

# *Subscriber Data Management*

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**Release 9.2**

## **Subscriber Provisioning Reference Manual**

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# Chapter 1

## Introduction

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### Topics:

- *About this document.....12*
- *Scope and audience.....12*
- *Document organization.....12*
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- *Related publications.....14*
- *Customer Care Center.....14*
- *Emergency Response.....16*
- *Locate Product Documentation on the Customer Support Site.....17*

This chapter provides general information about manual organization, the scope of this manual, its targeted audience, how to get technical assistance, and how to locate customer documentation on the Customer Support site.

## About this document

This document describes the provisioning interfaces and tools such as SOAP, Command File Loader (CFL), Command Template Loader (CTL), and XML files and templates. This document also provides a detailed description of the entities required for subscriber provisioning for the HLR, SIP, HSS, SLF, AAA and ENUM applications.

## Scope and audience

This document explains the processes for provisioning with templates. For template samples, detailed instructions on how and where to enter data, as well as a demonstration on converting a template from XML long format to XML short format, refer to the *SDM Subscriber Provisioning User Guide*.

This document is intended for operators that are responsible and qualified for the subject matter of this document.

## Document organization

This document is organized into the following chapters:

- *Introduction* contains general information about this document, how to contact the Tekelec *Customer Care Center*, and *Locate Product Documentation on the Customer Support Site*.
- *User Interfaces* describes XML interfaces and templates to provision subscribers and the CLI or WebCI interfaces for user and notification management.
- *Subscription* provides the entity to create a subscription for a subscriber.
- *Home Location Register (HLR)* provides the HLR subscriber data entities and operations.
- *MNP-SRF (Mobile Number Portability)* provides the subscriber data entities to create MNP-SRF subscribers.
- *Session Initiation Protocol (SIP)* provides the subscriber data entities for the SIP application and its many different functionalities.
- *Home Subscriber Server (HSS)* provides the subscriber data entities for the HSS application and SLF redirect host mapping.
- *Enum (Telephone Number Mapping)* provides the subscriber data entities to provision an ENUM user.
- *Authentication, Authorization, and Accounting (AAA)* provides details about AAA subscriber management and the entities and operations required to provision an AAA subscriber.

Referenced information located within this document is linked and can be reached by clicking the hyperlink.

**For references pointing outside of the current document, use these guidelines:**

### General:

- Locate the referenced section in the Table of Content of the referenced document.

- If not otherwise indicated in the reference, determine the section name that contains the reference and locate the same section name in the referenced document.
- Place the PDF files in one folder or on a disc and use the powerful Adobe PDF search functions to locate related information in one or more documents simultaneously.

**Alarms**

- *SDM Alarms Dictionary*

**Product, features, concepts**

- *SDM Product Description*

**Monitoring, maintenance, or troubleshooting:**

- Procedures: *Monitoring, Maintenance, Troubleshooting User Guide*
- Entities: *Monitoring, Maintenance, Troubleshooting Reference Manual*

**Subscriber provisioning:**

- Procedures: *Subscriber Provisioning User Guide*
- Entities: *Subscriber Provisioning Reference Manual*

**System configuration:**

- Procedures: *System Configuration User Guide*
- Entities: *System Configuration Reference Manual*

**User Interfaces:**

- *User guides*
  - How to use the user interface
  - How to set up users (permissions, groups, services)
- *Reference manuals*
  - About the user interfaces
  - Entities for setting up users

To determine the components of the complete documentation set delivered with the software, refer to the *SDM Documentation Roadmap* delivered with each documentation set.

## 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.

Icon	Description
 <p>DANGER</p>	<p><b>Danger:</b> (This icon and text indicate the possibility of <i>personal injury</i>.)</p>

Icon	Description
 WARNING	<b>Warning:</b> (This icon and text indicate the possibility of <i>equipment damage</i> .)
 CAUTION	<b>Caution:</b> (This icon and text indicate the possibility of <i>service interruption</i> .)
 TOPPLE	<b>Topple:</b> (This icon and text indicate the possibility of <i>personal injury and equipment damage</i> .)

## Related publications

For a detailed description of the available SDM documentation, refer to the *SDM Documentation Roadmap* included with your SDM documentation set.

## 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](mailto: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

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

Phone:

+1-919-460-2150

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:

8:00 a.m. through 5:48 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:

+91-124-465-5098 or +1-919-460-2150

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 the installed equipment that severely affects service, traffic, or maintenance capabilities, and requires immediate corrective action. Critical situations affect service and/or system operation resulting in one or several of these situations:

- 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](http://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

## User Interfaces

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### Topics:

- *Subscriber provisioning using XML templates.....19*
- *XML Description.....30*
- *User Security Management.....41*
- *Notification Security Management.....52*

This chapter describes the user interfaces that allow the operator to configure the system or provision subscribers. The description includes functionalities, command convention, navigation method, command execution, and the GUI symbols used in the WebCI.

## Subscriber provisioning using XML templates

### Overview

The SDM supports bulk subscriber provisioning using Templates. Templates can be defined using the XML language and loaded into the systems database through the Command Template Loader tool. These templates can then be used as references for the Invoking file that allows to provision subscribers.

Provisioning subscribers using Templates provide many advantages, such as the following:

- Simple XML provisioning commands
- Simple upgrade procedures
- Minimizes the number of requests that need to be processed to execute the different provisioning operations. This simplifies the interface development, and provides better performance, especially over low-speed connections

The next sub-sections describe in more details the use of Templates to provision subscribers, the format that you must follow when writing Templates and the tool you must use to load these Templates into the SDMs database.

Once the XML Templates have been loaded into the database, the subscribers can be provisioned with an XML Template Invoking file through a SOAP interface or the Command File Loader tool.

The Tekelec Oamp Manager is a standard process running on the Tekelec SDM, which supports external provisioning and configuration management. The Oamp Manager processes Extensible Markup Language (XML) requests as defined by the World Wide Web Consortium (W3C). The system can process requests through two modes: direct mode and batch mode.

1. Direct mode (through a SOAP interface or directly through a TCP socket) will accept XML Template Invoking files as well as XML Requests\* and be processed immediately by the Tekelec system. For more information, refer to [Provisioning in direct mode over TCP socket](#).
2. Batch mode (through the CFL tool) will accept a file containing XML Template Invoking files as well as XML Requests and then process the requests. This mode is useful when processing many subscribers at the same time. For more information, refer to [Provisioning in batch mode through the Command File Loader](#).

The SDM provides an interface to external applications (EA) using OAM&P VIP (Operation, Administration, Management and Process Virtual Interface) over TCP/IP.

### Connection properties

The External Application (EA) must first establish a TCP/IP connection with the SDM. The table below describes the parameters required to set up the connection.

**Table 1: TCP/IP connection parameters**

Connection properties	Value
Protocol	TCP

SDM listen IP	Provisioning VIP (configured during SDM installation)
SDM listen port	62001

### User authentication

Once the EA connects to the SDM, it must authenticate itself before any other action can be performed. The authentication process is performed through a user name/password mechanism. The table below describes the information required for the authentication.

**Table 2: Authentication information**

Field	Description
User name	A user that has RWX permission on OAMP group. The EA will need to be defined as a user in the OAMP service group. Please refer to the "Creating and managing users for the Tekelec Provisioning Interface" section of the SDM Subscriber Provisioning - User Guide for instructions on how to create and manage users and service groups.
User password	The password of the user trying to authenticate.
Application Name	Name of the application that is trying to connect to the SDM.

The user authentication is done differently depending on the mode used to process the provisioning requests:

- In direct mode, the user authentication can be done by sending an authentication request (Request Type: Operation) as the first request after establishing the connection.
- In batch mode (through the CFL tool), the user authentication is done automatically.

### XML Templates

The Tekelec system provides the Command Template Loader tool that is designed to load templates into the system's database, which allows the operator to provision subscribers using those templates. A Template file is made up of 2 entities:

- Template Request
- Command Template

The Command Template and associated Template Requests have to be defined and loaded onto the database of the SDM with the CmdTemplateLoader tool. The Template file can be made up of a multiple number of Template Requests.

A template file must be generated containing the two following entities: Command Template and Template requests. Template Request definitions are stored in the database in the original XML request format . Then the CmdTemplateLoader tool is executed to load the template file into the database and process its XML Template requests. Please refer to the "Subscriber Provisioning using XML Templates" section of the SDM Subscriber Provisioning - User Guide to know how to execute the CmdTemplateLoader tool.

Once Templates have been defined in the database, it can be used (referred to) for subscriber provisioning with an Invoking file.

## Template file description

The XML template file (containing Command Template(s) and Template requests) must be setup so that it is framed by the following XML File tags:

```
<file>
template request1
template request2
template request3
...
Command template 1
Command template2
...
</file>
```

Firstly, in a Template file, the Template requests must be defined. The Template requests are stored in the original XML request format with the identification of the Template request specified. This specification is done by including the following additional attribute "id" in the request identification field, as shown in the structure below.

```
<tx>
  <req name="Type of Template Request" id="Template Request ID number">
  ... request properties
  </req>
</tx>
```

The Command Template Loader supports the following types of Template requests:

- Update
- Insert
- Delete

Template requests can be formulated with all or some of these following parts:

- Request identification
- Request properties
  - entity identification
  - set of attributes and values
  - criteria

For a Template request, only the Request identification part is different from the original XML requests.

## Request identification

A request tag (e.g., <req>) must be used to formulate the type of template request and to identify it. The attribute "name" is used to provide the type of template request and it must be followed by the attribute "id" which will identify the Template request with an ID number. This identification will be used by the template to refer to the proper Template request.

Secondly, in a template file, the Command Template(s) must be defined and contain the constraints for Template attributes that can be overwritten (that must be modified, can be modified or cannot be modified) and it must also refer to the Template requests it uses.

The Oamp manager accepts XML template commands structured using the following xml tags:

```
<template id="Template ID number" otherAttributesModifiable="Y or N">
<attr name="Name of the modifiable attribute" mandatory="Y or N"/>
<attr name="ProvisionState"/>
...Attribute names
<tr id="Template request ID number">
<tr id="Template request ID number">
<tr id="Template request ID number">
... Template request identifications
</template>
```

Templates are formulated with these following parts:

- Template identification
- Attribute name
- Template request identification

### Template identification

A template tag (e.g., <template>) must be used to identify the Template and to specify whether or not the attributes that are not mandatory can or cannot be modified. The "**template id**" attribute allows to identify the template with a Template ID number. This identification will then be used later when provisioning subscribers with an Invoking file (XML "provisioning commands" written in Requests of type template) to refer to the proper template.

The template must also be defined by the following attribute: "**otherAttributesModifiable**".

This XML field can take one of the following two values : "Y" or "N" to indicate whether or not the values of the attributes defined in the referenced Template requests can or cannot be modified by commands in the Invoking file. The meaning of the two possible values is as follows:

- "Y": The values of the attributes that are defined in the referenced Template requests and that are not listed in the 'Attribute Name' section of the template, can be modified by commands in the Invoking file. In this case, any of the attributes defined in the referenced template requests can be provided in the Invoking file commands along with new values and these new values will overwrite the ones defined in the template requests.
- "N": The values of the attributes that are defined in the referenced Template requests and that are not listed in the 'Attribute Name' section of the template, cannot be modified by commands in the Invoking file. Only the attributes listed in this template can be modified by commands in the Invoking file.

### Attribute name

The part of the Command Template that must be used to specify the name of the attributes that can or must be modified. This field can be created as many times as there are attributes that can or must be modified. The attribute "**attr name**" allows to specify the name of the modifiable attribute.

When creating this field, the following attribute can also be specified: "**mandatory**".

This XML field provides information on whether the value of the attribute must absolutely be defined in the Invoking file or whether it may or may not be defined optionally in the Invoking file.

- "Y": The attribute and its value must absolutely be defined in the Invoking file. All the attributes that have been implemented as 'mandatory' in the system's database must have the XML field "mandatory" set to "Y".
- "N": The attribute and its value may or may not be defined in the Invoking file. This is not required to be included in the Invoking file. An attribute that has been implemented as 'mandatory' in the system's database cannot have the XML field "mandatory" set to "N".

All the attributes that have been implemented as 'optional' in the system's database can either have the XML field "mandatory" set to "Y" or "N".

The default value of the XML field "mandatory" is "N". This means that when the "mandatory" field is not specified, as shown in the example above for the "Provision State" attribute, the attribute and its value are not required in the Invoking file.

## Template request identification

The part of the Command Template that must be used to identify which Template requests to refer to. This field can be created many times to refer to each Template request it uses. In this field, the attribute "tr id" allows to provide the Template request ID number.

## Invoking file template

The Invoking file contains a type of XML Request that is created to support subscriber provisioning requests based on a Template. An Invoking file can only be created if Template files are already defined in the system's database.

An Invoking file (i.e., tp) contains a Template Id and Request template instructions (i.e., tpi). The Template Id identifies which Command Template to use. Each Invoking file instruction provides a specific attribute and value pair that are used to override the default attribute values found in Template requests associated with the specified Command Template.

An Invoking file must be created using the following XML structure:

```
<file>
  <tp id="Template ID number">
    <tpi nm="Name of the modifiable attribute to override" val="value"/>
    <tpi nm="Name of the modifiable attribute to override" val="value"/>
    <tpi rid=" Template request ID number" nm="Name of the modifiable attribute to
    override" val="value"/>
    ... request template instructions
  </tp>
</file>
```

Invoking files can be formulated with these following parts:

- Template identification
- Request template instructions

### *Template identification*

A template tag (e.g., <template>) must be used to identify the Template and to specify whether or not the attributes that are not mandatory can or cannot be modified. The "template id" attribute allows to identify the template with a Template ID number. This identification will then be used later when

provisioning subscribers with an Invoking file (XML "provisioning commands" written in Requests of type template) to refer to the proper template.

The template must also be defined by the following attribute: "**otherAttributesModifiable**".

This XML field can take one of the following two values : "Y" or "N" to indicate whether or not the values of the attributes defined in the referenced Template requests can or cannot be modified by commands in the Invoking file. The meaning of the two possible values is as follows:

- "Y": The values of the attributes that are defined in the referenced Template requests and that are not listed in the 'Attribute Name' section of the template, can be modified by commands in the Invoking file. In this case, any of the attributes defined in the referenced template requests can be provided in the Invoking file commands along with new values and these new values will overwrite the ones defined in the template requests.
- "N": The values of the attributes that are defined in the referenced Template requests and that are not listed in the 'Attribute Name' section of the template, cannot be modified by commands in the Invoking file. Only the attributes listed in this template can be modified by commands in the Invoking file.

### *Request template instructions for invoking files*

This part of the Invoking file needs to be created as many times as there are modifiable attributes for which you need to override the default value. Each Request Template instruction provides a specific attribute and value pair that are used to override the default attribute values found in Template Requests associated with the specified Template.

The following attributes represent correspondingly the attribute and value pair: "**tpi nm**" and "**val**".

The "**nm**" attribute provides the name of a modifiable attribute found in the Template requests associated with the specified Command Template.

The "**val**" attribute is used to define the new value of the specified modifiable attribute. This new value will override the default value defined for that attribute in the Template request associated with the Command Template used.

A Request Template instruction can also contain optionally a "**tpi rid**" attribute that allows to specify a Template request ID number (i.e., rid). In this case, attribute values would only be overwritten for the Template Request with the Template request ID number specified. By default, if no Template Request ID is specified, the values of all the attributes with this given name are overwritten in all the Template Request.

The "**tpi rid**" attribute limits the overwriting of the modifiable attribute specified within one single Template request. The modifiable attribute with the attribute name specified will only be overwritten by the value given in the Invoking file for the Template request specified.

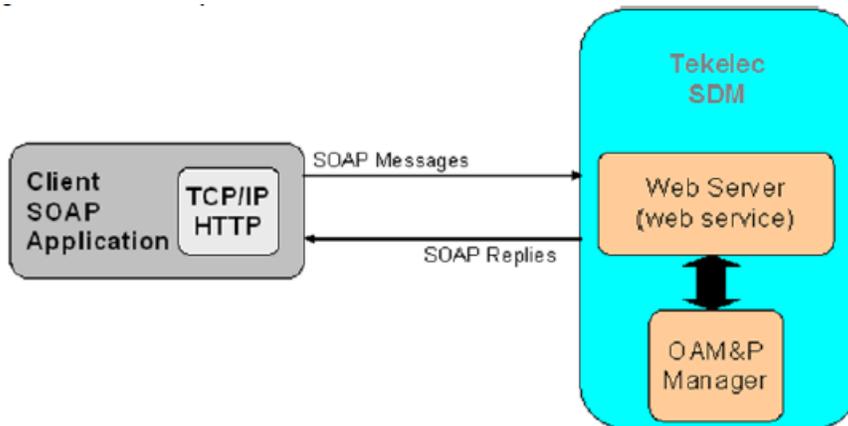
For examples on the use of XML Templates to provision subscribers, refer to the "Examples of XML Templates for Subscriber provisioning" section of the SDM Subscriber Provisioning - User Guide .

## **Provisioning in direct mode through the SOAP interface**

The Tekelec SDM provides machine-to-machine (M2M) communication between a clients SOAP application and the Tekelec SDM Web Server. SOAP (Simple Object Access Protocol) is a communication protocol that sends XML interface messages over the internet. Refer to figure below.

The SDM supports Web Services by using the SOAP protocol to exchange messages between network applications. The SOAP Messages and SOAP Replies are transported over the HTTP protocol. The SDM Web Server currently supports Request and Response message types.

A benefit of using M2M is to simplify the Subscriber Provisioning process. The operator can change and update subscriber profiles in their system, save the changes, and then use the M2M interface to transfer updates to the SDM system. Subscriber changes can now be done once, thus saving an operator the steps of manually repeating the same subscriber updates on the SDM.



The SOAP interface supports XML Templates and can also support files without templates using the following XML request types:

- Update
- Insert
- Delete
- Select
- Operation

In SOAP messages, the authentication is part of the SOAP Envelope Header. Refer to the next section for the user authentication format for SOAP messages

### Soap message format

```

<?xml version="1.0" encoding="UTF-8"?>
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"

  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <soapenv:Header>Set the username and password
    <ns1:UserName soapenv:actor="http://schemas.xmlsoap.org/soap/actor/next"
      soapenv:mustUnderstand="0" xsi:type="soapenc:string" xmlns:ns1="tekelec.com"
      xmlns:soapenc="http://schemas.xmlsoap.org/soap/encoding/">admin</ns1:UserName>
    <ns2:Passwd soapenv:actor="http://schemas.xmlsoap.org/soap/actor/next"
      soapenv:mustUnderstand="0" xsi:type="soapenc:string" xmlns:ns2="tekelec.com"
      xmlns:soapenc="http://schemas.xmlsoap.org/soap/encoding/">admin</ns2:Passwd>
  </soapenv:Header>
  <soapenv:Body>
    <processTransaction xmlns="http://webservice.blueslice.com" <![CDATA[BLUESLICE
      TRANSACTION]]> </processTransaction>
    <soap:Fault>
      ...
  
```

```

...
</soap:Fault>
</soapenv:Body>
</soapenv:Envelope>

```

### SOAP request message (sent by client system)

```

<?xml version="1.0" encoding="UTF-8"?>
<soapenv:Envelope
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"

xmlns:xsd="http://www.w3.org/2001/XMLSchema"

xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
<soapenv:Header>
  <ns1:UserName
soapenv:actor="http://schemas.xmlsoap.org/soap/actor/next"
soapenv:mustUnderstand="0" xsi:type="soapenc:string"
xmlns:ns1="tekelec.com"
xmlns:soapenc="http://schemas.xmlsoap.org/soap/encoding/">admin</ns1:UserName>

  <ns2:Passwd
soapenv:actor="http://schemas.xmlsoap.org/soap/actor/next"
soapenv:mustUnderstand="0" xsi:type="soapenc:string"
xmlns:ns2="tekelec.com"
xmlns:soapenc="http://schemas.xmlsoap.org/soap/encoding/">admin</ns2:Passwd>
</soapenv:Header>
<soapenv:Body>
  <processTransaction
xmlns="http://webservice.blueslice.com" <![CDATA[BLUESLICE
TRANSACTION]]>
  </processTransaction>
</soapenv:Body>
</soapenv:Envelope>

```

**Note:** The SDM SOAP servers both process one request per transaction.

The CDATA[TEKELEC TRANSACTION] portion of the message is the XML request that is inserted into the soap message.

### SOAP response message (sent by SDM SOAP server)

```

<?xml version="1.0" encoding="UTF-8"?>
<soapenv:Envelope
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"

xmlns:xsd="http://www.w3.org/2001/XMLSchema"

xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
<soapenv:Header>
  <ns1:UserName
soapenv:actor="http://schemas.xmlsoap.org/soap/actor/next"
soapenv:mustUnderstand="0" xsi:type="soapenc:string"
xmlns:ns1="tekelec.com"
xmlns:soapenc="http://schemas.xmlsoap.org/soap/encoding/">admin</ns1:UserName>

  <ns2:Passwd
soapenv:actor="http://schemas.xmlsoap.org/soap/actor/next"
soapenv:mustUnderstand="0" xsi:type="soapenc:string"
xmlns:ns2="tekelec.com"
xmlns:soapenc="http://schemas.xmlsoap.org/soap/encoding/">admin</ns2:Passwd>

```

```

</soapenv:Header>
<soapenv:Body>
  <processTransaction
xmlns="http://webservice.blueslice.com"><![CDATA[BLUESLICE
TRANSACTION]]> </processTransaction>
</soapenv:Body>
</soapenv:Envelope>

```

The CDATA[TEKELEC TRANSACTION RESPONSE] portion of the message is the XML response that is inserted into the soap response message.

## Error messages

If an error occurred in processing the request or with the format of the message, an error result code will be sent as shown below:

1. Message error="0" -> normal, request transaction was sent and processed.
2. Message error="0" but the message content has "res error = error code number". This implies there is a problem with the content of the request message (e.g., a problem with format or value out of range). The Error code numbers are generated by the SDM. For details on the error code numbers, refer to *Error Notifications* in the *SDM Monitoring, Maintaining, Troubleshooting-Reference Manual*.
3. Message error="10" -> Communication problem, unable to process the request transaction.

Example of a Response message with an error code returned:

```

<?xml version="1.0" encoding="UTF-8"?>
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
<soapenv:Header>
  <ns1:UserName soapenv:actor="http://schemas.xmlsoap.org/soap/actor/next"
soapenv:mustUnderstand="0" xsi:type="soapenc:string" xmlns:ns1="tekelec.com"
xmlns:soapenc="http://schemas.xmlsoap.org/soap/encoding/">admin</ns1:UserName>
  <ns2:Passwd soapenv:actor="http://schemas.xmlsoap.org/soap/actor/next"
soapenv:mustUnderstand="0" xsi:type="soapenc:string" xmlns:ns2="tekelec.com"
xmlns:soapenc="http://schemas.xmlsoap.org/soap/encoding/">admin</ns2:Passwd>
</soapenv:Header>
<soapenv:Body>
<message error="10"><![CDATA[TEKELEC TRANSACTION RESPONSE]]></message>
</soapenv:Body>
</soapenv:Envelope>

```

For more details on the logic used by the SDM when generating replies and the error responses, refer to [System Replies and Error Codes](#).

## Soap service URL

Specify the URL for the SOAP service, as follows:

```
http://<System Controller IP address>:8080/axis/services/MessageService
```

The external IP address of the SDM must be specified as the destination IP address.

When sending messages, the destination IP address must be specified along with the content of the SOAP message.

## Provisioning in direct mode over TCP socket

Using XML over a TCP connection is very similar to using the SOAP interface with two differences:

1. When connecting directly through TCP, the first request sent must be an authentication request
2. Instead of using the SOAP header, all messages sent to/received from the system are in the following format:

```
|-----|  
| Header | XML |  
|-----|
```

Where Header is a 4 bytes integer in network byte order\* indicating the size in bytes of the XML part. The maximum allowed value for requests is 14000 bytes (excluding the header). Bigger requests will be rejected by the system. There is no limit for the size of the reply.

**Note:** "Network byte order" refers to the standard byte order defined in the IP protocol. It's what you receive when you invoke 'htonl' (Host To Network Long). It corresponds to big-endian (most significant first). It is a zero-padded 4 bytes value.

## External commit protocol

The SDM system supports provisioning transactions with new "external commit" commands. The following commands are supported and allow the Network Operator to be able to manually control the XML provisioning transactions sent to the system's OAM&P Manager:

```
<req name="starttransaction"></req>  
<req name="commit"></req>  
<req name="rollback"></req>
```

This allows the Network Operator to send a large amount of requests within one single transaction by sending a 'Start Transaction' and a 'Commit' request (Stop transaction and commit to database).

**Note:** These new requests are only available on a direct XML/TCP connection, not on a SOAP connection

When sending XML provisioning transactions to the SDM system, the following requests must be sent in the following order:

1. The "Start Transaction" request must be sent first to indicate the beginning of a transaction
2. The template or text file with all the provisioning requests can then be sent out as usual.
3. The "Rollback" request or the "Commit" request can then be sent. If the system returned an error while processing the provisioning requests, you must send out a "Rollback" request in order to make sure the data changes processed prior to the error are not committed to the database. In this case, no provisioning changes are applied to the database. In the other case where all the provisioning requests are processed successfully (no error is returned), you must send out a "Commit" request

in order to make sure the provisioning changes are committed to the system's database. The "Commit" request indicates the end of the transaction.

```
<req name = "starttransaction">
  <req>...</req>
  <req>...</req>
  ...
<req name = "commit">
```

**Note:**

- If a "Start Transaction" command is sent, and then the connection is lost or the user logs off without sending a "commit" or "rollback" command, all pending requests are rolled back.
- One XML session can have one transaction at a time. If a "Start Transaction" command is sent, another "Start Transaction" command will commit the pending requests and start a new transaction.
- There is a timeout of one minute between the "Start Transaction" and the "Commit" commands. If the "Commit" command is not sent out within one minute of the "Start Transaction" command, the XML provisioning requests are rolled back (changes not applied to database).

Sending out provisioning requests in a (<tx></tx>) syntax (without the 'StartTransaction' request) is still supported and the same actions are taken (Start transaction, Rollback, Commit), except automatically. In this case, the provisioning changes are applied to the database immediately.

```
<tx>                                <!-- Start a transaction -->          <req>...</req>
  <!-- Rollback and stop if error -->    <req>...</req>          <!--
Rollback and stop if error -->          ...    </tx>                                <!--
Commit -->
```

**Note:** It is not possible to send "Start Transaction", "Commit" or "RollBack" requests within a <tx></tx> context or within a template definition. However, it is possible to issue a "Start Transaction" request, then execute several templates, then issue a "Commit" or "RollBack" (this would group several templates into a transaction).

Template requests which are not sent between a "StartTransaction" and a "Commit" request are by default automatically executed within a transaction context, which means that a template will either be fully executed, or not executed at all. When running a template, any failure encountered will automatically provoke a roll back of all the changes already processed from this template. All the requests in the template succeed or they are all rolled back.

In order to provide details of when a template is not successfully executed, the SDM system returns the following error notification, which includes information on which request within a template has failed:

```
<errMsg id="7029" name="RequestTemplateExecutionError"> <desc value="Error occurred
while processing RequestTemplate, on request %1 with error code %2"/>
```

## Provisioning in batch mode through the Command File Loader

The Tekelec system provides a batch mechanism called Command File Loader (CFL) that supports bulk provisioning. A file must be generated containing the XML requests. Then the CFL tool is executed to process the XML requests in the file. The Command File Loader tool reads the XML request transactions and processes them one after another. Each file must always contain an authentication request for user authentication.

The Invoking file (containing the request template instructions) must be setup so that it is framed by the following XML File tags:

```
<file>
Request template1
Request template2
Request template3
...
</file>
```

The Command File Loader supports XML Templates and can also support files without templates using the following XML request types.

- Update
- Insert
- Delete
- Select
- Operation (i.e., Authentication request)



**Warning:**

When using the Command File Loader tool, the <ctrl> z command does not send the process execution to background, as it typically would. Since there is no need to allow to run the Command File Loader tool in background, the Tekelec implementation intentionally interprets the <ctrl> z command as an "abort" message and suspends the ongoing command. Basically, the use of the <ctrl> z command cancels any change made by the ongoing command. In some situations, executing this command may produce a core dump of the Command File Loader processes.

However, using the CTRL-Z command will not cause any service outage, nor will it cause data corruption. The same warning also applies for the use of the <ctrl> z command when using the Tekelec CLI

## XML Description

This section describes the format of each XML Request type. This format must be followed when writing XML Template requests or when simply writing XML requests.

The Tekelec SDM system supports provisioning management by processing XML (Extensible Markup Language) requests provided using TCP/IP. The system provides a number of generic interfaces and the user can build their own interface for their specific application. The component that supports this interface is the Oamp Manager. It supports requests generated in XML as defined by the World Wide Web Consortium (W3C).

**Note:** The tag structure is defined by Tekelec and the properties are defined in the Global Schema. The Global Schema provides a pseudo-Object Oriented layer of abstraction to the system with the following properties: Namespaces, Entities, Attributes, and Operations.

## XML Request Types

The Oamp Manager supports the following XML Request types:

- **Update** (modifies instances of entities)
- **Insert** (adds instances to entities)
- **Delete** (deletes instances of entities)
- **Select** (select instances from entities)
- **Operation** (invokes an operation type of entity. Example: authentication request)

The Oamp manager accepts XML command requests structured using the following xml tags:

```
<tx>
<req name="RequestType">
... request properties
</req>
</tx>
```

All the XML request types support the long format. In addition, the Insert Request also supports the short format.

Requests can be formulated with all or some of these following parts:

- request identification
- entity identification
- set of attributes and values
- criteria

**Request Identification:** A request tag (e.g., <req>) must be used to formulate the type of request.

**Entity Identification:** An entity tag (e.g., <ent>) must be used to identify the entity that will receive the request.

**Set:** A set is used to specify the value for each attribute of that entity.

**Criteria:** The criteria (also called „where) can be an expression (expr) or set of expressions separated by operators (op). The square brackets “[”, “]” indicate optional items. The grammar format is provided below:

where := expr [op expr] ...

The "where" part is a list consisting of the following items:

- expr := [expr | attr | attr op value]
- attr := name="name" ent="entity" ns="namespace"
- op := value=["=" | "!=" | "and" | "or" | "gt" | "ge" | "lt" | "le"]
- value := val ="value"

The operators are: equal (=), not equal (!=),and, or, greater than (gt), greater than or equal (ge),less than (lt), less than or equal (le) respectively. The default operator is equal (=).

**Note:** The "resonly="y/n" field is optional and can be used in each request in order to indicate to the system whether it must include this request in the reply or simply the response. Note that excluding this optional attribute simply means that the system uses the default behavior, in which case it returns the entire request in the reply.

```
<tx>
<req name="RequestType">... resonly="y"
... request properties
</req>
</tx>
```

Moreover, it can be used in the transaction. In this case, it will apply to all the requests in the transaction.

```
<tx resonly="y">
  <req name="RequestType">
    ... request properties
  </req>
  <req name="RequestType">
    ... request properties
  </req>
</tx>
```

## Update Request

Update requests are formulated with the following parts:

- request identification
- entity identification
- set of attributes and values
- criteria (also called "where")
- operations (AddToSet, RemoveFromSet to manage sets)

The Update request should follow the format as shown below:

```
<req name="update">
  <ent name = " EntityName " ns=" Namespace"/>
  <set>
    <expr>
      <attr name="AttributeName" />
      <value val="value" />
    </expr>
    <oper name="AddToSet ">
      <expr>
        <attr name="AttributeName" />
        <value val="value" />
      </expr>
    </oper>
  </set>
  <where>
    <expr>
      <attr name="AttributeName" />
      <op value="Operator" />
      <value val="Value" />
    </expr>
  </where>
</req>
```

**Note:** Using the one line format in the XML file will simplify and speed up the bulk provisioning process. Update requests can also be provided on a single line in an XML file. Due to margin limits, the line is shown continuing onto subsequent lines, in the format as follows.

```
<req name="update"><ent name = "EntityName" ns="bn"/><set><expr><attr name="
AttributeName " /><value val="value" /></expr></set><where><expr><attr name="
AttributeName
"/><op value="Operator" /><valueval= " 'value' " /></expr></where></req>
```

For XML examples of an update request for the HLR, SIP and HSS, please refer to the "chapter 5" in the *SDM Subscriber Provisioning – User Guide*.

## Insert Request

The Insert request allows the user to insert one entity at a time. The Insert request type supports two formats.

- Short format
- Long format

### *Short Request format*

In this format, the user specifies the entity name, the entity namespace, and the list of attributes and values required. This format has been designed to reduce the number of XML keywords.

```
<ent name="EntityName" ns="Namespace">
  <attr>attribute value</ attr >
</ent>
```

When a request is specified in the above format, it will be processed as an Insert request.

**Note:** It is not possible to send an Insert Request in short format via the TCP/IP direct connection. Short format Insert Requests are only supported when provisioning using the Command File Loader tool.

### *Long Request format*

This format follows the long format request. The Insert request consists of the following parts:

- request identification
- entity identification
- set of attributes and values

The long format supports the capability to convert the insert request in an update request if the target entity already exists. In order to do so the odk="yes" keyword must be added besides the insert declaration.

The Insert request in long format should follow the format as shown below:

```
<req name="insert" odk="yes">
  <ent name=" EntityName " ns="Namespace " />
  <set>
    <expr><attr name="AttributeName " />
    <value val=" attribute value " />
  </expr>
</set>
</req>
```

**Note:** Using the one line format in an XML file will simplify and speed up the bulk provisioning process. Insert requests can also be provided on a single line in an XML file, in the following format:

```
<ent name = "EntityName" ns="Namespace"><attri>attribute value</
attri><attr>attribute
value</attr></ent>
```

For XML examples of an insert request for the HLR, SIP and HSS, please refer to the "chapter 5" in the *SDM Subscriber Provisioning – User Guide*.

## Delete Request

Delete requests are formulated with the following parts:

- request identification
- entity identification
- criteria

The Delete request should follow the format as shown below:

```
<req name="delete">
<ent name = " EntityName " ns=" Namespace"/>
<where>
<expr>
<attr name="AttributeName" />
<op value="Operator" />
<value val="value" />
</expr>
</where>
</req>
```

**Note:** Use the one line format in the XML file to simplify and speed up the bulk provisioning process. Delete requests can also be provided in an XML file on a single line. Due to margin limits, the line is shown continuing onto a second line as follows.

```
<req name="delete"><ent name = " EntityName " ns="Namespace" /><where><expr><attr
name="AttributeName" /><op value="Operator" /><value
val="value" /></expr></where></req>
```

For XML examples of a delete request for the HLR, SIP and HSS, please refer to the "chapter 5" in the *SDM Subscriber Provisioning – User Guide*.

## Select Request

Select requests are formulated with the following parts:

- request identification
- entity identification
- set of attributes and values
- criteria (also called "where")

The Select request should follow the format shown below:

```
<req name="select">
<ent name = " EntityName " ns=" Namespace"/>
<select>
<expr>
<attr name="AttributeName" />
</expr>
</select>
<where>
<expr>
<attr name="AttributeName" />
<op value="Operator" />
<value val="Value" />
</expr>
```

```
</where>
</req>
```

**Note:** Using the one line format in the XML file will simplify and speed up the bulk provisioning process. Select requests can also be provided on a single line in an XML file.

Due to margin limits, the line is shown continuing onto subsequent lines, shown below in a general format.

```
<req name="select"><ent name = " EntityName " ns=" Namespace " /><set><expr><attr
name=" AttributeName " /><value val="value" /></expr></set><where><expr><attr
name="AttributeName" /><op value="operator" /><valueval=
" 'value' " /></expr></where></req>
```

For XML examples of a select request for the HLR, SIP and HSS, please refer to the "chapter 5" in the *SDM Subscriber Provisioning – User Guide*.

## Operation Request

Operation requests are formulated with the following parts:

- request identification
- operation and entity identification
- set of attributes and values

The Operation request should follow the format shown below:

```
<req name="operation">
<oper name = "OperationName" ent name = "EntityName " ns=" Namespace" />
<expr>
<param name="ParameterName" />
<op value="="/>
<value val="value" />
</expr>
<oper>
<req>
```

**Note:** Using the one line format in the XML file will simplify and speed up the bulk provisioning process. Operation requests can also be provided on a single line in an XML file. Due to margin limits, the single line is shown continuing onto subsequent lines, shown below in a general format.

```
<tx nbreq="1"><req name="operation" ver="1.3.01" state="processed"><oper name="
OperationName " ent=" EntityName " ns=" Namespace " /><oper name=" OperationName
" ent="
EntityName " ns=" Namespace " /><res error="ErrorCode"
affected="count"></res><rset><row><rv>7</rv></row></rset></req></tx>
```

For XML examples of a delete request for the HLR, SIP and HSS, refer to chapter *Examples of XML Templates for Subscriber Provisioning* in the *SDM Subscriber Provisioning – User Guide*.

## Authentication Operation

Every file loaded by the Command File Loader must absolutely contain an Authentication request, which is an Operation Type request.

The XML format of the request must be as follows:

```
<req name="operation">
  <oper name = "RequestUserAuc" ent name = "UserAuthentication" ns="bn">
    <expr>
      <param name="UserName" />
      <op value="=" />
      <value val="USER_NAME" />
    </expr>
    <expr>
      <param name="UserPasswd" />
      <op value="=" />
      <value val="USER_PASSWD" />
    </expr>
    <expr>
      <param name="ModuleName" />
      <op value="=" />
      <value val="APPLICATION_NAME" />
    </expr>
  </oper>
</req>
```

## System Replies and Error Codes

The system replies to the XML requests by adding specific tags as follows:

```
<tx nbreq="1">
  ... Body...
</req>
Request*
<res error="ErrorCode" affected="count" />
</tx>
```

The system replies to the received XML provisioning transaction using the following logic:

- In the case where the XML transaction is invalid due to an XML error syntax, the system parses the XML requests in the same order as received in the transaction until it detects the XML syntax error, at which point it stops parsing the transaction and sends back an XML reply that includes the following:
  - Requests that each include the valid request\* that has been parsed prior to detecting the XML syntax error, along with an error response with error code "1" to indicate that the request has been validated but has not been processed.
  - A last request that only includes the response error (res error) with an error code <error code#> to indicate that there has been an XML parsing error. Refer to the "Error Notifications" chapter of the *SDM Monitoring, Maintaining, Troubleshooting – Reference Manual* for a description of each error code that can be generated by the system.
- In the case where the XML transaction is invalid due to an XML request content error (i.e. unknown entity name or unknown field name or unknown value), the system parses all of the transaction's requests, but cannot successfully process them. The system replies back with an XML reply that includes the following:
  - Requests for each request received in the transaction. These requests include the request\* as received and the response error (res error) with one of these error codes:
    - Error code: "1" for the valid requests with no error. This indicates that the request has been validated but has not been processed.

- Error code: <error code#> for the erroneous requests. The error code number identifies the failure cause why the system is not able to process the request. Refer to the "Error Notifications" chapter of the *SDM Monitoring, Maintaining, Troubleshooting – Reference Manual* for a description of each error code that can be generated by the system.
- In the case where the XML syntax of the transaction is valid as well as the content of each of its XML requests, the system is able to process all of the requests and returns in the XML reply each XML request\* (in the same order as provided in the transaction) with an error code "0" to indicate that the request has been validated and processed.

**Note:** The "resonly='y/n'" attribute is an optional attribute that can be used in each request in order to indicate to the system whether it must include this request in the reply or simply the response. In the case where the request includes the "resonly" set to "y", the system won't include the request as received in the provisioning transaction, but only the response error. In the case where this attribute is included for the entire transaction, the system won't send back any of the received requests in the Reply, as follows:

```
<tx nbreq="1">
... Body...
</req>
Request*
<res error="ErrorCode" affected="count" </res>
</tx>
```

Note that excluding this optional attribute simply means that the system uses the default behavior, in which case it returns the entire request in the reply.

The XML reply provides result values in the same order as they were requested from the XML request, where:

- res = result
- rset = result set
- rv = row value
- The nbreq is set to a value equal to the amount of requests contained in the transaction

In the response generated by the system: <res error="ErrorCode" affected="count">, two fields are returned:

**Table 3: Error code fields**

Field name	Value	Description
error	Integer	<p>Error code that indicates the validation and processing status of the XML request.</p> <p>A valid XML request is an XML request that has no syntax errors and that can be processed by the system.</p> <p>An invalid XML request is an XML request with syntax errors that cannot be processed by the system.</p> <p>Note that an XML request can be valid but cannot be processed due to errors found in the other requests sent within the same transaction.</p> <p>0: The request has been validated and processed.</p>

Field name	Value	Description
		1: The request has been validated but not processed.  If the value is not "0" or "1", refer to the "Error Notifications" chapter of the <i>SDM Monitoring, Maintaining, Troubleshooting – Reference Manual</i> for a description of each error code that can be generated by the system.
affected	Integer	This field indicates the number of lines that are read (select request), inserted (insert request), modified (update request) or deleted (delete request) from the database.  This field takes the value "0" if nothing has been done in the database.  When this field is returned with a "0" value, this means that nothing has been done in the system's database.

**Note:** In the case where the XML's reply contains a response as follows: `<res error="0" affected="0"/>`, this means that the XML request has been validated and processed, but no provisioning changes needed to be written in the database. For example, this response can be returned if the XML request is valid and can be processed by the system, but is for a subscriber that doesn't exist in the system's database.

In the case of XML template, the following behavior is used:

When an error occurs during the execution of the template, the template execution is stopped at the first faulty template request. The system returns the error code associated to the failure cause of the first faulty template request. The result doesn't include any information indicating which request failed.

For example, if we take a template (template1) consisting of 10 template request (TR1, TR2,...TR10). We send a command that activates template1. The system will start to sequentially send TR1 through TR10. Assuming TR1 and TR2 are successful but TR3 fails with error code 1030. The system will stop sending the remaining request and will return `<res error=1030 affected=0/>`

Please refer to the "TIP" given in the "Operation Request" section for the structure in which an operation request followed by a system reply using the one line format must be.

For XML examples of a system reply for the HLR, SIP and HSS, please refer to the chapter 5 in the *SDM Subscriber Provisioning – User Guide*.

## Subscriber profile entities for XML requests

The subscriber profile entities and attributes that can be provisioned or displayed with the XML requests for HLR, SIP, and IMS HSS are shown in the following figures.

Each figure provides a hierarchical view of the subscriber profile entity and its subentities. Attributes are listed in brackets. Detailed information on these entities is provided in earlier sections of this document.

Mandatory attributes are shown in bold and black font, for example, **Bsgld**. Mandatory attributes inherited from higher-level parent entities are shown in bold and light blue font. All mandatory attributes must be included in the XML request. Optional attributes are shown in plain text.

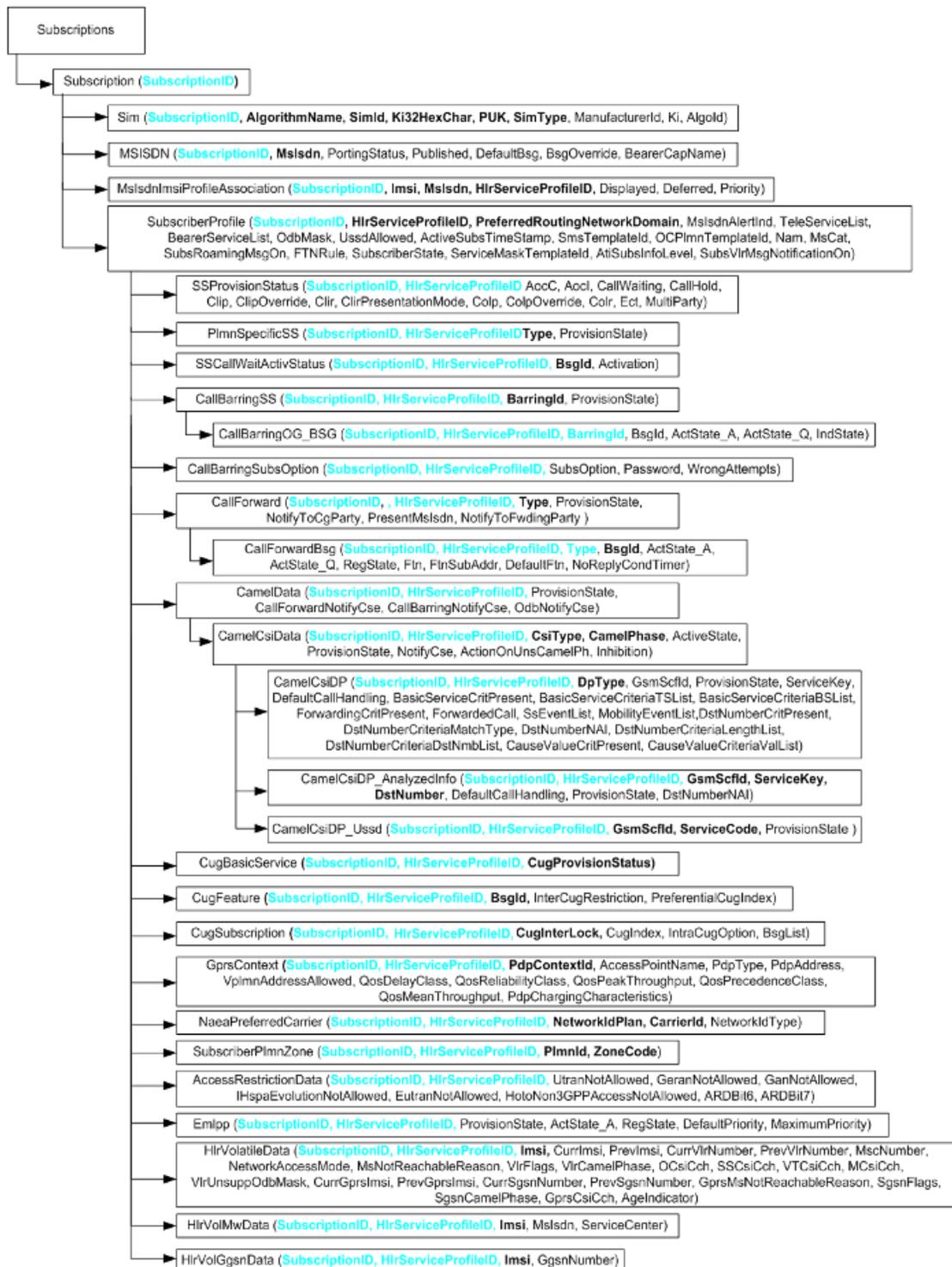


Figure 1: GSM subscriber profile entities and attributes for HLR application

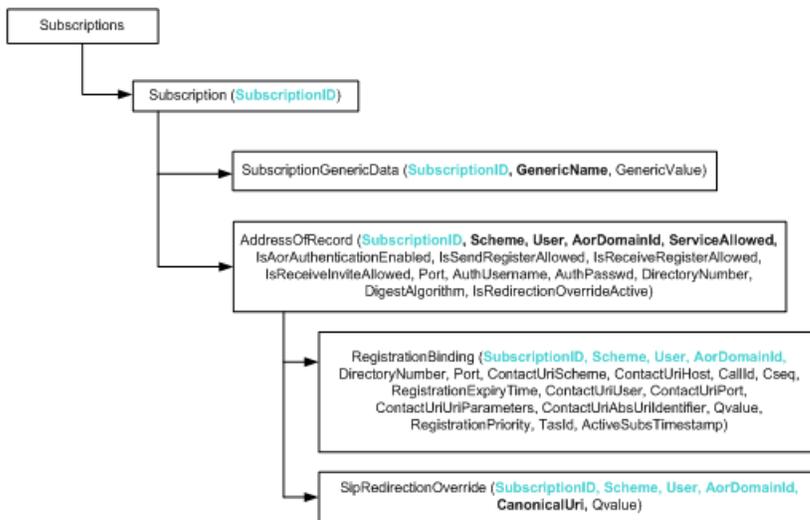


Figure 2: SIP subscriber profile entities and attributes for FMC application

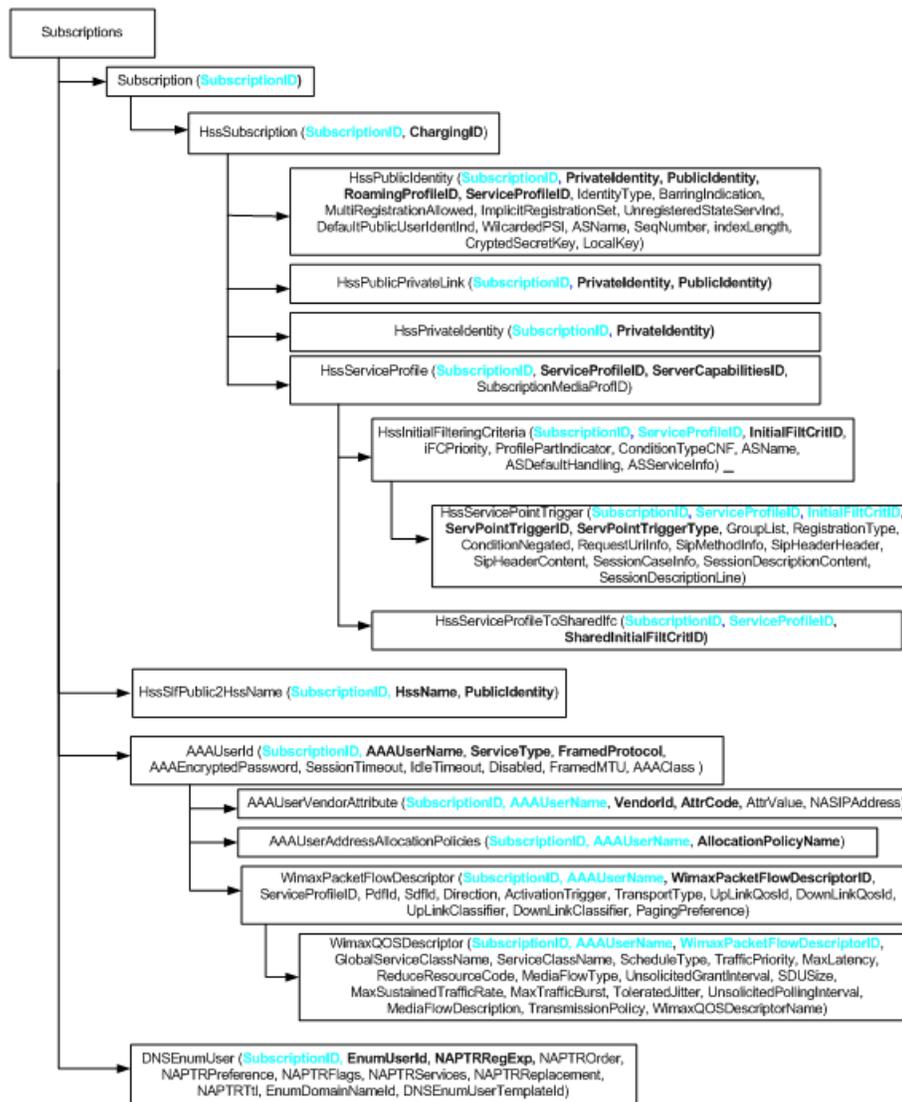


Figure 3: HSS subscriber profile entities and attributes for HSS and AAA applications

## User Security Management

The SDM system offers its users high security by giving the administrator the capability to make the following user restrictions from any of the supported SDM user interfaces (CLI, WebCI, XML interfaces):

- Manage users by classifying them within groups with specific access privileges and services.
- Manage notifications sent to subscribed users about updates to certain applications (entities/attributes).

The following sections describe the entities and attributes available through the CLI and WebCI to manage user privileges.

## User Security Management through WebCI

Group			
GroupName	Description	PersistOs	Action
admin		On	Modify Delete
batch		On	Modify Delete
operation		On	Modify Delete
simprov		On	Modify Delete
surveil		On	Modify Delete
user		On	Modify Delete
Add Group			

User				
Username	GroupName	UpgradeMode	PersistOs	Action
admin	admin	NotApplicable	On	Modify Delete
batch	batch	NotApplicable	On	Modify Delete
cfu	admin	NotApplicable	On	Modify Delete
operation	operation	NotApplicable	On	Modify Delete
simprov	simprov	NotApplicable	On	Modify Delete
surveil	surveil	NotApplicable	On	Modify Delete
user	user	NotApplicable	On	Modify Delete
Add User				

Service		
ServiceName	Description	Action
Database		Modify Delete
ExternalService		Modify Delete
HlrConfig		Modify Delete
HlrSimProv		Modify Delete
HlrSubsProv		Modify Delete
HssConfig		Modify Delete
HssSubsProv		Modify Delete
Oamp		Modify Delete
Policy		Modify Delete
Schema		Modify Delete
SipConfig		Modify Delete
SipSubsProv		Modify Delete
Ss7Config		Modify Delete
SubscriberProv		Modify Delete
System		Modify Delete
SystemValidation		Modify Delete
Add Service		

Figure 4: User Manager

The User Management window provides information on the user, its username and password, on the different Groups, its identifier and name, and on the access privileges (access permission) associated to each Group for a specific Service. The User Management window displays the following tables: User, Service, Group and AccessPrivileges. These tables can only be modified by the Admin Group, while each user can change their own password.

Through the WebCI, the administrator of the system, already defined in the admin group, can:

- Create new groups and provision the desired access privileges for each one of them, by provisioning the Group table.
- Modify the access privileges provisioned for each group (including pre-defined groups), by clicking on each GroupName link. This means that the administrator of the system can modify the permissions defined for each service of a specific group.
- Delete groups (including pre-defined groups, except the 'admin' group)
- Create new users and associate them to the right group by provisioning the User table.
- Delete users (including pre-defined users, except the 'admin' user)
- Modify the password of a user or the group to which the user (including predefined users) is associated to, by clicking on the 'Modify' button in the User table.
- Create/Delete services by provisioning the Service table.
  - **Warning:** The predefined services cannot be deleted since these are internal services and a deletion could impact the system.

For instructions on how to provision these tables, refer to the 'Creating and Managing users for the User Interfaces' section of the *SDM System Configuration - User Guide*.

## User Security Management through CLI

Users can be managed only by the users in Group Admin, except for the fact that each user can change their own password. Please refer to the "Users" section of the *SDM Product Description* for details on the Admin Group.

This section describes the CLI commands to manage users through the CLI.

### User

#### Name

User

#### Description

This is used to define users and their user name and password.

#### CLI Navigation

```
Oamp[]> SecurityManager[]> User
```

#### CLI Inherited Attributes

None

#### CLI Command Syntax

```
Oamp[]> SecurityManager[]> add User [UserName = string; Password = string;
  GroupName = string]
```

#### Operations Permitted

Display, add

#### Attributes and Values

Table 4: User attributes

Mandatory Attributes	Value Range	Default	Description
UserName	Up to 20 characters except the following: "/ \ [] ;   = , + * ^ <>"	N/A	Identifier that uniquely identifies a user.
Password	Minimum of 6 characters and up to 64 characters encrypted.	UserName (ex: UserName admin, UserPasswd: admin)	Encrypted password unique for each Group a user is associated to.

Mandatory Attributes	Value Range	Default	Description
GroupName	Made of up to 64 characters in lowercase. Groups already predefined in the system: <ul style="list-style-type: none"> <li>• operation</li> <li>• surveillance</li> <li>• admin</li> <li>• batch</li> <li>• simprov</li> </ul>	N/A	Name of the Group to which the user is associated to. This gives access privileges to a user.
Optional Attributes	Value Range	Default	Description
UpgradeMode		Not Applicable	For future use.
PersistOS	Bool 0 , 1	0	This parameter indicates to the SDM system whether or not to store the user information in the Operating System (OS) in addition to being stored in the database.  Once the user information is added to the OS, the user can login to the blade using terminal emulator. <ul style="list-style-type: none"> <li>• 0=The user information is not stored in the OS, but only in the database.</li> <li>• 1= The user information is stored in the OS in addition to being stored in the database.</li> </ul>

### CLI Example

```
1 : Oamp[]> SecurityManager[]> display User[UserName = blue1]
```

## Group

**Name**  
Group

### Description

This is used to define a user group (some are pre-defined at installation of the system), which consists of a group name and the right access granted for each service. A group may be associated to several users.

### CLI Navigation

```
Oamp[]> SecurityManager[]> Group
```

### CLI Inherited Attributes

None

### CLI Command Syntax

```
Oamp[]> SecurityManager[]> display Group [GroupName = string]
```

### Operations Permitted

Display, modify.

### Attributes and Values

Table 5: Group attributes

Mandatory Attribute	Value Range	Default	Description
GroupName	Made of up to 64 characters in lowercase. Groups already predefined in the system: <ul style="list-style-type: none"> <li>• user</li> <li>• operation</li> <li>• surveillance</li> <li>• admin</li> <li>• batch</li> <li>• simprov</li> </ul>	N/A	Name of the Group that regroups users that have been categorized based on their system use and that have the same access privileges and access permission for the different entity services on the system.  For more details on each of the predefined Groups, refer to the "Users" section of the <i>SDM Product Description</i> .
PersistOS	Bool 0 , 1	0	This parameter indicates to the SDM system whether or not to store the user information in the Operating System (OS) in addition to being stored in the database. Once the user information is added to the OS, the user can login to the blade using terminal emulator.

Mandatory Attribute	Value Range	Default	Description
			<ul style="list-style-type: none"> <li>0=The user information is not stored in the OS, but only in the database.</li> <li>1= The user information is stored in the OS in addition to being stored in the database.</li> </ul>
Optional Attribute	Value Range	Default	Description
Description	String (up to 256)	N/A	This parameter allows to give a clear description of the group.

#### CLI Example

```
1 : Oamp[]> SecurityManagement[]> display Group[GroupName = user]
```

## Security Access Privileges

#### Name

SecurityAccessPrivileges

#### Description

This entity defines access privileges to a user group by making an association between a user group, a service, and an access permission. Each access privilege gives a single group the access permission (Read/Write/Execute) to a single service.

#### CLI Navigation

```
Oamp[]> SecurityManager[]> Group []> SecurityAccessPrivileges
```

#### CLI Inherited Attributes

GroupName

#### CLI Command Syntax

```
Oamp[]> SecurityManager[]> Group [GroupName = string] > display  
SecurityAccessPrivileges [ServiceName=char; Permission=integer]
```

#### Operations Permitted

Display, add, modify

Attributes and Values

Table 6: SecurityAccessPrivileges attributes

Mandatory Attribute	Value Range	Default	Description
ServiceName	Integer except "0" Services that are already predefined in the system: <ul style="list-style-type: none"> <li>• Database</li> <li>• ExternalService</li> <li>• HlrConfigHlrSimProv</li> <li>• HlrSubsProv</li> <li>• HssConfig</li> <li>• HssSubsProv</li> <li>• Oamp</li> <li>• Policy</li> <li>• Schema</li> <li>• SipConfig</li> <li>• SipSubsProv</li> <li>• Ss7ConfigSubscriberProv</li> <li>• System</li> </ul>	N/A	Identifier that identifies a service and their associated entities. A service is associated to each user group to define to which entities it has access to. Please see *NOTE below for more details on the entities associated to the services.
Optional Attribute	Value Range	Default	Description
Permission	<ul style="list-style-type: none"> <li>• 1 Read (Display)</li> <li>• 2 Write (Add/Modify/Delete)</li> <li>• 3 ReadWrite</li> <li>• 4 Execute (Access to entity own operations)</li> <li>• 5 ReadExecute</li> <li>• 7 Read WriteExecute</li> </ul>	N/A	Type of action a user group can do to the entities it has access to. Please see **NOTE below for more details on the access permissions allowed by a user group for all the different services.



**Important:** The User Security Management feature allows any module to supersede any access right, meaning that module could define their own access rights and those rights cannot be overwritten. For example, if a particular entity cannot be added or deleted, the module will prevent the user from adding or deleting the entity.

### CLI Example

```
1 : Oamp[]>
SecurityManager[]> Group[GroupName=user]> display
SecurityAccessPrivileges[ServiceName = Oamp]
```

### Predefined services and associated entities

An entity can belong only to one service. The following table displays the different pre-defined services and their associated entities:

**Table 7: Predefined services and associated entities**

Service	Entities
System	System, Shelf, Slot, SmModule, Alarm, AlarmHistory
Subscriber Provisioning (Subscription)	All entities that are used to provision Subscriptions (SubscriptionID)
HLR Subscriber Provisioning	All entities that are used to provision a HLR subscriber profile.
SIM Provisioning	All entities that are used to provision Sim cards and associate them with IMSIs.
HLR Configuration	All the HLR entities that are used to configure the Tekelec ngHLR.
SS7 Configuration	All SS7/SIGTRAN entities that are used to configure SS7 and SIGTRAN.
HSS Subscriber Provisioning	All the HSS subscriber entities
HSS Configuration	All the HSS entities which are used to configure the HSS.
SIP Subscriber Provisioning	All the SIP subscriber entities
SIP Configuration	All the SIP entities which are used to configure the SIP functionality
Database	Database entity (Backup/Restore/DRM operations)
OAMP	LicenseManagement, UserManagement, NotificationManagement, Performance Management counter.
Schema	All the entities used by the schema: <ul style="list-style-type: none"> <li>• CacheAttribute</li> <li>• Constraint</li> <li>• ConstraintAttribute</li> <li>• DataType</li> <li>• Entity</li> <li>• LdapAttribute</li> <li>• LdapAttributeCriteriaRelation</li> <li>• LdapAttributeMapping</li> <li>• LdapAttributeMappingCriteria</li> <li>• LdapNamingContexts</li> <li>• LdapObjectClass</li> </ul>

Service	Entities
	<ul style="list-style-type: none"> <li>• LdapObjectClassCriteria</li> <li>• LdapObjectClassCriteriaRelation</li> <li>• LdapRdn</li> <li>• Namespace</li> <li>• Operation</li> <li>• Parameter</li> <li>• PhysicalAccessPath</li> <li>• RDbDataType</li> <li>• Reference</li> <li>• ReferenceParameter</li> <li>• ResourceManager</li> <li>• Schema</li> <li>• Schemaversion</li> <li>• SchemaVersionFile</li> <li>• Token</li> <li>• TokenMaxPerCategory</li> </ul>
External Service	Entities that are used to manage external services defined by the Network Operator in the Global Schema.
SystemValidation	All entities used for system validation.
Policy	Subscriber, IdMap, FieldInformation

**Access permissions per service and group**

Each access privilege gives a single group the access permission (Read/Write/Execute) to a single service. The access privileges table is defined or fined tune by the operators when needed (when a new group is added or an existing group needs to be altered).

**Table 8: Predefined access permissions to services per user group**

Services/Group	User	Operation	Surveillance	Admin	Batch	Simprov
System	R	RWX	R	RWX		
OAMP	R	R	R	RWX	R	
Database		RWX		RWX		
HLR subscriber prov	RWX			RWX	RWX	
SIM provisioning	RWX			RWX	RWX	RWX
HLR configuration	RWX		R	RWX		
SS7 configuration	RWX		R	RWX		

Services/Group	User	Operation	Surveillance	Admin	Batch	Simprov
SIP subscriber prov	RWX			RWX	RWX	
SIP configuration	RWX		R	RWX		
HSS subscriber prov	RWX			RWX	RWX	
HSS configuration	RWX		R	RWX		
External Service				RWX	RX	
Subscriber Provisioning	RWX			RWX	RWX	
Schema				RWX		
Policy				RWX		

R: Read (Display) W: Write (Add/Modify/Delete) X: eXecute (Access to entity own operations)



**Important:** The User Security Management feature allows any module to supersede any access right, meaning that a module could define its own access rights and those rights cannot be overwritten. For example, if a particular entity cannot be added or deleted, the module will prevent the user from adding or deleting the entity.

## Service

### Name

Service

### Description

In addition to the internal services pre-defined in the system, the Network Operator can use this entity to define/modify/delete external services that regroup entities manually added by the Network Operator in the system's Global Schema.

### CLI Navigation

```
Oamp[]> SecurityManager[]> Service
```

### CLI Inherited Attributes

None

### CLI Command Syntax

```
Oamp[]> SecurityManager[]> add Service [ServiceName = string; Description = string]
```

### Operations Permitted

Add, display, modify, delete

### Attributes and Values

Table 9: Service attributes

Mandatory Attributes	Value Range	Default	Description
ServiceName	Up to 20 characters except the following: "/ \ [] ; ;   = , + * ^ <>" The pre-defined services are as follows: <ul style="list-style-type: none"> <li>• System</li> <li>• OAMP</li> <li>• Database</li> <li>• External service</li> <li>• Schema</li> <li>• HLR Subscriber prov</li> <li>• SIM provisioning</li> <li>• HLR configuration</li> <li>• SS7 configuration</li> <li>• SIP subscriber prov</li> <li>• SUP configuration</li> <li>• HSS Subscriber prov</li> <li>• HSS configuration</li> <li>• Subscriber prov</li> <li>• Policy</li> </ul>	N/A	Identifier that uniquely identifies a service.
Mandatory Attributes	Value Range	Default	Description
Description	String (up to 256)	N/A	Description that defines the service.

### CLI Example

```
1 : Oamp[]> SecurityManager[]> display Service[ServiceName = HlrConfig]
```

## Notification Security Management

The Oamp folder accesses the Notification Management functionality, which allows the management of users, applications, their notification registrations, and properties.

### Notification Security Management through WebCI

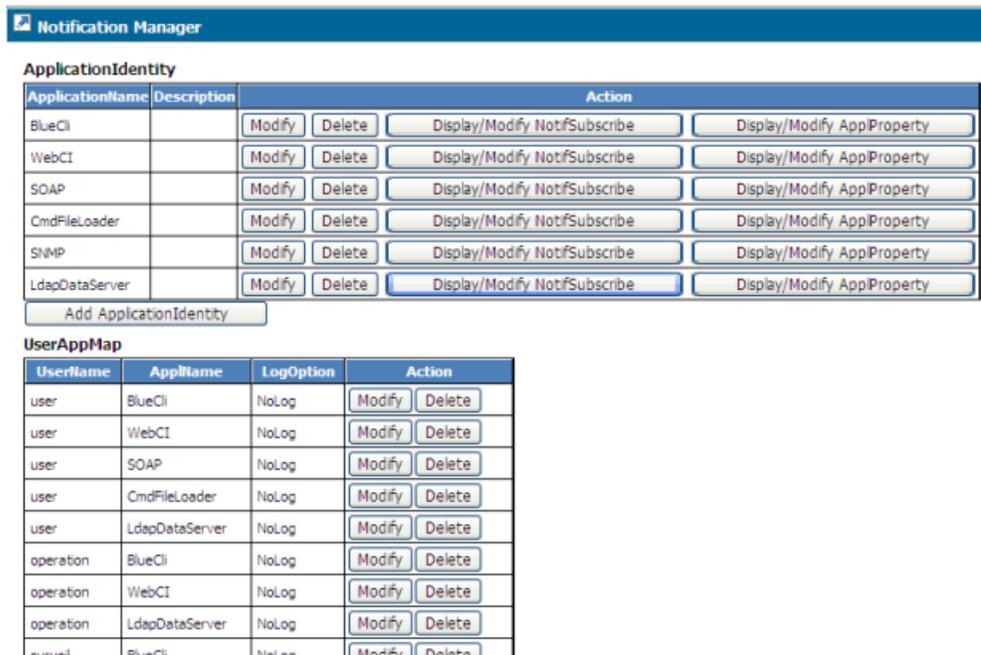


Figure 5: Notification Manager

The Notification Manager window provides information on the applications associated to each user (the applications allowed for each user) and on the applications' notification registration and properties. The user-application combinations are defined in the UserAppMap table. The external applications are defined in the ApplicationIdentity table, each with notification properties and registration permissions that can be defined/deleted in the AppProperty and NotifSubscribe tables respectively.

For instructions on how to provision these tables, refer to the 'Creating and managing users/applications for the Notifications' section of the *SDM System Configuration - User Guide*.

### Notification Security Management through CLI

This section describes the CLI commands that manage which user is allowed to request which type of notification through the CLI.

Only users in the Admin group can manage users, except that all users can change their own password. Refer to the "Users" section of the *SDM Product Description* for details on the Admin group.

## Application Identity

### Name

ApplicationIdentity

### Description

This is used to define applications (application name and description) for which users associated to them will be able to subscribe to receiving notifications.

### CLI Navigation

```
Oamp[]> NotificationManager[]> ApplicationIdentity
```

### CLI Inherited Attributes

None

### CLI Command Syntax

```
Oamp[]> NotificationManager[]> add ApplicationIdentity [AppName = string;  
Description = string]
```

### Operations Permitted

Display, add, modify, delete

### Attributes and Values

Table 10: ApplicationIdentity attributes

Mandatory Attribute	Value Range	Default	Description
AppName	Up to 20 characters except the following: "/ \ [] ;   = , + * ^ <>" The pre-defined applications are: <ul style="list-style-type: none"> <li>• BlueCli</li> <li>• WebCI</li> <li>• CmdFileLoader</li> <li>• SNMP</li> <li>• LdapDataServer</li> <li>• PolicyManager</li> </ul>	N/A	Identifier that uniquely identifies an application.
Optional Attribute	Value Range	Default	Description
Description	Up to 20 characters except the following: "/ \ [] ;   = , + * ^ <>"	N/A	Identifier that uniquely identifies an application.

Mandatory Attribute	Value Range	Default	Description
	<>" The pre-defined applications are: <ul style="list-style-type: none"> <li>• BlueCli</li> <li>• WebCI</li> <li>• CmdFileLoader</li> <li>• SNMP</li> <li>• LdapDataServer</li> <li>• PolicyManager</li> </ul>		

### CLI Example

```
1 : Oamp[]> NotificationManager[]> display ApplicationIdentity[ApplName = BlueCli]
```

## Notification Subscribe

### Name

NotificationSubscribe

### Description

This is used to define an NotificationSubscribe application's notification subscription capabilities: namespace, entity, Attribute. The application can only subscribe to notifications for changes/updates made to the entities' attributes or entity defined here.

### CLI Navigation

```
Oamp[]> NotificationManager[]> ApplicationIdentity[]> NotificationSubscribe
```

### CLI Inherited Attributes

ApplName

### CLI Command Syntax

```
Oamp[]> NotificationManager[]> ApplicationIdentity [ApplName = char] > add  
NotificationSubscribe [Namespace = char; Entity = char; Attribute= char]
```

### Operations Permitted

Add, display, modify, delete

Attributes and Values

Table 11: NotificationSubscribe attributes

Mandatory Attribute	Value Range	Default	Description
Namespace	<p>There are only two Namespaces in the Global Schema:</p> <ul style="list-style-type: none"> <li>'bn'</li> <li>'global' (this is only for the Subscription entity)</li> </ul>	N/A	Namespace given for the entity in the Global Schema.
Entity	Name of entity in Global Schema.	N/A	Name of the entity for which notifications need to be sent if changes/updates are made.
ApplName	<p>Up to 20 characters except the following: / \ [] ;   = , + * ^</p> <p>The pre-defined applications are: Unknown, Framework, SchemaManager, , SystemManager, DataProvider, DpController, OampEventViewer, OampEventMgr, OampManager, OampPerformanceManager, HlrServer, HlrProvManager, HlrWgs, AucServer, SS7Manager, SipServer, SipProvManager, NodeManager, TestModuleType, DpReplicator, BlueCli, WebCI, SOAP, CmdFileLoader, SNMP, HssServer, HssProvManager, SipUa, XmlDataServer, DpProxy, SubscriberManager, LdapDataServer, LteHssServer, LteProvManager, Drm, DataAccessServer, ExternalService, PolicyManager, RasServer, EirProvManager, DraProvManager</p>	N/A	<p>Name of the application that is registered to receive notifications on changes of the configured namespace/entity/attribute.</p> <p>This name should be the same as the name specified by the application in the <i>InterfaceModuleId</i> parameter when authenticating with the system through the <i>RequestUserAuc</i> operation.</p>
Optional Attribute	Value Range	Default	Description
Attribute	Name of attribute belonging to the entity as defined in the Global Schema.	N/A	Name of the attribute for which notifications need to be sent if changes/updates are made.

### CLI Example

```
1 : Oamp[]> NotificationManager[]> display ApplicationIdentity[ApplName = BlueCli]>
  add NotificationSubscribe[Namespace = bn;
  Entity=MSISDN;Attribute=DefaultBsg]
```

## Application Property

### Name

ApplicationProperty

### Description

This is used to define the properties of the notifications that must be sent out for each application. It allows the Network Operator to specify the following property for each application/entity for which notifications need to be sent: whether or not the previous value (before update) must be included in the notifications in addition to the current value (after update).

### CLI Navigation

```
Oamp[]> NotificationManager[]> ApplicationIdentity[]> ApplicationProperty
```

### CLI Inherited Attributes

ApplName

### CLI Command Syntax

```
Oamp[]> SecurityManager[]> ApplicationIdentity [ApplName = char] > add
ApplicationProperty [Namespace = char; Entity = char; isValueBefore =
0,1]
```

### Operations Permitted

Add, display, modify, delete

### Attributes and Values

Table 12: ApplicationProperty attributes

Mandatory Attribute	Value Range	Default	Description
Namespace	There are only two Namespaces in the Global Schema: <ul style="list-style-type: none"> <li>'bn'</li> <li>'global' (this is only for the Subscription entity)</li> </ul>	N/A	Namespace given for the entity in the Global Schema.

Mandatory Attribute	Value Range	Default	Description
Entity	Name of entity in Global Schema.	N/A	Name of the entity for which notifications need to be sent if changes/updates are made.
Optional Attribute	Value Range	Default	Description
isValueBefore	Bool 0 , 1	0	This parameter indicates whether or not the previous value (before update of entity) must be sent in the notification in addition to the current value (after update of entity). For example, if the 'ValueBefore' property is set to 'On' for the MSISDN entity on the WebCI application, all the changes made to that entity (for example, on DefaultBsg) from this application will trigger a notification sending the previous DefaultBsg value (before update) and the current DefaultBsg value (after update).

### CLI Example

```
1 : Oamp[]> NotificationManager[]> display ApplicationIdentity[ApplName = BlueCli]>
add ApplicationProperty[Namespace = bn; Entity=MSISDN]
```

## User Application Map

### Name

UserApplicationMap

### Description

This is used to define user-application combinations. Each user account must have one or several applications (as defined in the ApplicationIdentity entity) associated to it. The same user can have different applications associated to it with different logging properties. To achieve this, different entries with the same user name must be created in the UserApplicationMap entity.

### CLI Navigation

```
Oamp[]> NotificationManager[]> UserApplicationMap
```

### CLI Inherited Attributes

None

### CLI Command Syntax

```
Oamp[]> NotificationManager[]> add UserApplicationMap [UserName=string;  
ApplName=char; LogOption=0,1,2,3]
```

### Operations Permitted

Display, add, modify, delete

### Attributes and Values

Table 13: UserApplicationMap attributes

Mandatory Attributes	Value Range	Default	Description
UserName	Up to 20 characters except the following: "/ \ [] ;   = , + * ^ <>" The pre-defined users are: <ul style="list-style-type: none"> <li>• user</li> <li>• operation</li> <li>• surveillance</li> <li>• admin</li> <li>• batch</li> <li>• simprov</li> </ul>	N/A	Identifier that uniquely identifies a user.
ApplName	Up to 20 characters except the following: "/ \ [] ;   = , + * ^ <>" The pre-defined applications are: <ul style="list-style-type: none"> <li>• Cli</li> <li>• WebCI</li> <li>• CmdFileLoader</li> <li>• SNMP</li> <li>• LdapDataServer</li> <li>• PolicyManager</li> </ul>	N/A	Identifier that uniquely identifies an application.
Optional Attributes	Value Range	Default	Description
LogOption	<ul style="list-style-type: none"> <li>• 0 NoLog</li> <li>• 1 LogAll</li> <li>• 2 LogRead</li> <li>• 3 LogMod</li> </ul>	0	This parameter indicates which of the following logging options the SDM system should follow for each user-application combination:  <b>0 NoLog:</b> No logs are saved by the system.

Mandatory Attributes	Value Range	Default	Description
			<p><b>1 LogAll:</b> The system saves logs for all the actions taken by this user on this application. <b>WARNING:</b> This could impact the performance of the system during high traffic.</p> <p><b>2 LogRead:</b> The system saves logs only for the reading actions taken by this user on this application.</p> <p><b>3 LogMod:</b> The system saves logs only for the modifying actions taken by this user on this application.</p>

**CLI Example**

```
1 : Oamp[]> NotificationManager[]> add
  UserApplicationMap[UserName=admin;ApplName=WebCI]
```

# Chapter 3

## Subscription

---

### Topics:

- [Subscription.....61](#)

SDM uses one unique subscription ID to define a subscriber. Each subscription ID may have multiple subscriber profiles attached for the various SDM applications. Subscriber profiles can be created only once the subscription ID is established.

## Subscription

### Name

Subscription

### Description

This entity allows the operator to define a subscription for a subscriber. A subscription is required before being able to create subscriber profiles for the HLR, SIP, HSS, SLF, and AAA applications.

### CLI Navigation

```
Subscriptions[]> Subscription
```

### CLI Inherited Attributes

None

### CLI Command Syntax

```
Subscriptions[]>add Subscription [SubscriptionID= <string>]
```

### Operations Permitted

Add, modify\*\*, delete\*, display

**Note:** \*You cannot delete a subscription ID when it is still referenced by a subscriber profile. Prior to deleting a subscription ID, ensure that no subscriber profiles exist for that subscription ID.

**Note:** \*\*You can modify the subscription ID only through the XML provisioning system by loading an XML Update Request, and not through the CLI of WebCI.

### Attributes and Values

Table 14: Subscription mandatory attribute

Attribute	Value Range	Default	Description
SubscriptionID	string	N/A	Unique identifier of the subscription defined for a subscriber.

### CLI Example

```
Subscriptions[]>add Subscription [SubscriptionID=sub-1]
```

# Chapter 4

## Home Location Register (HLR)

---

### Topics:

- *Subscriber Identity Module (SIM) Provisioning.....63*
- *HLR Subscriber Provisioning.....69*
- *CAMEL Services Provisioning.....91*
- *Closed User Group (CUG) Basic Service.....127*
- *GPRS Services.....133*
- *MSISDN Provisioning.....140*
- *North American Equal Access Carrier.....148*
- *Access Restriction Data.....150*
- *Supplementary Services Provisioning (AoCI, AoCC, CLIP, CLIR, COLP, COLR, Hold, Wait, MPTY).....151*
- *PLMN provisioning.....154*
- *Enhanced Multi-Level Priority & Precedence (EMLPP).....158*
- *LCS Privacy Profile.....160*
- *HLR Volatile Data Provisioning.....163*
- *Subscription Generic Data.....182*
- *LTE-HSS profile provisioning.....183*
- *HLR Operations.....187*

This chapter describes the HLR subscriber data entities. Each description includes:

- CLI and WebCI navigation paths
- Allowed operations
- Attributes and values

## Subscriber Identity Module (SIM) Provisioning

These entities provisioning SIM cards for the Tekelec ngHLR.

### Subscriber Identity Module (SIM)

**Name:**

Sim

**Description**

This entity allows the operator to provision SIM cards and optionally associate them to a subscriptionID (subscriber).

The SDM provides the operator the possibility to provision SIM cards using either one of the following two methods:

**Method 1:** Unused SIM cards can be provisioned in the SDM's database without being assigned to any subscribers. For this, the Sim and SimImsiMap entities must be provisioned without specifying a

SubscriptionID (SubscriptionID='null'). For this, the Sim entity must be provisioned without specifying a

SubscriptionID (SubscriptionID='null').

**Method 2:** Already owned SIM cards can be provisioned in the SDM's database and can be associated to a subscription (which represents the subscriber). For this, the Sim and SimImsiMap entities must be provisioned and a SubscriptionID must be specified in order to assign the Sim data to a subscriber.

**CLI Navigation**

```
Hlr[]> Sim
```

Or

```
Subscriptions[]> Subscription[SubscriptionID]> Sim
```

**CLI Inherited Attributes**

1. None
2. SubscriptionID

**CLI Command Syntax**

1. Hlr[]> Add Sim[AlgorithmName = Text; SimId = Text; Ki32HexChar = Text; PUK = Integer; ManufacturerID = Text; SimType = 0,1,2; AlgoId=integer; SubscriptionID = <string>; Op32HexChar = Text]
2. Subscriptions[]> Subscription [SubscriptionID = <string>]> Add Sim [AlgorithmName = Text; SimId = Text; Ki32HexChar = Text; PUK = Integer;

ManufacturerID = Text; SimType = 0,1,2; AlgoId=integer; Op32HexChar = Text]

**Operations Permitted**

Add, modify, delete, display

**Attributes and Values**

**Table 15: SIM mandatory attributes**

Attribute	Value Range	Default	Description
AlgorithmName	up to 32 digits and/or letters	N/A	Name of the authentication algorithm to be used by the Authentication Center (AuC). Algorithm is used to authenticate this IMSI.  <b>Note:</b> In the case where the AlgorithmName corresponds to an algorithm of Type 'UMTS_XOR', the SimType must be 'USIM'.
SimId	up to 32 digits and/or letters	N/A	Identification of the SIM card.
Ki32HexChar	Must be 32 digits and/or letters (a to f)	N/A	Individual Subscriber Authentication Key. Private key of SIM card. Read only.
PUK	8 to 10 digits	N/A	PIN Unblocking Key to unlock the SIM card.
SimType	0 (SIM) 1 (USIM) 2 (OffBoard)	0 (SIM)	Specify the type of SIM card of the subscriber. 0: GSM SIM card 1: UMTS SIM card (referred to as a USIM) 2: SIM card that is hosted by an external HLR. This value is used by the LTE-HSS to decide where/how the subscriber is authenticated upon reception of an AIR. If the SimType is "off-board", the authentication request is forwarded to the Hlr-Proxy, otherwise the subscriber is authenticated by the LTE-HSS.

**Table 16: SIM optional attributes**

Attribute	Value Range	Default	Description
-----------	-------------	---------	-------------

ManufacturerId	up to 32 digits and/or letters	NULL	Manufacturer of SIM card. Not supported by all operators.
AlgoId	<i>Integer (2)</i>	N/A	Unique identifier used to locate in the A4K4 entity the record pointed by the AlgoId (index) in the SIM Ki provisioning request.
SubscriptionID	string	N/A	Identifier of the subscription defined for a subscriber. This is unique.   <b>Important:</b> In the case where you wish to provision an unused Sim card entry that is unassigned to any subscriber (SubscriptionID), simply don't include this parameter when provisioning this SIM card.
Op32HexChar	Must be 32 digits and/or letters (a to f).	NULL	Operator variant for GSM Milenage and UMTS Milenage algorithms.

Example of an assigned SIM card (assigned to SubscriptionID: sub-1):

```
Subscriptions[]:Subscription [SubscriptionID=sub-1]> add Sim [AlgorithmName = XOR; SimId = 12345678790; Ki32HexChar = 1234567890abcdef1234567890abcdef; PUK = 12345678; SimType = 0; AlgoId=1]
```

Example of an unassigned SIM card:

```
Hlr[]> add Sim[AlgorithmName = XOR; SimId = 12345678790; Ki32HexChar = 1234567890abcdef1234567890abcdef; PUK = 12345678; ManufacturerID = text; SimType = 0; AlgoId=1]
```

## SIM IMSI Map

**Name:**

SimImsiMap

**Description**

This entity allows the operator to provision the following for a SIM entry that is already defined in the Sim entity and that is already associated to a subscription:

- specify which IMSI is the Primary IMSI.
- one or multiple IMSIs

**CLI Navigation**

Subscriptions[]> Subscription[SubscriptionID]> Sim[SimId]> SimImsiMap

Or

Hlr[]> Sim[SimId]> SimImsiMap

**CLI Inherited Attributes**

1. SubscriptionID, SimId
2. SimId

**CLI Command Syntax**

1. Subscriptions[]:Subscription [SubscriptionID= <string>]> Sim[SimId= <text>]> Add SimImsiMap [Imsi = Integer; PrimaryImsi = 0,1]
2. :Hlr[]> Sim[SimId= <text>]> Add SimImsiMap [Imsi = Integer; PrimaryImsi = 0,1]

**Operations Permitted**

Add, modify, delete, display

**Attributes and Values**

**Table 17: SimImsiMap mandatory attributes**

Attribute	Value Range	Default	Description
Imsi	5 to 15 digits	N/A	<p>IMSI that can be used by the subscriber’s SIM card. The IMSI can be a Primary (used in the Home PLMN) or Alternate IMSI (used in a Visited PLMN).</p> <p><b>Provisioning Tips:</b></p> <ul style="list-style-type: none"> <li>• The PrimaryIMSI must be added first in the SimImsiMap entity, prior to being able to add other alternate IMSIs.</li> <li>• The PrimaryIMSI must be removed last when deleting an entry from the SimImsiMap.</li> </ul>

**Table 18: SimImsiMap optional attributes**

Optional Attributes			
Attribute	Value Range	Default	Description
PrimaryImsi	0,1	0	This parameter allows to set an IMSI as the Primary IMSI for a specific SIM card.

Optional Attributes			
Attribute	Value Range	Default	Description
			0= The IMSI is not the Primary IMSI, which means it is an Alternate IMSI that will be used when roaming in Visited PLMNs. 1= The IMSI is the Primary IMSI.* <b>Note:</b> Only one IMSI defined for a SIM card can be set as the Primary IMSI.

### CLI Example

```
Subscriptions[:Subscription [SubscriptionID=sub-1]> Sim[SimId=234445666000]>
add SimImsiMap [Imsi = 310910421000100; PrimaryImsi=1]
```

## SIM-swap Deferred

The following section provides information about the SimSwapDeferred entity and its parameters. This entity is used internally to store in the database the data (OldSimId, NewSimId, AutoMap, DeleteOldIMSI) specified in the Deferred SIM Swap operation, so that the Tekelec ngHLR can complete the SIM swap operation when receiving the first Update Location for one of the new SIM card's IMSIs.

This entity can only be displayed in the WebCI to allow the Network Operator to see the list of "pending" SIM swap operations (Deferred SIM swap operations that have not yet been completed).

### Name

SimSwapDeferred

### CLI Navigation

```
Hlr[]> SimSwapDeferred[]
```

### CLI Inherited Attributes

None.

### CLI Command Syntax

```
:Hlr[]> display SimSwapDeferred []
```

### Operations Permitted

Display

Attributes and Values

Table 19: SimSwapDeferred mandatory attributes

Attribute	Value Range	Default	Description
OldSimId	integer	N/A	SimId already assigned to the SubscriptionID (prior to the SIM-swap).
NewSimId	integer	N/A	New unused SimId (SimId already provisioned in the Sim entity, but unassigned to any SubscriptionID).
AutoMap	bool (0 or 1)	1	<p>Parameter that indicates whether the Tekelec ngHLR must change all the old IMSIs defined in the MsIsdnImsiProfileAssociation entity with the new IMSIs by using a MCC/MNC best matching mechanism when completing the SIM swap operation.</p> <p>0: Once the SIM-swap operation is completed, the Network Operator must map manually all the IMSIs, by editing the MsIsdnImsiProfileAssociation and making sure that the IMSIs of the new SIM card should have the same MCC/MNC as the ones of the old SIM card.</p> <p>1: The Tekelec ngHLR automatically performs a mapping of the IMSIs in order to associate new IMSIs in the MsIsdnIMSIPProfileAssociation entity once the SIM-swap operation is completed. It makes sure that all alternate IMSIs used in the MsIsdnImsiProfileAssociation entity of the Old SIM ID must match (MCC/MNC match: first 5/6 digits of the IMSI) with all the alternate IMSIs of the New SIM ID.</p> <p> <b>Important:</b> in case of failure: If there are still some alternate IMSIs not matched, the SIM Swap operation will fail and the Network Operator must execute again the SwapSIM() operation, but this time with the AutoMap option set to '0' and map manually all the IMSIs.</p>
DeleteOld Sim	bool (0 or 1)	0	<p>Parameter that indicates whether the Tekelec ngHLR must delete the old SIM data entry from the Sim entity once the SIM-swap operation is completed.</p> <p>If this parameter is set to '0', after the completion of the SIM swap, the SubscriptionID of the old SIM card is changed to "NULL". This means that the data of the old Sim card remains provisioned in the Sim entity, but becomes unassigned to any subscriber. If you wish to delete it, you can delete the corresponding entry from the Sim entity.</p> <p>If this parameter is set to '1', the Tekelec ngHLR automatically deletes the data of the old SIM card</p>

Attribute	Value Range	Default	Description
			provisioned in the Sim entity after the completion of the SIM swap.

#### CLI Example

```
:Hlr[]> display SimSwapDeferred []
```

## HLR Subscriber Provisioning

This section describes the Subscriber Profile entity that needs to be provisioned when provisioning an HLR subscriber profile. It also describes in alphabetical order each of the HLR entities used to provision service profiles. For each entity, the following information is provided: name, description, navigation, inherited attributes, command syntax, operations permitted, attributes (with value ranges, defaults, and description), and an example.

Prior to provision HLR subscriber entities, a SubscriptionID must have already been provisioned through the [Subscription](#).

### Subscriber Profile (Bearer Services, Teleservices, Call Barring, PreferredRoutingNetworkDomain)

#### Name

SubscriberProfile

#### Description

This entity allows the operator to generate a profile for a subscriber (subscription) and assign services to it.

#### CLI Navigation

```
Subscriptions[]> Subscription [SubscriptionID]> SubscriberProfile
```

#### CLI Inherited Attributes

SubscriptionID

#### CLI Command Syntax

```
Subscriptions[]> Subscription[SubscriptionID= <string>]>add
SubscriberProfile[HlrServiceProfileID = string; PreferredRoutingNetworkDomain
= Sip, Gsm; MsIsdnAlertInd = integer; TeleServiceList = TSxx;
BearerServiceList = BSxx; OdbMask = text; UssdAllowed = 0,1;
SubsRoamingMsgOn=0,1; ActiveSubTimeStamp= timestamp; OCPlmnTemplateId=
integer; SmsTemplateId=integer;SubscriberState=0,1; FTNRule=varchar;
ServiceMaskTemplateId=integer; CurrADDTimestamp= timestamp;
```

```
LatestADDTimestamp= timestamp; Nam = 0-2; MsCat = 0-255; AtiSubsInfoLevel
=0,1,2,3,4; CurrImeiSv=string; PrevImeiSv= string;
SubsVlrMsgNotificationOn=0,1;
DefaultPdnContextId=uint;SpPdnChargingCharacteristics=
HotBilling,FlatRate,Prepaid,Normal;
AMBRUL=uint;AMBRDL=uint;APNOIReplacement=string ;RFSPID=uint
;HlrProxyMode=0,1; LRT_APNFilterTemplateId= 5]
```

Table 20: SubscriberProfile mandatory attributes

Attribute	Value Range	Default	Description
HlrServiceProfileID	String (1-15 characters)*	N/A	Identifier of the HLR Service Profile. This allows to define which HLR Service Profile the Tekelec ngHLR will use for this subscriber.   <b>Important:</b> In the current release, it's only possible to have one profile per subscription, which is why the HlrServiceProfileID is restricted to the value "1".
Preferred Routing Network Domain	Gsm or Sip	Gsm	Network terminating domain values.

Table 21: SubscriberProfile optional attributes

Attribute	Value Range	Default	Description
MsIsdn-AlertInd	up to 15 digits	Null	This indication refers to the MSISDN stored in the HLR. It is used to alert the Service Center when the MS is reachable again.
TeleService - List	TS11, TS12, TS21, TS22, TS61 to TS63 TS91, TS92, TSD1 to TSD9 TSDA to TSDF	TS10	Teleservices (TS) available to subscriber. TS11=Speech (Telephony) TS12=Speech (Emergency Call) TS21=Short Message Service (Short message MT / PP) TS22=Short Message Service (Short message MO/PP) TS61=Facsimile Services (Alternate Speech and Facsimile Group 3) TS62=Facsimile Services (Automatic Facsimile Group 3) TS63= Facsimile Services (Facsimile Group 4)

Attribute	Value Range	Default	Description
			TS91=Voice Group Services (Voice Group Call Service) TS92=Voice Group Services (Voice Broadcast Service) TSD1=operator defined PLMN specific TS-1 TSD2=operator defined PLMN specific TS-2 TSD3=operator defined PLMN specific TS-3 TSD4=operator defined PLMN specific TS-4 TSD5=operator defined PLMN specific TS-5 TSD6=operator defined PLMN specific TS-6 TSD7=operator defined PLMN specific TS-7 TSD8=operator defined PLMN specific TS-8 TSD9=operator defined PLMN specific TS-9 TSDA=operator defined PLMN specific TS-A TSDB=operator defined PLMN specific TS-B TSDC=operator defined PLMN specific TS-C TSDD=operator defined PLMN specific TS-D TSDE=operator defined PLMN specific TS-E TSDF=operator defined PLMN specific TS-F
<del>Bearer-ServiceList</del>	BS11 to BS17 BS19 BS1A to BS1F BS21 to BS27 BS29 BS2A to BS2F BS31 to BS36 BS38, BS40, BS48, BSD1 to BSD9 BSDA to BSDF	Null	Bearer Services (BS) available to subscriber. BS01-BS0F=Undefined BS11=Data CDA 300bps BS12= Data CDA 1200bps BS13= Data CDA 1200-75bps BS14= Data CDA 2400bps BS15= Data CDA 4800bps BS16= Data CDA 9600bps BS17= General Data CDA BS19=Unspecified BS1A= Data CDS 1200bps BS1B=Unspecified BS1C= Data CDS 2400bps BS1D= Data CDS 4800bps BS1E= Data CDS 9600bps

Attribute	Value Range	Default	Description
			BS1F= General Data CDS BS21=Data PDS CA 300bps BS22=Data PDS CA 1200bps BS23=Data PDS CA 1200-75bps BS24=Data PDS CA 2400bps BS25=Data PDS CA 4800bps BS26=Data PDS CA 9600bps BS27= General PAD Access CA BS29-BS2B=Unspecified BS2C=Data PDS 2400bps BS2D=Data PDS 4800bps BS2E=Data PDS 9600bps BS2F=General Data PDS Services BS30=All Alternate Speech CDA BS31-BS36=Unspecified BS37=Undefined BS38=All Alternate Speech CDS BS39-BS3F=Undefined BS40=All Speech followed by Data CDA BS41-BS47=Undefined BS48= All Speech followed by Data CDS BS49-BS4F=Undefined BS51-BS57=Undefined BS59-BS5F=Undefined BS61-BS67=Undefined BS69-BSCF=Undefined BSD1= Operator defined PLMN specific BS1 BSD2= Operator defined PLMN specific BS2 BSD3= Operator defined PLMN specific BS3 BSD4= Operator defined PLMN specific BS4 BSD5= Operator defined PLMN specific BS5 BSD6= Operator defined PLMN specific BS6 BSD7= Operator defined PLMN specific BS7

Attribute	Value Range	Default	Description
			BSD8= Operator defined PLMN specific BS8 BSD9= Operator defined PLMN specific BS9 BSDA= Operator defined PLMN specific BSA BSDB= Operator defined PLMN specific BSB BSDC= Operator defined PLMN specific BSC BSDD= Operator defined PLMN specific BSD BSDE= Operator defined PLMN specific BSE BSDF= Operator defined PLMN specific BSF BSE0-BSFF=Undefined
OdbMask	See description	Null	Operator Determined Barring Mask. Enable call barring for scenarios listed below: ALLOGCalls ALLOGInternatCalls ALLOGInternatCallsExceptHplmn ALLOGInterzonalCalls ALLOGInterzonalCallsExceptHplmn ALLOGInternatExceptHplmnAndBarring InterzonalCalls ALLOGWhenRoamingOutsideHPLMNCountry AllICCalls AllICCallsWhen RoamingOutsideHplmn AllICCallsWhen RoamingOutsideZone OfHplmn RoamingOutsideHplmn RoamingOutsideHplmnCountry PremiumRateInfo PremiumRateEntertainment PremiumRateInfoAndEntertainment SuppServicesManagement RegistrationAnyFtn RegistrationInternatFtn RegistrationInternatFtnExceptHplmn RegistrationAnyInterzonalFtn RegistrationInterzonalFtnExceptHplmn CallTransfer

Attribute	Value Range	Default	Description
			<p>CallTransferAnyChargedToServed  CallTransferAnyInternatCharged ToServed  CallTransferAnyInterzonalCharged ToServed  CallTransferBothChargedToServed  CallTransferExistingTransferForServed  PacketServices PacketServicesFromHplmnWhileInVplmn  PacketServicesWithinVplmn  OperatorSpecificType1  OperatorSpecificType2  OperatorSpecificType3  OperatorSpecificType4  Where OG = Outgoing,  Internat = International,  Hplmn = Home PLMN country,  Vplmn = Visiting PLMN country  IC = Incoming Calls  Supp = Supplementary  Ftn = Forward to number  ChargedToServed = Call charged to served subscriber  OperatorSpecificType = Defined by Operator</p>
UssdAllowed	0 or 1	0	<p>USSD messaging allowed for this subscriber.  0 = USSD not allowed  1 = USSD allowed</p>
SubsRoamingMsgOn	0 or 1	0	<p>This attribute allows to turn On/Off welcome roaming messages for the subscriber.  0=Off  1=On</p>
OCPlmnTemplateId	integer	Null	<p>ID the Tekelec ngHLR gives to the OCPLMN Template upon its creation. This attribute allows to assign an OCPLMN template to a subscriber in order to assign a different set of roaming and service screening restrictions.</p>

Attribute	Value Range	Default	Description
			(In the WebCI, the OCPLmnTemplateName parameter allows to assign an OCPLMN Template to a subscriber)
SmsTemplate Id (CLI) SmsTemplateName (WebCI)	integer (CLI) varchar (WebCI)	0 (CLI) Not Defined (WebCI)	<p>Id or name of the MT-SMS Routing Template (configured in the ngHLR) for the Tekelec ngHLR to use for this subscriber when receiving an MT-SMS MAP SRI_for_SM message.</p> <p>In the CLI, the SmsTemplateId attribute uses a numerical value in the Subscriber Profile to refer to an MT-SMS Routing Template.</p> <p>In the WebCI, the SmsTemplateName attribute uses a character-based value in the Subscriber Profile to refer to the MT-SMS Routing Template.</p> <p>0 or 'Not Defined': When the SmsTemplateId is set to 0 (CLI) or when the SmsTemplateName is set to 'Not Defined' (WebCI), it refers to the default MT-SMS Routing Template (TemplateId=0 and TemplateName=Not Defined). In this case, the Tekelec ngHLR does not reroute the MT-SMS and follows the standard process, by responding to the Originator SMS-GMSC with a MAP SRI_for_SM Ack, which includes an IMSI and a MSC id of where the subscriber is roaming.</p> <p><b>Pre-requisites:</b></p> <ul style="list-style-type: none"> <li>• Prior to being able to set a subscriber profile to an MT-SMS Routing Template, the latter must already be configured in the Tekelec ngHLR; see <i>Provisioning the Tekelec ngHLR for MT-SMS Routing</i> (System Configuration User Guide).</li> <li>• For the Tekelec ngHLR to route the MT-SMS request for this subscriber (as per the template defined in its subscriber profile), the MT-SMS Routing and/or MT-SMS Relay functionalities must first be activated for the entire Tekelec ngHLR. For instructions on how to do so, refer to the "Viewing the activation status of HLR features and activating/deactivating them individually" section of the SDM System Configuration - User Guide.</li> </ul>
Subscriber State	0,1	1	<p>This allows to enable or disable the subscriber status.</p> <p>0: disable</p>

Attribute	Value Range	Default	Description
			1: enable  <b>Note:</b> Setting this parameter to 0 (disable) doesn't delete the entry provisioned for this subscriber in the database.
FTNRule	1-30 characters	Null	Name that identifies the FTN management rule as defined in the "FTNManagementRule" entity. Provisioning this parameter assigns a FTN Management rule to a subscriber. The Tekelec ngHLR will accept or refuse the registration of an FTN performed by a subscriber with a RegSS/ActSS, depending on the "FTN Management Rule" (the allowed FTN list) that is assigned to its subscriber profile. This allows the operator to better control the registration of the FTN(s) for each subscriber.
ServiceMaskTemplateId	integer	Null	Identifier of the TS/BS mask Template the Tekelec ngHLR must use for this subscriber when handling CAMEL and when the parameter "ActionOnUnsCamelPh" is set to 'Apply Mask' in the CamelCsiData entity.
CurrADDTimestamp	timestamp	0000-00-00 00:00:00	Read-Only. This parameter displays the timestamp for the current IMEI-SV.
LatestADDTimestamp	timestamp	0000-00-00 00:00:00	Read-Only. This parameter displays the timestamp for the last time a valid IMEI-SV was received.
CurrImeiSv	String	Null	Read-only. This parameter displays the current value of the IMEI-SV.
PrevImeiSv	string	Null	Read-only. This parameter displays the previous value of the IMEI-SV.
MsCat	0 (National Use) 1 (Language French) 2 (Language English) 3 (Language German) 4 (Language Russian) 5 (Language Spanish) 6 (Language TBD1)	10	Mobile Station Category. 0=calling party's category unknown at this time (national use) 1=operator, language French 2= operator, language English 3= operator, language German 4= operator, language Russian 5= operator, language Spanish 6= operator, language To be determined1 7= operator, language To be determined2 8= operator, language To be determined3

Attribute	Value Range	Default	Description
	7 (Language TBD2) 8 (Language TBD3) 9 (Reserved9) 10(Ordinary Subscriber) 11 (Subscriber With Priority) 12 (DataCall) 13 (TestCall) 14 (Spare14) 15 (PayPhone) 16 (Spare16) to 223 (Spare223) 224 (National Use224) to 254 (National Use254) 255 (Spare255)		9=Reserved (see ITU-T Recommendation Q.104) (national use) 10=ordinary calling subscriber 11= calling subscriber with priority 12=data call (voice band data) 13=test call 14=spare 15=payphone 16 to 223=spare 224 to 254= reserved for national use 255=spare
Nam	0 (NonGprsAnd Gprs), 1 (NonGprsOnly), 2 (GprsOnly)	0	Set the Network Access Mode.
AtiSubs InfoLevel	0 (NoSubsInfo Screening) 1 (Suppress StateLocation) 2 (HlrStored StateAndHplmn Indication) 3 (HlrStoredState AndLocation) 4 (SuppressAlr)	0	Allows the Network Operator to set rules, on a per subscriber basis, to control whether the PSI message is suppressed or not and how much information can be included in the ATI-ack messages. Refer to the "Per Subscriber ATI screening" section of the SDM Product Description for a detailed description of the rules and the Tekelec ngHLR's behavior.
ActiveSubs TimeStamp	Timestamp (date and time)	Null	Read-Only. Timestamp of when the subscriber profile was first created for a subscriber. This is

Attribute	Value Range	Default	Description
			generated by the Tekelec ngHLR and is only for informational purposes.
SubsVlrMsg Notification On	Bool 0 or 1	0	<p>This parameter allows the Network Operator to enable/disable the “XML Notifications on UL, UL-GPRS, SAI, ReadySM and Purge MS” feature for a subscriber.</p> <p><b>0(Off):</b> The feature is disabled for this subscriber. Upon reception of UL, UL-GRPS, SAI, Ready SM and Purge MS messages for this subscriber, the SDM will never send XML notifications to the external server (even if the feature is activated for the entire system (if the HlrConfig’s “VlrMsgNotificationState” parameter is set to 2 (activated))).</p> <p><b>1(On):</b> The feature is enabled for this subscriber. If the feature is activated for the entire system (if the HlrConfig’s “VlrMsgNotificationState” parameter is set to 2 (activated)), the SDM will send XML notifications to the external server upon reception of UL, UL-GRPS, SAI, Ready SM and Purge MS messages for this subscriber.</p> <p>For details on the HlrConfig’s “VlrMsgNotificationState” parameter, refer to the “HLR Configuration” section of the SDM System Configuration – Reference Manual.</p>
DefaultPdn ContextId	Unsigned int 32	Null	This parameter is the default context identifier that is sent in the user data profile to the MME or SGSN during an update location procedure.
SpPdn Charging Characteristics	One or a combination of these values: HotBilling FlatRate Prepaid Normal	Null	This parameter indicates the charging type(s) to be applied to the subscriber data profile.
AMBRUL	Unsigned int 32	Null	Maximum Requested Bandwidth Up Link for the subscriber data profile.
AMBRDL	Unsigned int 32	Null	Maximum Requested Bandwidth Down Link for the subscriber data profile.
APNOI Replacement	String	Null	This parameter indicates the domain name to replace the APN OI for the non-roaming case and the home routed roaming case when constructing

Attribute	Value Range	Default	Description
			the PDN GW FQDN upon which to perform a DNS resolution.
RFSPID	Unsigned int 32	Null	This parameter is the RAT-Frequency-Selection-Priority-Id, which contains the subscriber's profile Id for RAT/Frequency Priority.
HlrProxy Mode	Bool (0,1)	0	<p>This flag is used by the LTE-HSS to decide where/how a subscriber should get registered when receiving a ULR message.</p> <p>If the flag is set to "true" (1), the subscriber is hosted by a remote HLR and the LTE-HSS forwards the registration request to the SDM ngHLR's HLR-Proxy functionality, which in turn forwards the message to the external HLR.</p> <p><b>Note:</b> For the HLR-Proxy functionality to work for the subscriber, the LteHssImsiRangeConfig entity must be configured for the subscriber's IMSI Range. You can configure this entity through the Tekelec CLI, refer to the "HLR Proxy functionality" section of the SDM System Configuration – Reference Manual for details on the LteHssImsiRangeConfig entity and the CLI Navigation and syntax.</p> <p>If it is set to "false" (0), the subscriber is hosted locally, by the SDM ngHLR. In this case, the message is forwarded to the SDM ngHLR, which handles the subscriber's registration locally.</p>
SRILCSAllowed	Bool (0,1)	1	<p>Control of SRI-LCS per subscriber.</p> <p>True (1): allow SRI-LCS</p> <p>False (0): Do not allow SRI-LCS</p>
Curr Software Version	UTF8String	Null	<p>Read-Only. The Tekelec ngHLR stores in its database the value received in the Software-Version AVP, as the CurrSoftwareVersion parameter.</p> <p>It contains the 2-digit Software Version Number (SVN) of the International Mobile Equipment Identity, as specified in 3GPP TS 23.003 [3].</p>
Curr3GPP2 MEID	OctetString	Null	<p>Read-Only. The Tekelec ngHLR stores in its database the value received in the 3GPP2-MEID AVP, as the Curr3GPP2MEID parameter.</p> <p>This AVP contains the Mobile Equipment Identifier of the user's terminal. For further details</p>

Attribute	Value Range	Default	Description
			on the encoding of the AVP data, refer to the encoding of the Mobile Identity (MEID) octets 3 to 10 in 3GPP2 A.S0022 [28] Annex A.
LRT_Access Restriction TemplateId	Integer (10)	Null	Associates the LRT Access Restriction service with a subscriber profile.
LRT_APNFiltering TemplateId	Integer (10)	Null	Associates the LRT APN Filtering service with a subscriber profile.
LRT_VPLMN AddressAllowed TemplateId	Integer (10)	Null	Associates the LRT VPLMN Address Allowed service with a subscriber profile.

### Operations Permitted

Add, modify, delete\*, display

**Note:** Not all users (User Groups) are allowed to perform these operations.

**Provisioning TIP:** The last BS in a BSG cannot be removed if an applicable supplementary service (CF, CW, CB) is provisioned/registered/activated with a corresponding BSG.

### CLI Example

```
Subscriptions[]> Subscription[SubscriptionID=sub-1]> Add
SubscriberProfile[HlrServiceProfileID =1; PreferredRoutingNetworkDomain =
Gsm; MsIsdnAlertInd = 0; TeleServiceList = TS11; BearerServiceList = BS21;
OdbMask = AllogCalls; UssdAllowed = 1; SubsRoamingMsgOn=1;SubscriberState=0;
FTNRule=ftnrule1; ServiceMaskTemplateId=1; Nam = 0; MsCat =102;
AtiSubsInfoLevel =4; SubsVlrMsgNotificationOn=1; LRT_APNFilterTemplateId=
5]
```

## Call Barring – Basic Service Group

### Name

CallBarringOG\_BSG

### Description

To provision Call Barring Basic Service Group details for a subscriber.

### CLI Navigation

```
Subscriptions[]> Subscription [SubscriptionID]>
SubscriberProfile[HlrServiceProfileID]> CallBarringSS> CallBarringOG_BSG
```

**CLI Inherited Attributes**

SubscriptionID, HlrServiceProfileID, BarringId

**CLI Command Syntax**

```
Subscriptions[]> Subscription[SubscriptionID= <string>]>
SubscriberProfile[HlrServiceProfileID = <string>]:CallBarringSS[BarringId
= <integer>]>add CallBarringOG_BSG[BsgId = 1,2,6,7,8,12; ActState_A = 0,1;
ActState_Q = 0,1; IndState = 0,1]
```

**Operations Permitted**

Add, modify, delete, display

**Table 22: CallBarringOG\_BSG mandatory attributes**

Attribute	Value Range	Default	Description
BsgId	1 (Speech), 2 (ShortMessageService), 6 (FacsimileServices), 7 (AllDataCircuit Asynchronous), 8 (AllDataCircuit Synchronous), 12 (VoiceGroup Services)	N/A	<p>BsgId identifies the service capabilities for a subscriber, as defined in TeleServiceList and BearerServiceList fields, into six groups as follows:</p> <p>1=Speech (TS11,TS12)* 2=Short Message Service (TS21,TS22, TS23)* 6=Facsimile services (TS61, TS62)* 7=All Data Circuit Asynchronous (BS10)* 8=All Data Circuit Synchronous (BS18)* 12=Voice Group Services (TS91,TS92)*</p> <p>*At least one of the corresponding Basic Services must be provisioned for the subscriber (in the SubscriberProfile[ ] entity) prior to being able to provision/register/activate a Call Barring – Basic Service Group.</p>

Table 23: CallBarringOG\_BSG optional attributes

Attribute	Value Range	Default	Description		
ActState_A	0 or 1	0	For Activation state:	Set A bit to:	Set Q bit to:
ActState_A	0 or 1	0	Active & Operative	1	0
			Active & Quiescent	1	1
			Not Active	0	0 or 1
			<p><b>Note:</b> 1: Service can only be invoked if Activation State is Active and Operative.</p> <p><b>Note:</b> 2: Setting this parameter to 0 (not active) doesn't delete the entry provisioned in the database, it simply means that the service won't be invoked by the system.</p>		
IndState	0 or 1	0	Induction state set by the network. Read only.		

**CLI Example**

```
Subscriptions[]> Subscription[SubscriptionID= sub-1]>
SubscriberProfile[HlrServiceProfileID =1]:CallBarringSS[BarringId = 146]>add
CallBarringOG_BSG[BsgId = 1; ActState_A = 1; ActState_Q = 0]
```

**Call Barring Supplementary Services (BAIC, BAOC, BICROAM, BOIC, BOICEXHC)**

**Name**

CallBarringSS

**Description**

To provision Call Barring Supplementary Services details for a subscriber.

**CLI Navigation**

```
Subscriptions[]> Subscription [SubscriptionID]>
SubscriberProfile[HlrServiceProfileID]> CallBarringSS
```

**CLI Inherited Attributes**

SubscriptionID, HlrServiceProfileID

**CLI Command Syntax**

```
Subscriptions[]> Subscription[SubscriptionID= <string>]>
SubscriberProfile[HlrServiceProfileID = <string>]>add CallBarringSS[BarringId
= 146,147,148,154,155; ProvisionState = 0,1]
```

**Operations Permitted**

Add, modify, delete, display

**Attributes and Values**

**Table 24: CallBarringSS mandatory attributes**

Attribute	Value Range	Default	Description
BarringId	146 (BAOC), 147 (BOIC), 148 (BOICEXHC), 154 (BAIC), 155 (BICROAM)	N/A	BAOC = Barring of All Outgoing Calls BOIC = Barring of Outgoing International Calls BOICEXHC = Barring of Outgoing International Calls EXcept those directed to the Home PLMN Country BAIC = Barring of All Incoming Calls BICROAM = Barring of Incoming Calls when ROAMing outside home PLMN Country <b>Note:</b> Provisioning TIP: BAOC, BOIC or BOICEXHC cannot be activated together.

**Table 25: CallBarringSS optional attributes**

Attribute	Value Range	Default	Description
Provision-State	0 or 1	0	Supplementary Service Provision State 0 = disabled 1 = enabled <b>Note:</b> Setting this parameter to 0 (disabled) doesn't delete the entry provisioned in the database, it simply means that the service won't be invoked by the system.

**CLI Example**

```
Subscriptions[]> Subscription[SubscriptionID= sub-1]>
SubscriberProfile[HlrServiceProfileID =1]>add CallBarringSS[BarringId =
146; ProvisionState = 1]
```

**Call Barring Subscriber Options**

**Name:**

CallBarringSubsOption

**Description**

To provision the permissions and methods to configure Call Barring parameters for a subscriber.

**CLI Navigation**

```
Subscriptions[]> Subscription [SubscriptionID]> SubscriberProfile
[HlrServiceProfileID]> CallBarringSubsOption
```

**CLI Inherited Attributes**

SubscriptionID, HlrServiceProfileID.

**CLI Command Syntax**

```
Subscriptions[]> Subscription[SubscriptionID= <string>]>
SubscriberProfile[HlrServiceProfileID = <string>]>add CallBarringSubsOption
[SubsOption = 0,1; Password = integer; WrongAttempts = 0-4]
```

**Operations Permitted**

Add, modify, delete, display

**Note:** Not all users (User Groups) are allowed to perform these operations.

**Table 26: CallBarringSubsOption optional attributes**

Attribute	Value Range	Default	Description
SubsOption	0 (Password), 1 (SvcProvider)	0 (Password)	Call barring can be controlled by subscriber via Password or by Service Provider
Password	4 digits	N/A	Subscriber call barring password
WrongAttempts	0 to 4	0	Number of failed attempts user can have to enter a wrong password.

**CLI Example**

```
Subscriptions[]> Subscription[SubscriptionID= sub-1]>
SubscriberProfile[HlrServiceProfileID =1]>add CallBarringSubOption
[SubOption = Password; Password = 1234; WrongAttempts = 3]
```

**Call Forward (CFU, CFB, CFNRY, CFNRC)**

**Name:**

CallForward

**Description**

To provision Call Forwarding parameters for a subscriber. Parameters that can be provisioned are Call Forward Unconditional, Call Forward Busy, Call Forward No Reply and Call Forward Not Reachable.

**CLI Navigation**

```
Subscriptions[]> Subscription [SubscriptionID]> SubscriberProfile
[HlrServiceProfileID]> CallForward
```

**CLI Inherited Attributes**

SubscriptionID, HlrServiceProfileID

**CLI Command Syntax**

```
Subscriptions[]> Subscription[SubscriptionID= <string>]>
SubscriberProfile[HlrServiceProfileID = <string>]>add CallForward[Type =
33,41,42, 43; ProvisionState = 0,1; NotifytoCgParty = 0,1; PresentMsIsdn =
0,1; NotifyToFwdingParty = 0,1; CFDefaultEnabled=0,1;CFDefaultFtn=integer]
```

**Operations Permitted**

Add, modify, delete, display

**Attributes and Values**

**Table 27: CallForward mandatory attributes**

Mandatory Attributes			
Attribute	Value Range	Default	Description
Type	33 (CFU), 41 (CFB), 42 (CFNRY), 43 (CFNRC)	33 (CFU)	CFU = Call Forwarding Unconditional CFB = Call Forwarding on Mobile Subscriber Busy CFNRY = Call Forwarding on No Reply

Mandatory Attributes			
Attribute	Value Range	Default	Description
			CFNRC = Call Forwarding on Mobile Subscriber Not Reachable

Table 28: CallForward optional attributes

Attribute	Value Range	Default	Description
ProvisionState	0 or 1	0	Supplementary Service Provision State. 0 = not provisioned 1 = provisioned <b>Note:</b> Setting this parameter to 0 (not provisioned) doesn't delete the entry provisioned in the database, it simply means that the system won't support this supplementary service for the subscriber.
NotifyToCgParty	0 or 1	0	Notify calling subscriber that the call has been forwarded 0 = do not send notification 1 = send notification
PresentMsIsdn	0 or 1	0	Present MSISDN of the served subscriber to the forwarded-to subscriber 0 = do not present 1 = present
NotifyToFwding-Party	0 or 1	0	Forwarding subscriber receives notification that the call has been forwarded 0 = do not send notification 1 = send notification
CFDefaultEnabled	0 or 1	1	Enable/Disable flag for the Default FTN. 0= the Default FTN is absent or will not be used. 1= the Default FTN is provisioned and will be used for a CCF category if the subscriber has deactivated the provisioned category.
CFDefaultFtn	up to 15 digits	N/A	The Default Forwarded-to-number that is used for a Conditional Call Forwarding service if the subscriber has deactivated the provisioned CCF service and the Default FTN is provisioned and enabled.

**CLI Example**

```
Subscriptions[]> Subscription[SubscriptionID= sub-1]>
SubscriberProfile[HlrServiceProfileID = 1]>add CallForward [Type = 41;
NotifytoCgParty = 1; PresentMsIsdn = 0; ProvisionState = 1;
NotifyToFwdingParty = 0; CFDefaultEnabled=1;CFDefaultFtn=15634213333]
```

**Call Forward Basic Service Group**

**Name**

CallForwardBsg

**Description**

To provision Call Forwarding Basic Service Group parameters for a subscriber.

**CLI Navigation**

```
Subscriptions[]> Subscription [SubscriptionID]> SubscriberProfile
[HlrServiceProfileID]> CallForward> CallForwardBsg
```

**CLI Inherited Attributes**

SubscriptionID, HlrServiceProfileID, Type.

**CLI Inherited Attributes**

```
Subscriptions[]> Subscription[SubscriptionID= <string>]>
SubscriberProfile[HlrServiceProfileID = <string>]: CallForward[Type =
Type]>add CallForwardBSG[BsgId = 1,6,7,8,12; ActState_A = 0,1; ActState_Q
= 0,1; RegState = 0,1; Ftn = integer; FtnSubAddr = integer; DefaultFtn =
integer; NoReplyCondTimer = integer]
```

**Operations Permitted**

Add, modify, delete, display

**Attributes and Values**

**Table 29: CallForwardBsg mandatory attributes**

Attribute	Value Range	Default	Description
BsgId	1 (Speech), 6 (FacsimileServices), 7 (AllDataCircuit Asynchronous), 8 (AllDataCircuit Synchronous),	1 (Speech)	BsgId identifies the service capabilities for a subscriber: 1-Speech (TS11,TS12)*, 6-Facsimile Services (TS61, TS62)*, 7-All Data Circuit Asynchronous (BS10)*,

Attribute	Value Range	Default	Description
	12 (VoiceGroup Services)		8-All Data Circuit Synchronous (BS18)*, 12-Voice Group Services (TS91, TS92)* *At least one of the corresponding Basic Services must be provisioned for the subscriber (in the SubscriberProfile[entity]) prior to being able to provision/register/activate a Call Forward – Basic Service Group.

Table 30: CallForwardBsg optional attributes

Attribute	Value Range	Default	Description		
Act State_A	0 or 1	0	Activation state:	Set A bit to:	Set Q bit to:
			Active & Operative	1	0
			Active & Quiescent	1	1
			Not Active	0	0 or 1
			<p><b>Note:</b> 1: Service can only be invoked if Activation State is Active and Operative (A=1, Q = 0).</p> <p><b>Note:</b> 2: Keep in mind that setting this parameter to 0 (not provisioned) doesn't delete the entry provisioned in the database, it simply means that the system won't invoke this service for the subscriber.</p>		
RegState	0 or 1	0	Supplementary Service Registration State 0 = not registered 1 = registered <b>Note:</b> Setting this parameter to 0 (not registered) doesn't delete the entry provisioned in the database.		
Ftn	up to 28 digits	N/A	Forwarded-to-number formats supported: E.164 number (15 digits) and Non E.164 number (28 digits).		
FtnSub Addr	up to 21 digits	N/A	ISDN subaddress of the forwarded-to-number. Used when the Forwarded number is an ISDN number.		

Attribute	Value Range	Default	Description
Default Ftn	up to 15 digits	N/A	Default Forwarded-to Number.
NoReplyCondTimer	5-30	null	Only applicable to Call Forwarding on No Reply (CFNRY). Indicates the period (in seconds) during which the incoming call is not answered before it is forwarded.
Ftn Override	0,1	0	<p>This parameter indicates whether or not the validation of the provisioned FTNs through the OAM interface is bypassed for this subscriber when the global FTN validation is activated ('FtnProvValidation' = '1' in HlrConfig[ ]).</p> <p><b>Note:</b> The value of this flag is not permanent and must be specified for each transaction.</p> <p>The FtnOverride value is disregarded when the HLR configuration's (HlrConfig[ ]) 'FtnProvValidation' parameter is set to '0' (Deactivated)</p> <p><b>0</b>=The activation status of the FTN provisioned validation set globally for the entire system is not overridden. The FTN validation is not bypassed for this subscriber in the case where the global FTN validation is activated ('FtnProvValidation' = '1').</p> <p><b>1</b>= The activation status of the FTN provisioned validation set globally for the entire system is overridden. The FTN validation is bypassed (not performed) for this subscriber even if the FTN validation is activated for the entire system ('FtnProvValidation' = '1' in HlrConfig[ ]).</p>

**Note:** Adding the Basic Service Group will only provision the group. To activate this service, the Registration State must be set to 1, ActState\_A must be set to 1, and the ActState\_Q must be set to 0.

### CLI Example

```
Subscriptions[ ]> Subscription[SubscriptionID= sub-1]>
SubscriberProfile[HlrServiceProfileID =1]:CallForward[Type = 42]>add
CallForwardBSG[BsgId = 1; ActState_A = 1; ActState_Q = 0; RegState = 1; Ftn
= 15145551212; FtnSubAddr = 15145551212; DefaultFtn = 15145551000;
NoReplyCondTimer = 15]
```

## Call Waiting Activation

### Name

SSCallWaitActivStatus

### Description

To provision the activation of Call Waiting for a subscriber.

**CLI Navigation**

```
Subscriptions[]> Subscription [SubscriptionID]> SubscriberProfile
[HlrServiceProfileID]> SS_CallWaitActivStatus
```

**CLI Inherited Attributes**

SubscriptionID, HlrServiceProfileID.

**CLI Command Syntax**

```
Subscriptions[]> Subscription[SubscriptionID= <string>]>
SubscriberProfile[HlrServiceProfileID = <string>]>add
SS_CallWaitActivStatus[BsgId = 1,6,7,8,12; Activation = 0,1]
```

**Operations Permitted**

Add, modify, delete, display

**Provisioning TIP: Call Waiting cannot be activated if BAIC/BAICROAM is activated.**

**Attributes and Values**

**Table 31: SS\_CallWaitActivStatus mandatory attributes**

Attribute	Value Range	Default	Description
BsgId	1 (Speech), 6 (Facsimile Services), 7 (AllDataCircuit Asynchronous), 8 (AllDataCircuit Synchronous), 12 (VoiceGroupServices)	N/A	BsgId identifies the service capabilities for a subscriber, as defined in TeleServiceList and BearerServiceList fields, into 5 groups as follows: 1=Speech (TS11,TS12)* 6=Facsimile services (TS61, TS62)* 7=All Data circuit asynchronous (BS10)* 8=All Data circuit synchronous (BS18)* 12=Voice group services (TS91,TS92)* *At least one of the corresponding Basic Services must be provisioned for the subscriber (in the SubscriberProfile[ ] entity) prior to being able to provision/register/activate a Call Waiting -Basic Service Group.

**Table 32: SS\_CallWaitActivStatus optional attributes**

Attribute	Value Range	Default	Description
Activation	0 or 1	0	Call Waiting activation

Attribute	Value Range	Default	Description
			0 = not activated 1 = activated

#### CLI Example

```
Subscriptions[]> Subscription[SubscriptionID= Sub-1]>
SubscriberProfile[HlrServiceProfileID = 1]> Add SS_CallWaitActivStatus [BsgId
= 1; Activation = 1]
```

## CAMEL Services Provisioning

The following entities provision Camel services:

- CamelData[]
- CamelCsiData[]
- CamelCsiDP[]
  - O-CSI:
    - Collected Info
    - Route Select Failure
  - T-CSI, VT-CSI:
    - Terminating Attempt Authorized
    - Terminating Busy
    - Terminating NoAnswer
  - GPRS-CSI:
    - GPRS-CSI DP
  - OSMS-CSI:
    - OSMS-CSI DP
  - M-CSI:
    - M-CSI DP
  - SS-CSI:
    - SS-CSI DP
- CamelCsiDP\_AnalyzedInfo[]
  - D-CSI :
    - Mobility Event List
- CamelCsiDP\_Ussd[]
  - U-CSI

## Camel Services

This section presents the following entities that have been implemented to provision Camel services:

- CamelData[ ]
- CamelCsiData[ ]
- CamelCsiDP[ ]
  - O-CSI:
    - Collected Info
    - Route Select Failure
  - T-CSI, VT-CSI:
    - Terminating Attempt Authorized
    - Terminating Busy
    - Terminating NoAnswer
  - GPRS-CSI:
    - GPRS-CSI DP
  - OSMS-CSI:
    - OSMS-CSI DP
  - M-CSI:
    - M-CSI DP
  - SS-CSI:
    - SS-CSI DP
- CamelCsiDP\_AnalyzedInfo[ ]
  - D-CSI :
    - Mobility Event List
- CamelCsiDP\_Ussd[ ]
  - U-CSI

### Name:

CamelData

### Description

To provision CAMEL information for a subscriber, such as its provision state and notification flags.

### CLI Navigation

```
Subscriptions[ ]> Subscription [SubscriptionID]> SubscriberProfile  
[HlrServiceProfileID]> CamelData
```

**CLI Inherited Attributes**

SubscriptionID, HlrServiceProfileID.

**CLI Command Syntax**

```
Subscriptions[]> Subscription[SubscriptionID= <string>]>
SubscriberProfile[HlrServiceProfileID = <string>]>add CamelData
[ProvisionState = 0,1; CallForwardNotifyCse=0,1; CallBarringNotifyCse=0,1;
OdbNotifyCse=0,1]
```

**Operations Permitted**

Add, modify, delete, display

**Note:** Not all users (User Groups) are allowed to perform these operations.

**Table 33: CamelData optional attributes**

Attribute	Value Range	Default	Description
ProvisionState	0,1	0	This flag can be provisioned to indicate the state of Camel Data  <b>Note:</b> Setting this parameter to 0 (not provisioned) doesn't delete the entry provisioned in the database, it simply means that the system won't support this service for the subscriber.
CallForwardNotifyCse	0,1	0	The value of this attribute cannot be changed from the default value of 0. It will be available with future SDM enhancements.
CallBarringNotifyCse	0,1	0	The value of this attribute cannot be changed from the default value of 0. It will be available with future SDM enhancements.
OdbNotifyCse	0,1	0	The value of this attribute cannot be changed from the default value of 0. It will be available with future SDM enhancements.

### CLI Example

```
Subscriptions[ ]> Subscription[SubscriptionID= sub-1]>
SubscriberProfile[HlrServiceProfileID = 1]>add CamelData[ProvisionState =
1; CallForwardNotifyCse=0; CallBarringNotifyCse=0; OdbNotifyCse=0]
```

## CAMEL CSI Data

### Name:

CamelCsiData

### Description

This entity allows to provision CAMEL CSIs for a subscriber with the Provision state of the CAMEL services set to 'On'.

### CLI Navigation

```
Subscriptions[ ]> Subscription [SubscriptionID]> SubscriberProfile
[HlrServiceProfileID]>CamelData[ ]> CamelCsiData[ ]
```

### CLI Inherited Attributes

SubscriptionID, HlrServiceProfileID.

### CLI Command Syntax

```
Subscriptions[ ]> Subscription[SubscriptionID= <string>]>
SubscriberProfile[HlrServiceProfileID = <string>]:CamelData[ ]>add
CamelCsiData[CsiType=1-10; ProvisionState=0,1; ActiveState=0,1; CamelPhase
=1,2,3; NotifyCse=0,1; ActionOnUnsCamelPh=0-4; Inhibition=0,1]
```

### Operations Permitted

Add, modify, delete, display

**Note:** Not all users (User Groups) are allowed to perform these operations.

### Attributes and Values

Table 34: CAMELCsiData mandatory attributes

Attribute	Value Range	Default	Description
CsiType	1 O-CSI 2 T-CSI 3 VT-CSI 4 GPRS-CSI 5 OSMS-CSI	N/A	This parameter allows you to specify the CSI type to be used.   <b>Important:</b> When provisioning an entry with CsiType=O-CSI or CsiType=T-CSI, the CamelPhase parameter

Attribute	Value Range	Default	Description
	6 D-CSI 7 M-CSI 8 U-CSI 9 TIF-CSI 10 SS-CSI		becomes mandatory (see description below).

Table 35: CAMELCsiData optional attributes

Attribute	Value Range	Default	Description
ProvisionState	0,1	0	This flag can be provisioned to indicate the Provision state of a specific CAMEL Csi Data.  <b>Note:</b> Setting this parameter to 0 (not provisioned) doesn't delete the entry provisioned in the database, it simply means that the system won't support this service for the subscriber.
CamelPhase	1 (Phase1) 2 (Phase2) 3 (Phase3)	3	This flag can be provisioned to indicate to the Tekelec ngHLR what Camel Phase must be supported per CSI.  <b>Note:</b> Only the T-CSI and O-CSI can be provisioned with multiple different Camel Phases. All other CSI Types can only be provisioned with one single Camel Phase.  For the T-CSI and O-CSI, the CamelPhase parameter is mandatory.
ActiveState	0,1	0	<b>This flag can be provisioned to indicate the Active state of a specific Camel Csi Data.</b>  <b>Note:</b> Setting this parameter to 0 (not active) doesn't delete the entry provisioned in the database, it simply means that the system won't invoke this service for the subscriber.
NotifyCse	0,1	0	This flag can be provisioned to indicate to the Tekelec ngHLR whether or not the Camel Server needs to be notified when any changes occur in the CamelCsi Data.

Attribute	Value Range	Default	Description
ActionOnUnsCamelPh	0 Standard 1 Deny 2 Odb 3 ApplyMask 4 BSG-BAOC	0	Applicable only for O-CSI. This allows the operator to determine the type of action (behavior) it wants the Tekelec ngHLR to take when handling CAMEL. For further information on these behaviors, refer to section <i>Enhanced CAMEL handling</i> and section <i>CAMEL roaming enhancements</i> in the SDM Product Description.
Inhibition	0 (Always Send) 1 (Don't send when in HPLMN) 2 (Don't send when NotReach/CF) 3 (Don't send when in HPLMN or NotReach/CF)	0 (Always Send)	This flag allows the operator to choose whether or not the Tekelec ngHLR sends the subscriber's T-CSI information in the SRI. This flag can be set to one of these options:  0 (Always Send): This means that the Tekelec ngHLR proceeds with the SRI call flow as if the subscriber has T-CSI "Provisioned".  1(Don't send when in HPLMN): This means that the Tekelec ngHLR verifies if the PLMN in which the subscriber is located is defined as a Home PLMN in the HPLMN entity (entity provisionable by the operator, refer to "Support for multiple CC-NDC as Home PLMN" section). If it is the case, the Tekelec ngHLR then proceeds with the SRI call flow as if the subscriber has T-CSI "NOT provisioned" - For details on the HPLMN entity, refer to the "Define HLR identities, HPLMN definitions and IMSI ranges" section of the SDM System Configuration – Reference Manual.).  2(Don't send when Not Reachable/CF): This means that the Tekelec ngHLR verifies if all of the following conditions are met: -the subscriber is not reachable -Call Forward (CFNRc, CFU) is detected for this subscriber.  If at least one condition is met, the Tekelec ngHLR proceeds with the SRI call flow as if the subscriber has T-CSI "NOT provisioned".

Attribute	Value Range	Default	Description
			<p>3(Don't send when in HPLMN or Not Reachable/CF):This means that the Tekelec ngHLR verifies if all three of the following conditions are met:</p> <ul style="list-style-type: none"> <li>-the subscriber is not reachable</li> <li>-Call Forward (CFNRc, CFU) is detected for this subscriber.</li> <li>-the subscriber is roaming in a HPLMN (PLMN is defined as HPLMN in the Tekelec ngHLR's HPLMN entity). For details on the HPLMN entity, refer to the "Define HLR identities, HPLMN definitions and IMSI ranges" section of the SDM System Configuration – Reference Manual).</li> </ul> <p>If at least one condition is met, the Tekelec ngHLR proceeds with the SRI call flow as if the subscriber has T-CSI "NOT provisioned".</p>

#### CLI Example

```
Subscriptions[]> Subscription[SubscriptionID= sub-1]>
SubscriberProfile[HlrServiceProfileID = 1]:CamelData[]>add
CamelCsiData[CsiType=1; ProvisionState=0; ActiveState=0; CamelPhase =3;
NotifyCse=1; ActionOnUnsCamelPh=0]
```

## CAMEL CSI DP

### Name

CamelCsiDP

### Description

This entity allows to provision the following:

- Route Select Failure Detection Points for CAMEL O-CSIs.
- Collected Info Detection points for CAMEL O-CSIs.
- Terminating Attempt Authorized Detection points for CAMEL T-CSIs and VT-CSIs.
- Terminating Busy Detection points for CAMEL T-CSIs and VT-CSIs.
- Terminating No Answer Detection points for CAMEL T-CSIs and VT-CSIs.
- Detection points for CAMEL GPRS-CSIs.
- Detection points for CAMEL OSMS-CSIs.
- Detection points for CAMEL M-CSIs.
- Detection points for CAMEL SS-CSIs.

## Route Select Failure DP for Camel O-CSIs

### CLI Navigation

```
Subscriptions[ ]> Subscription [SubscriptionID]> SubscriberProfile
[HlrServiceProfileID]>CamelData[ ]> CamelCsiData[CsiType =
1]>CamelCsiDP[DpType=4]
```

### CLI Inherited Attributes

SubscriptionID, HlrServiceProfileID, CsiType.

### CLI Command Syntax

```
Subscriptions[ ]> Subscription[SubscriptionID= <string>]>
SubscriberProfile[HlrServiceProfileID = <string>]:
CamelData[]:CamelCsiData[CsiType = 1]>add CamelCsiDP[DpType=4; GsmScfId =
<value>; ServiceKey=0-2147483647; ProvisionState=0,1; DefaultCallHandling
=0,1; CauseValueCritPresent=0,1; CauseValueCriteriaValList=
int,int,int,int,int]
```

### Operations Permitted

Add, modify, delete, display

**Note:** Not all users (User Groups) are allowed to perform these operations.

### Attributes and Values

**Table 36: Route Select Failure DP for Camel O-CSIs mandatory Attributes**

Attribute	Value Range	Default	Description
DpType	4 (RouteSelectFailure)	N/A	Detection Point Value. This indicates which Dp type is provisioned.
GsmScfId	0 to 2147483647	N/A	ID of list containing the CAMEL server addresses.
ServiceKey	0 to 2147483647	N/A	

**Table 37: Route Select Failure DP for Camel O-CSIs optional Attributes**

Attribute	Value Range	Default	Description
ProvisionState	0,1	0	This flag can be provisioned to indicate the Provision state of a specific Camel CsiDp Data.  <b>Note:</b> Setting this parameter to 0 (not provisioned) doesn't

Attribute	Value Range	Default	Description
			delete the entry provisioned in the database, it simply means that the system won't support this service for the subscriber.
DefaultCallHandling	0 or 1	0	Default Call Handling indicates whether the call shall be released or continued as requested in case of error in the gsmSSF to gsmSCF dialogue or in case the call is submitted to call gapping in the gsmSSF. A default call handling shall be associated to each Service Key.  0 = Continue call 1 = Release call
CauseValueCritPresent	0 or 1	0	This indicates the presence of Cause Value criteria information.  0 = not present 1 = present
CauseValueCriteriaValList	1-127	NULL	This parameter supports the following: <ul style="list-style-type: none"> <li>• items separated by ',', no spaces</li> <li>• list of max 5 cause values</li> <li>• each value is an integer within the 1-127 range.</li> </ul>

### CLI Example

```
Subscriptions[]> Subscription[SubscriptionID= sub-1]>
SubscriberProfile[HlrServiceProfileID = 1]:CamelData[]:CamelCsiData[CsiType
= 1]>add CamelCsiDP[DpType=4; GsmScfId =3;ProvisionState=1; ServiceKey=147;
DefaultCallHandling =1; CauseValueCritPresent=1;
CauseValueCriteriaValList=133,135]
```

## Collected Info DP for Camel O-CSIs

### CLI Navigation

```
Subscriptions[ ]> Subscription [SubscriptionID]> SubscriberProfile
[HlrServiceProfileID]>CamelData[ ]> CamelCsiData[CsiType = 1]>
CamelCsiDP[DpType=2]
```

### CLI Inherited Attributes

SubscriptionID, HlrServiceProfileID, CsiType

### CLI Command Syntax

```
Subscriptions[ ]> Subscription[SubscriptionID= <string>]>
SubscriberProfile[HlrServiceProfileID =
<string>]:CamelData[]:CamelCsiData[CsiType = 1]>add CamelCsiDP[DpType=2;
GsmScfId = <value>; ServiceKey=0-2147483647; ProvisionState=0,1;
DefaultCallHandling =0,1; BasicServiceCritPresent=0,1;
BasicServiceCriteriaTSLList= TS00-TSDF; BasicServiceCriteriaBSList= BS00-BSDF;
ForwardingCritPresent=0,1; ForwardedCall=0,1; DstNumberCritPresent=0,1;
DstNumberCriteriaMatchType=0,1; DstNumberNAI=0,1;
DstNumberCriteriaLengthList= 0,1; DstNumberCriteriaDstNmbList= 0,1]
```

### Operations Permitted

Add, modify, delete, display

**Note:** Not all users (User Groups) are allowed to perform these operations.

### Attributes and Values

**Table 38: Collected Info DP for Camel O-CSIs mandatory attributes**

Attribute	Value Range	Default	Description
DpType	2 (CollectedInfo)	N/A	Detection Point Value. This indicates which Dp type is provisioned.
GsmScfId	0 to 2147483647	N/A	ID of list containing the CAMEL server addresses.
ServiceKey	0 to 2147483647	0	The Service Key identifies to the gsmSCF the service logic. Different Service Keys may be associated to different Trigger Detection Points (TDPs).

Table 39: Collected Info DP for Camel O-CSIs optional attributes

Attribute	Value Range	Default	Description
ProvisionState	0,1	0	This flag can be provisioned to indicate the Provision state of particular Camel CsiDp Data.  <b>Note:</b> Setting this parameter to 0 (not provisioned) doesn't delete the entry provisioned in the database, it simply means that the system won't support this service for the subscriber.
DefaultCallHandling	0 or 1	0	Default Call Handling indicates whether the call shall be released or continued as requested in case of error in the gsmSSF to gsmSCF dialogue or in case the call is submitted to call gapping in the gsmSSF. A default call handling shall be associated to each Service Key.  0 = Continue call 1 = Release call
BasicServiceCrit Present	0 or 1	0	Presence of Basic service criteria information.  0 = not present 1 = present
BasicService Criteria TSList	TS00, TS10 to TS12 TS20 to TS22 TS60 to TS63 TS70, TS80, TS90 to TS92, TSD0 to TSD9 TSDA to TSDF,	NULL	List of Teleservices trigger criteria; Maximum of 5 criteria values.  <b>Note:</b> the 5 criteria values can be selected from either the TS Criteria List or from the BS Criteria List or from both.  Refer to TeleServices (TS) under <i>Subscriber Profile (Bearer Services, Teleservices, Call Barring, PreferredRoutingNetworkDomain)</i> for details on Teleservices.

Attribute	Value Range	Default	Description
			<p>This parameter supports the following:</p> <ul style="list-style-type: none"> <li>• items in the lists separated by ' , ' , no spaces</li> <li>• cannot have duplications in the list For example TS00 is "All TS" and will duplicate any other TS</li> <li>• max (TS + BS) = 5</li> </ul>
BasicService Criteria BSList	BS00, BS10 to BS19 BS1A to BS1F BS20 to BS29 BS2A to BS2F BS30 to BS36 BS38, BS40, BS48, BS50, BS58, BS60, BS68, BSD0 to BSD9 BSDA to BSDF	NULL	<p>List of Bearer Services trigger criteria;</p> <p>Maximum of 5 criteria values.</p> <p><b>Note:</b> the 5 criteria values can be selected from either the TS Criteria List or from the BS Criteria List or from both.</p> <p>Refer to Bearer Services (BS) under <i>Subscriber Profile (Bearer Services, Teleservices, Call Barring, PreferredRoutingNetworkDomain)</i> for details on Bearer Services.</p> <p>This parameter supports the following:</p> <ul style="list-style-type: none"> <li>• items in the lists separated by ' , ' , no spaces</li> <li>• cannot have duplications in the list For example TS00 is "All TS" and will duplicate any other TS</li> <li>• max (TS + BS) = 5</li> </ul>
ForwardingCrit Present	0 or 1	0	<p>The Forwarding Criteria information is present in the subscriber profile.</p> <p>0 = not present 1 = present</p>
ForwardedCall	0 or 1	1	<p>0 = Normal call forwarding 1 = Not forwarded</p>

Attribute	Value Range	Default	Description
DstNumberCrit Present	0 or 1	0	Presence of Destination number criteria 0 = not present 1= present
DstNumberNAI	0 International 1 National	0	This flag can be provisioned to indicate whether the Destination Number Nature of Address Indicator is in national or international format.
DstNumberCriteria MatchType	0 or 1	0	Destination number criteria 0 = inhibiting 1 = enabling
DstNumberCriteria LengthList	1 to 15, up to 3 comma separated values	Null	Length of destination criteria numbers This parameter supports the following: <ul style="list-style-type: none"> <li>list of integers, separated by ',', no spaces</li> <li>max 3 lengths</li> </ul>
DstNumberCriteria DstNmbList	up to 15 digits, up to 10 comma separated values	Null	List of destination criteria numbers; maximum of 10 destination numbers This parameter supports the following: <ul style="list-style-type: none"> <li>string consisting of numbers, separated by ','</li> <li>max Numbers = 10</li> <li>length of each number = 1- 15 digits</li> </ul>

**CLI Example**

```
Subscriptions[ ]> Subscription[SubscriptionID= sub-1]>
SubscriberProfile[HlrServiceProfileID = 1]:CamelData[ ]:CamelCsiData[CsiType
= 1]>add CamelCsiDP[DpType=4; GsmScfId =3;ProvisionState=1; ServiceKey=147;
DefaultCallHandling =1; BasicServiceCritPresent=1;
BasicServiceCriteriaTSLList=TS11,TS21
;BasicServiceCriteriaBSList=BS15,BS16;ForwardingCritPresent=1;ForwardedCall=0;DstNumberCritPresent=1;
DstNumberCriteriaMatchType=1; DstNumberNAI=0; DstNumberCriteriaLengthList=
3,15,8;DstNumberCriteriaDstNmbList=1234567890,568761234567890]
```

## Terminating Attempt Authorized DP for Camel T-CSIs

### CLI Navigation

```
Subscriptions[ ]> Subscription [SubscriptionID]> SubscriberProfile
[HlrServiceProfileID]>CamelData[ ]> CamelCsiData[CsiType =
2]>CamelCsiDP[DpType=12]
```

### CLI Inherited Attributes

SubscriptionID, HlrServiceProfileID, CsiType.

### CLI Command Syntax

```
Subscriptions[ ]> Subscription[SubscriptionID= <string>]>
SubscriberProfile[HlrServiceProfileID =
<string>]:CamelData[]:CamelCsiData[CsiType = 2]>add CamelCsiDP[DpType=12;
GsmScfId = <value>; ServiceKey=0-2147483647; ProvisionState=0,1;
DefaultCallHandling =0,1; BasicServiceCritPresent=0,1;
BasicServiceCriteriaTSList= TS00-TSDF ; BasicServiceCriteriaBSList=
BS00-BSDF]
```

### Operations Permitted

Add, modify, delete, display

### Attributes and Values

Table 40: Terminating Attempt Authorized DP for Camel T-CSIs mandatory attributes

Attribute	Value Range	+	Description
DpType	12 (Terminating AttemptAuthorized)	N/A	Detection Point Value. This indicates which Dp type is provisioned.
GsmScfId	0 to 2147483647	N/A	ID of list containing the CAMEL server addresses.
ServiceKey	0 to 2147483647	0	The Service Key identifies to the gsmSCF the service logic. Different Service Keys may be associated to different Trigger Detection Points (TDPs).

Table 41: Terminating Attempt Authorized DP for Camel T-CSIs optional attributes

Attribute	Value Range	Default	Description
ProvisionState	0,1	0	This flag can be provisioned to indicate the Provision state of particular Camel CsiDp Data.  <b>Note:</b> Setting this parameter to 0 (not provisioned) doesn't delete the entry provisioned in the database, it simply means that the system won't support this service for the subscriber.
DefaultCallHandling	0 or 1	0	Default Call Handling indicates whether the call shall be released or continued as requested in case of error in the gsmSSF to gsmSCF dialogue or in case the call is submitted to call gapping in the gsmSSF. A default call handling shall be associated to each Service Key.  0 = Continue call 1 = Release call
BasicServiceCrit Present	0 or 1	0	Presence of Basic service criteria information.  0 = not present 1 = present
BasicServiceCriteria TSList	TS00, TS10 to TS12 TS20 to TS22 TS60 to TS63 TS70, TS80, TS90 to TS92, TSD0 to TSD9 TSDA to TSDF,	NULL	List of Teleservices trigger criteria; Maximum of 5 criteria values.  <b>Note:</b> the 5 criteria values can be selected from either the TS Criteria List or from the BS Criteria List or from both.  Refer to TeleServices (TS) under <i>Subscriber Profile (Bearer Services, Teleservices, Call Barring, PreferredRoutingNetworkDomain)</i> for more details on Teleservices.  This parameter supports the following: <ul style="list-style-type: none"><li>items in the lists separated by ', ', no spaces</li></ul>

Attribute	Value Range	Default	Description
			<ul style="list-style-type: none"> <li>cannot have duplications in the list For example TS00 is "All TS" and will duplicate any other TS</li> <li>max (TS + BS) = 5</li> </ul>
BasicServiceCriteria BSList	BS00, BS10 to BS19 BS1A to BS1F BS20 to BS29 BS2A to BS2F BS30 to BS36 BS38, BS40, BS48, BS50, BS58, BS60, BS68, BSD0 to BSD9 BSDA to BSDF	NULL	List of Bearer Services trigger criteria; Maximum of 5 criteria values. <b>Note:</b> the 5 criteria values can be selected from either the TS Criteria List or from the BS Criteria List or from both. Refer to BearerServices (BS) under <i>Subscriber Profile (Bearer Services, Teleservices, Call Barring, PreferredRoutingNetworkDomain)</i> for more details on Bearer Services. This parameter supports the following: items in the lists separated by ',' , no spaces cannot have duplications in the list For example TS00 is "All TS" and will duplicate any other TS max (TS + BS) = 5

### CLI Example

```
Subscriptions[]> Subscription[SubscriptionID= sub-1]>
SubscriberProfile[HlrServiceProfileID = 1]:CamelData[]:CamelCsiData[CsiType = 2]>add CamelCsiDP[DpType=12; GsmScfId =3;ProvisionState=1; ServiceKey=147;
DefaultCallHandling =1; BasicServiceCritPresent=1;
BasicServiceCriteriaTSList=TS11,TS21 ;BasicServiceCriteriaBSList=BS15,BS16]
```

### Terminating Busy DP for CAMEL T-CSIs

#### CLI Navigation

```
Subscriptions[ ]> Subscription [SubscriptionID]> SubscriberProfile
[HlrServiceProfileID]>CamelData[ ]> CamelCsiData[CsiType =
2]>CamelCsiDP[DpType=13]
```

**CLI Inherited Attributes**

SubscriptionID, HlrServiceProfileID, CsiType.

**CLI Command Syntax**

```
Subscriptions[]> Subscription[SubscriptionID= <string>]>
SubscriberProfile[HlrServiceProfileID =
<string>]:CamelData[:CamelCsiData[CsiType = 2]>add CamelCsiDP[DpType=13;
GsmScfId = <value>; ServiceKey=0-2147483647; ProvisionState=0,1;
DefaultCallHandling =0,1; CauseValueCritPresent=0,1;
CauseValueCriteriaValList=int,int,int,int,int]
```

**Operations Permitted**

Add, modify, delete, display

**Note:** Not all users (User Groups) are allowed to perform these operations.

**Attributes and Values**

**Table 42: Terminating Busy DP for Camel T-CSIs mandatory attributes**

Attribute	Value Range	Default	Description
DpType	13 (TerminatingBusy)	N/A	Detection Point Value. This indicates which Dp type is provisioned.
GsmScfId	0 to 2147483647	N/A	ID of list containing the CAMEL server addresses.
ServiceKey	0 to 2147483647	0	The Service Key identifies to the gsmSCF the service logic. Different Service Keys may be associated to different Trigger Detection Points (TDPs).

**Table 43: Terminating Busy DP for Camel T-CSIs optional attributes**

Attribute	Value Range	Default	Description
ProvisionState	0,1	0	This flag can be provisioned to indicate the Provision state of a specific Camel CsiDp Data.  <b>Note:</b> Setting this parameter to 0 (not provisioned) doesn't delete the entry provisioned in the database, it simply means that the system won't support this service for the subscriber.

Attribute	Value Range	Default	Description
DefaultCallHandling	0 or 1	0	Default Call Handling indicates whether the call shall be released or continued as requested in case of error in the gsmSSF to gsmSCF dialogue or in case the call is submitted to call gapping in the gsmSSF. A default call handling shall be associated to each Service Key.  0 = Continue call 1 = Release call
CauseValueCritPresent	0 or 1	0	This indicates the presence of Cause Value criteria information.  0 = not present 1 = present
CauseValueCriteriaValList	1-127	NULL	This parameter supports the following: <ul style="list-style-type: none"> <li>• items separated by ‘,’ , no spaces</li> <li>• list of max 5 cause values</li> <li>• each value is an integer within the 1-127 range.</li> </ul>

### CLI Example

```
Subscriptions[]> Subscription[SubscriptionID= <string>]>
SubscriberProfile[HlrServiceProfileID=1]:CamelData[]:CamelCsiData[CsiType
= 2]>add CamelCsiDP[DpType=13; GsmScfId =3;ProvisionState=1; ServiceKey=147;
DefaultCallHandling =1; CauseValueCritPresent=1;
CauseValueCriteriaValList=127,123,115]
```

### Terminating No Answer DP for CAMEL T-CSIs

#### CLI Navigation

```
Subscriptions[ ]> Subscription [SubscriptionID]> SubscriberProfile
[HlrServiceProfileID]>CamelData[ ]> CamelCsiData[CsiType =
2]>CamelCsiDP[DpType=14]
```

#### CLI Inherited Attributes

SubscriptionID, HlrServiceProfileID, CsiType.

### CLI Command Syntax

```
Subscriptions[]> Subscription[SubscriptionID= <string>]>
SubscriberProfile[HlrServiceProfileID =
<string>]:CamelData[]:CamelCsiData[CsiType = 2]>add CamelCsiDP[DpType=14;
GsmScfId = <value>; ServiceKey=0-2147483647; ProvisionState=0,1;
DefaultCallHandling =0,1; CauseValueCritPresent=0,1;
CauseValueCriteriaValList=int,int,int,int,int]
```

### Operations Permitted

Add, modify, delete, display

**Note:** Not all users (User Groups) are allowed to perform these operations.

### Attributes and Values

**Table 44: Terminating No Answer DP for CAMEL T-CSIs mandatory attributes**

Attribute	Value Range	Default	Description
DpType	14 (TerminatingNoAnswer)	N/A	Detection Point Value. This indicates which Dp type is provisioned.
GsmScfId	0 to 2147483647	N/A	ID of list containing the CAMEL server addresses.
ServiceKey	0 to 2147483647	0	The Service Key identifies to the gsmSCF the service logic. Different Service Keys may be associated to different Trigger Detection Points (TDPs).

**Table 45: Terminating No Answer DP for CAMEL T-CSIs optional attributes**

Attribute	Value Range	Default	Description
ProvisionState	0,1	0	This flag can be provisioned to indicate the Provision state of a specific Camel CsiDp Data.  <b>Note:</b> Setting this parameter to 0 (not provisioned) doesn't delete the entry provisioned in the database, it simply means that the system won't support this service for the subscriber.
DefaultCallHandling	0 or 1	0	Default Call Handling indicates whether the call shall be released or continued

Attribute	Value Range	Default	Description
			as requested in case of error in the gsmSSF to gsmSCF dialogue or in case the call is submitted to call gapping in the gsmSSF. A default call handling shall be associated to each Service Key.  0 = Continue call 1 = Release call
CauseValueCritPresent	0 or 1	0	This indicates the presence of Cause Value criteria information.  0 = not present 1 = present
CauseValueCriteriaValList	1-127	NULL	This parameter supports the following: <ul style="list-style-type: none"> <li>• items separated by ‘,’ , no spaces</li> <li>• list of max 5 cause values</li> <li>• each value is an integer within the 1-127 range.</li> </ul>

#### CLI Example

```
Subscriptions[]> Subscription[SubscriptionID= <string>]>
SubscriberProfile[HlrServiceProfileID=1]:CamelData[]:CamelCsiData[CsiType
= 2]>add CamelCsiDP[DpType=14; GsmScfId =2; ServiceKey=147; ProvisionState=1;
DefaultCallHandling =1; CauseValueCritPresent=1; CauseValueCriteriaValList=
127,12,19,121,120]
```

### Terminating Attempt Authorized DP for Camel VT-CSIs

#### CLI Navigation

```
Subscriptions[ ]> Subscription [SubscriptionID]> SubscriberProfile
[HlrServiceProfileID]>CamelData[ ]> CamelCsiData[CsiType =
3]>CamelCsiDP[DpType=12]
```

#### CLI Inherited Attributes

SubscriptionID, HlrServiceProfileID, CsiType.

### CLI Command Syntax

```
Subscriptions[]> Subscription[SubscriptionID= <string>]>
SubscriberProfile[HlrServiceProfileID =
<string>]:CamelData[]:CamelCsiData[CsiType = 3]>add CamelCsiDP[DpType=12;
GsmScfId =<value>; ServiceKey=0-2147483647; ProvisionState=0,1;
DefaultCallHandling =0,1; BasicServiceCritPresent=0,1;
BasicServiceCriteriaTSLList= TS00-TSDF; BasicServiceCriteriaBSList= BS00-BSDF]
```

### Operations Permitted

Add, modify, delete, display

**Note:** Not all users (User Groups) are allowed to perform these operations.

### Attributes and Values

**Table 46: Terminating Attempt Authorized DP for Camel VT-CSIs mandatory attributes**

Attribute	Value Range	Default	Description
<i>DpType</i>	12 (Terminating AttemptAuthorized)	N/A	Detection Point Value. This indicates which Dp type is provisioned.
<i>GsmScfId</i>	0 to 2147483647	N/A	ID of list containing the CAMEL server addresses.
<i>ServiceKey</i>	0 to 2147483647	0	The Service Key identifies to the gsmSCF the service logic. Different Service Keys may be associated to different Trigger Detection Points (TDPs).

**Table 47: Terminating Attempt Authorized DP for Camel VT-CSIs optional attributes**

Attribute	Value Range	Default	Description
ProvisionState	0,1	0	This flag can be provisioned to indicate the Provision state of particular Camel CsiDp Data.  <b>Note:</b> Setting this parameter to 0 (not provisioned) doesn't delete the entry provisioned in the database, it simply means that the system won't support this service for the subscriber.
DefaultCallHandling	0 or 1	0	Default Call Handling indicates whether the call shall be released or continued

Attribute	Value Range	Default	Description
			<p>as requested in case of error in the gsmSSF to gsmSCF dialogue or in case the call is submitted to call gapping in the gsmSSF. A default call handling shall be associated to each Service Key.</p> <p>0 = Continue call 1 = Release call</p>
BasicServiceCrit Present	0 or 1	0	<p>Presence of Basic service criteria information.</p> <p>0 = not present 1 = present</p>
BasicServiceCriteria TSList	TS00, TS10 to TS12 TS20 to TS22 TS60 to TS63 TS70, TS80, TS90 to TS92, TSD0 to TSD9 TSDA to TSDF	NULL	<p>List of Teleservices trigger criteria; Maximum of 5 criteria values.</p> <p><b>Note:</b> the 5 criteria values can be selected from either the TS Criteria List or from the BS Criteria List or from both.</p> <p>This parameter supports the following:</p> <ul style="list-style-type: none"> <li>• items in the lists separated by ', ', no spaces</li> <li>• can not have duplications in the list For example TS00 is "All TS" and will duplicate any other TS</li> <li>• max (TS + BS) = 5</li> </ul>
BasicServiceCriteria BSList	BS00, BS10 to BS19 BS1A to BS1F BS20 to BS29 BS2A to BS2F BS30 to BS36 BS38, BS40, BS48,	NULL	<p>List of Bearer Services trigger criteria;</p> <p>Maximum of 5 criteria values.</p> <p><b>Note:</b> the 5 criteria values can be selected from either the TS Criteria List or from the BS Criteria List or from both.</p> <p>This parameter supports the following:</p> <ul style="list-style-type: none"> <li>• items in the lists separated by ', ', no spaces</li> </ul>

Attribute	Value Range	Default	Description
	BS50, BS58, BS60, BS68, BSD0 to BSD9 BSDA to BSDF		<ul style="list-style-type: none"> <li>can not have duplications in the list For example TS00 is "All TS" and will duplicate any other TS</li> <li>max (TS + BS) = 5</li> </ul>

#### CLI Example

```
Subscriptions[]> Subscription[SubscriptionID= sub-1]>
SubscriberProfile[HlrServiceProfileID=1]:CamelData[]:CamelCsiData[CsiType
= 3]>add CamelCsiDP[DpType=12; GsmScfId =3; ServiceKey=147; ProvisionState=1;
DefaultCallHandling =1; BasicServiceCritPresent=1;
BasicServiceCriteriaTSList=TS11,TS21 ;BasicServiceCriteriaBSList=BS15,BS16]
```

### Terminating Attempt Busy DP for CAMEL VT-CSIs

#### CLI Navigation

```
Subscriptions[ ]> Subscription [SubscriptionID]> SubscriberProfile
[HlrServiceProfileID]>CamelData[ ]> CamelCsiData[CsiType =
3]>CamelCsiData[CsiType
```

#### CLI Inherited Attributes

SubscriptionID, HlrServiceProfileID, CsiType.

#### CLI Command Syntax

```
Subscriptions[]> Subscription[SubscriptionID= <string>]>
SubscriberProfile[HlrServiceProfileID =
<string>]:CamelData[]:CamelCsiData[CsiType = 3]>add CamelCsiDP[DpType=13;
GsmScfId =<value>; ServiceKey=0-2147483647; ProvisionState=0,1;
DefaultCallHandling =0,1; CauseValueCritPresent=0,1;
CauseValueCriteriaValList= int,int,int,int,int]
```

#### Operations Permitted

Add, modify, delete, display

Attributes and Values

Table 48: Terminating Attempt Busy DP for CAMEL VT CSIs mandatory attributes

Attribute	Value Range	Default	Description
DpType	13 (TerminatingBusy)	N/A	Detection Point Value. This indicates which Dp type is provisioned.
GsmScfId	0 to 2147483647	N/A	ID of list containing the CAMEL server addresses.
ServiceKey	0 to 2147483647	0	The Service Key identifies to the gsmSCF the service logic. Different Service Keys may be associated to different Trigger Detection Points (TDPs).

Table 49: Terminating Attempt Busy DP for CAMEL VT CSIs optional attributes

Attribute	Value Range	Default	Description
ProvisionState	0,1	0	This flag can be provisioned to indicate the Provision state of a specific Camel CsiDp Data.  <b>Note:</b> Setting this parameter to 0 (not provisioned) doesn't delete the entry provisioned in the database, it simply means that the system won't support this service for the subscriber.
DefaultCallHandling	0 or 1	0	Default Call Handling indicates whether the call shall be released or continued as requested in case of error in the gsmSSF to gsmSCF dialogue or in case the call is submitted to call gapping in the gsmSSF. A default call handling shall be associated to each Service Key.  0 = Continue call 1 = Release call
CauseValueCritPresent	0 or 1	0	This indicates the presence of Cause Value criteria information.

Attribute	Value Range	Default	Description
			0 = not present 1 = present
CauseValueCriteriaValList	1-127	NULL	This parameter supports the following: <ul style="list-style-type: none"> <li>• items separated by ',' , no spaces</li> <li>• list of max 5 cause values</li> <li>• each value is an integer within the 1-127 range.</li> </ul>

### CLI Example

```
Subscriptions[]> Subscription[SubscriptionID= sub-1]>
SubscriberProfile[HlrServiceProfileID =1]:CamelData[]:CamelCsiData[CsiType
= 3]>add CamelCsiDP[DpType=13; GsmScfId =3;ProvisionState=1; ServiceKey=147;
DefaultCallHandling =1; CauseValueCritPresent=1;
CauseValueCriteriaValList=127,123,115]
```

### Terminating No Answer DP for CAMEL VT-CSIs

#### CLI Navigation

```
Subscriptions[ ]> Subscription [SubscriptionID]> SubscriberProfile
[HlrServiceProfileID]>CamelData[ ]> CamelCsiData[CsiType =
3]>CamelCsiDP[DpType=14]
```

#### CLI Inherited Attributes

SubscriptionID, HlrServiceProfileID, CsiType.

#### CLI Command Syntax

```
Subscriptions[]> Subscription[SubscriptionID= <string>]>
SubscriberProfile[HlrServiceProfileID =
<string>]:CamelData[]:CamelCsiData[CsiType = 3]>add CamelCsiDP[DpType=14;
GsmScfId =<value>; ServiceKey=0-2147483647; ProvisionState=0,1;
DefaultCallHandling =0,1; CauseValueCritPresent=0,1;
CauseValueCriteriaValList=int,int,int,int,int]
```

#### Operations Permitted

Add, modify, delete, display

**Note:** Not all users (User Groups) are allowed to perform these operations.

Attributes and Values

Table 50: Terminating No Answer DP for CAMEL VT-CSIs mandatory attributes

Attribute	Value Range	Default	Description
DpType	14 (TerminatingNoAnswer)	N/A	Detection Point Value. This indicates which Dp type is provisioned.
GsmScfId	0 to 2147483647	N/A	ID of list containing the CAMEL server addresses.
ServiceKey	0 to 2147483647	0	The Service Key identifies to the gsmSCF the service logic. Different Service Keys may be associated to different Trigger Detection Points (TDPs).

Table 51: Terminating No Answer DP for CAMEL VT-CSIs optional attributes

Attribute	Value Range	Default	Description
ProvisionState	0,1	0	This flag can be provisioned to indicate the Provision state of a specific Camel CsiDp Data.  <b>Note:</b> Setting this parameter to 0 (not provisioned) doesn't delete the entry provisioned in the database, it simply means that the system won't support this service for the subscriber.
DefaultCallHandling	0 or 1	0	Default Call Handling indicates whether the call shall be released or continued as requested in case of error in the gsmSSF to gsmSCF dialogue or in case the call is submitted to call gapping in the gsmSSF. A default call handling shall be associated to each Service Key.  0 = Continue call 1 = Release call
CauseValueCritPresent	0 or 1	0	This indicates the presence of Cause Value criteria information.

Attribute	Value Range	Default	Description
			0 = not present 1 = present
CauseValueCriteriaValList	1-127	NULL	This parameter supports the following: <ul style="list-style-type: none"> <li>• items separated by ',' , no spaces</li> <li>• list of max 5 cause values</li> <li>• each value is an integer within the 1-127 range.</li> </ul>

### CLI Example

```
Subscriptions[]> Subscription[SubscriptionID= sub-1]>
SubscriberProfile[HlrServiceProfileID =1]:CamelData[]:CamelCsiData[CsiType
= 3]>add CamelCsiDP[DpType=14; GsmScfId =2; ServiceKey=147; ProvisionState=1;
DefaultCallHandling =1; CauseValueCritPresent=1; CauseValueCriteriaValList=
127,12,19,121,120]
```

### Detection Points for Camel GPRS-CSIs

For Camel GPRS-CSIs (CsiType=4), the following Detection Points can be provisioned through the CamelCsiDP entity, by specifying the DpType:

- Attach (DpType=129)
- AttachChangeOfPosition (DpType=130)
- PdpContextEstablishment (DpType=139)
- PdpContextEstablishmentAck (DpType=140)
- PdpContextChangeOfPosition (DpType=142)

### CLI Navigation

```
Subscriptions[ ]> Subscription [SubscriptionID]> SubscriberProfile
[HlrServiceProfileID]>CamelData[ ]> CamelCsiData[CsiType =
4]>CamelCsiDP[DpType=<see Description>]
```

### CLI Inherited Attributes

SubscriptionID, HlrServiceProfileID, CsiType.

### CLI Command Syntax

```
Subscriptions[]> Subscription[SubscriptionID= <string>]>
SubscriberProfile[HlrServiceProfileID =
<string>]:CamelData[]:CamelCsiData[CsiType = 4]>add CamelCsiDP[DpType= <see
Description>; GsmScfId =<value>; ServiceKey=0-2147483647; ProvisionState=0,1;
DefaultCallHandling =0,1 ]
```

**Operations Permitted**

Add, modify, delete, display

**Note:** Not all users (User Groups) are allowed to perform these operations.

**Attributes and Values**

**Table 52: Detection Points for Camel GPRS-CSIs Mandatory Attributes**

Attribute	Value Range	Default	Description
DpType	129, 130, 139, 140, 142 (see Description)	N/A	To specify Dp type to be provisioned: 129 - Attach 130 - AttachChangeOfPosition 139 - PdpContextEstablishment 140 - PdpContextEstablishmentAck 142 - PdpContextChangeOfPosition
GsmScfId	0 to 2147483647	N/A	ID of list containing the CAMEL server addresses.
ServiceKey	0 to 2147483647	0	The Service Key identifies to the gsmSCF the service logic. Different Service Keys may be associated to different Trigger Detection Points (TDPs).

**Table 53: Detection Points for Camel GPRS-CSIs Optional Attributes**

Attribute	Value Range	Default	Description
ProvisionState	0,1	0	This flag can be provisioned to indicate the Provision state of a specific Camel CsiDp Data.  <b>Note:</b> Setting this parameter to 0 (not provisioned) doesn't delete the entry provisioned in the database, it simply means that the system won't support this service for the subscriber.
DefaultCallHandling	0 or 1	0	Default Call Handling indicates whether the call

Attribute	Value Range	Default	Description
			shall be released or continued as requested in case of error in the gsmSSF to gsmSCF dialogue or in case the call is submitted to call gapping in the gsmSSF. A default call handling shall be associated to each Service Key.  0 = Continue call 1 = Release call

#### CLI Example

```
Subscriptions[]> Subscription[SubscriptionID= sub-1]>
SubscriberProfile[HlrServiceProfileID =1]:CamelData[]:CamelCsiData[CsiType
= 4]>add CamelCsiDP[DpType=129; GsmScfId =2; ServiceKey=147;
ProvisionState=1; DefaultCallHandling =1]
```

### SMS Collected Info Detection Points for Camel OSMS-CSIs

#### CLI Navigation

```
Subscriptions[ ]> Subscription [SubscriptionID]> SubscriberProfile
[HlrServiceProfileID]>CamelData[ ]> CamelCsiData[CsiType =
5]>CamelCsiDP[DpType= 1]
```

#### CLI Inherited Attributes

SubscriptionID, HlrServiceProfileID, CsiType

#### CLI Command Syntax

```
Subscriptions[]> Subscription[SubscriptionID= <string>]>
SubscriberProfile[HlrServiceProfileID =
<string>]:CamelData[]:CamelCsiData[CsiType = 5]>add CamelCsiDP[DpType=1;
GsmScfId = <value>; ServiceKey= 0-2147483647; ProvisionState=0,1;
DefaultCallHandling =0,1 ]
```

#### Operations Permitted

Add, modify, delete, display

**Note:** Not all users (User Groups) are allowed to perform these operations.

Attributes and Values

Table 54: SMS Collected Info Detection Points for Camel OSMS-CSIs Mandatory Attributes

Attribute	Value Range	Default	Description
DpType	1 (SmsCollectedInfo)	N/A	Detection Point Value. This indicates which Dp type is provisioned.
GsmScfId	0 to 2147483647	N/A	ID of list containing the CAMEL server addresses.
ServiceKey	0 to 2147483647	0	The Service Key identifies to the gsmSCF the service logic. Different Service Keys may be associated to different Trigger Detection Points (TDPs).

Table 55: SMS Collected Info Detection Points for Camel OSMS-CSIs Optional Attributes

Attribute	Value Range	Default	Description
<i>ProvisionState</i>	0,1	0	This flag can be provisioned to indicate the Provision state of a specific Camel CsiDp Data.  <b>Note:</b> Setting this parameter to 0 (not provisioned) doesn't delete the entry provisioned in the database, it simply means that the system won't support this service for the subscriber.
<i>DefaultCallHandling</i>	0 or 1	0	Default Call Handling indicates whether the call shall be released or continued as requested in case of error in the gsmSSF to gsmSCF dialogue or in case the call is submitted to call gapping in the gsmSSF. A default call handling shall be associated to each Service Key.  0 = Continue call 1 = Release call

### CLI Example

```
Subscriptions[]> Subscription[SubscriptionID= sub-1]>
SubscriberProfile[HlrServiceProfileID =1]:CamelData[]:CamelCsiData[CsiType
= 5]>add CamelCsiDP[DpType=1; GsmScfId =2; ServiceKey=147; ProvisionState=1;
DefaultCallHandling =1]
```

## Mobility Event List Detection Points for Camel M-CSIs

### CLI Navigation

```
Subscriptions[ ]> Subscription [SubscriptionID]> SubscriberProfile
[HlrServiceProfileID]>CamelData[ ]> CamelCsiData[CsiType =
7]>CamelCsiDP[DpType= 255]
```

### CLI Inherited Attributes

SubscriptionID, HlrServiceProfileID, CsiType.

### CLI Command Syntax

```
Subscriptions[]> Subscription[SubscriptionID= <string>]>
SubscriberProfile[HlrServiceProfileID =
<string>]:CamelData[]:CamelCsiData[CsiType = 7]>add CamelCsiDP[DpType=255;
GsmScfId = <value>; ServiceKey= 0-2147483647; MobilityEventList= <see
description>; ProvisionState=0,1]
```

### Operations Permitted

Add, modify, delete, display

**Note:** Not all users (User Groups) are allowed to perform these operations.

### Attributes and Values

**Table 56: Mobility Event List Detection Points for Camel M-CSIs Mandatory Attributes**

Attribute	Value Range	Default	Description
DpType	255 (MobilityEventList)	N/A	Detection Point Value. This indicates which Dp type is provisioned.
GsmScfId	0 to 2147483647	N/A	ID of list containing the CAMEL server addresses.
ServiceKey	0 to 2147483647	0	The Service Key identifies to the gsmSCF the service logic. Different Service Keys may be associated to different Trigger Detection Points (TDPs).

Attribute	Value Range	Default	Description
MobilityEventList	LUsameVLR LUotherVLR ImsiAttach MsImsiDetach NwImsiDetach	N/A	To provision List of Values for Mobility Event:  1. items separated by ', ', no spaces  2. list of max 5 event values

Table 57: Mobility Event List Detection Points for Camel M-CSIs Optional Attributes

Attribute	Value Range	Default	Description
ProvisionState	0,1	0	This flag can be provisioned to indicate the Provision state of a specific Camel CsiDp Data.  <b>Note:</b> Setting this parameter to 0 (not provisioned) doesn't delete the entry provisioned in the database, it simply means that the system won't support this service for the subscriber.

#### CLI Example

```
Subscriptions[]> Subscription[SubscriptionID= sub-1]>
SubscriberProfile[HlrServiceProfileID = 1]:CamelData[]:CamelCsiData[CsiType
= 7]>add CamelCsiDP[DpType=255; GsmScfId =2; ServiceKey=147;
MobilityEventList =LUotherVLR,MsImsiDetach; ProvisionState=1]
```

### Supplementary Service Event List Detection Points for Camel SS-CSIs

#### CLI Navigation

```
Subscriptions[ ]> Subscription [SubscriptionID]> SubscriberProfile
[HlrServiceProfileID]>CamelData[ ]> CamelCsiData[CsiType =
10]>CamelCsiDP[DpType= 255]
```

#### CLI Inherited Attributes

SubscriptionID, HlrServiceProfileID, CsiType.

#### CLI Command Syntax

```
Subscriptions[]> Subscription[SubscriptionID= <string>]>
SubscriberProfile[HlrServiceProfileID =
```

```
<string>]:CamelData[]:CamelCsiData[CsiType = 10]>add CamelCsiDP[DpType=254;  
GsmScfId =<value>; SsEventList = <see description>; ProvisionState=0,1]
```

### Operations Permitted

Add, modify, delete, display

**Note:** Not all users (User Groups) are allowed to perform these operations.

### Attributes and Values

**Table 58: Supplementary Service Event List Detection Points for Camel SS-CSIs Mandatory Attributes**

Attribute	Value Range	Default	Description
DpType	254 (SupplementaryServiceEvent)	N/A	Detection Point Value. This indicates which Dp type is provisioned.
GsmScfId	0 to 2147483647	N/A	ID of list containing the CAMEL server addresses.
SsEventList	CD ECT MPTY	N/A	This parameter allows to provision a list of values for Supplementary Service Event: <ul style="list-style-type: none"> <li>1. items separated by ',' , no spaces</li> <li>2. list of max 3 event values</li> <li>3. MPTY - Multi Party call</li> </ul> <p>ECT - Explicit Call Transfer</p> <p>CD - Call Deflection</p>

**Table 59: Supplementary Service Event List Detection Points for Camel SS-CSIs Optional Attributes**

Attribute	Value Range	Default	Description
ProvisionState	0,1	0	This flag can be provisioned to indicate the Provision state of a specific Camel CsiDp Data. <p><b>Note:</b> Setting this parameter to 0 (not provisioned) doesn't delete the entry provisioned in the database, it simply means that the system won't support this service for the subscriber.</p>

### CLI Example

```
Subscriptions[]> Subscription[SubscriptionID= sub-1]>  
SubscriberProfile[HlrServiceProfileID =1]:CamelData[]:CamelCsiData[CsiType  
= 10]>add CamelCsiDP[DpType=254; GsmScfId =2; SsEventList =CD,ECT, MPTY;  
ProvisionState=1]
```

## Analyzed Info Detection Points for Camel D-CSIs

### Name

CamelCsiDP\_AnalyzedInfo

### Description

This entity allows you to provision CamelCsiDP\_AnalyzedInfo Information with Destination Number Criterias for Camel D-CSIs.

### CLI Navigation

```
Subscriptions[ ]> Subscription [SubscriptionID]> SubscriberProfile  
[HlrServiceProfileID]>CamelData[ ]> CamelCsiData[CsiType = 6]>  
CamelCsiDP_AnalyzedInfo[ ]
```

### CLI Inherited Attributes

SubscriptionID, HlrServiceProfileID, CsiType.

### CLI Command Syntax

```
Subscriptions[]> Subscription[SubscriptionID= <string>]>  
SubscriberProfile[HlrServiceProfileID =  
<string>]:CamelData[]:CamelCsiData[CsiType = 6]>add CamelCsiDP_AnalyzedInfo  
[GsmScfId =<value>; ServiceKey=0-2147483647;DstNumber = <see description>;  
ProvisionState=0,1; DefaultCallHandling =0,1; DstNumberNAI=0,1]
```

### Operations Permitted

Add, modify, delete, display

### Note:

- Maximum 10 CamelCsiDP\_AnalyzedInfo entries are allowed.
- DstNumber is a Key and cannot be modified. To Modify DstNumber, the entry must be recreated (deleted and added as a new entry).

Attributes and Values

Table 60: CamelCsiDP\_AnalyzedInfo mandatory attributes

Attribute	Value Range	Default	Description
CamelCsiDP_AnalyzedInfo	CamelCsiDP_AnalyzedInfo	N/A	Dp Type with unique possible value.
GsmScfId	0 to 2147483647	N/A	ID of list containing the CAMEL server addresses.
ServiceKey	0 to 2147483647	0	The Service Key identifies to the gsmSCF the service logic. Different Service Keys may be associated to different Trigger Detection Points (TDPs).
DstNumber	String 1-15 digits	N/A	Destination number. The Destination numbers defined in the subscriber's instances of DP_Analyzed_Info must not overlap (for example 0800 and 080012 not allowed)

Table 61: CamelCsiDP\_AnalyzedInfo optional attributes

Attribute	Value Range	Default	Description
ProvisionState	0,1	0	This flag can be provisioned to indicate the Provision state of a specific Camel CsiDp Data.  <b>Note:</b> Setting this parameter to 0 (not provisioned) doesn't delete the entry provisioned in the database, it simply means that the system won't support this service for the subscriber.
DefaultCallHandling	0 or 1	0	Default Call Handling indicates whether the call shall be released or continued as requested in case of error in the gsmSSF to gsmSCF dialogue or in case the call is submitted to call gapping in the gsmSSF. A default call handling shall be associated to each Service Key.

Attribute	Value Range	Default	Description
			0 = Continue call 1 = Release call
DstNumberNAI	0 (International) 1 (National)	0	This flag can be provisioned to indicate Nature of Address

#### CLI Example

```
Subscriptions[]> Subscription[SubscriptionID= sub-1]>
SubscriberProfile[HlrServiceProfileID = 1]:CamelData[]:CamelCsiData[CsiType
= 6]>add CamelCsiDP_AnalyzedInfo [GsmScfId =2; DstNumber =123456789012345;
ServiceKey=147; ProvisionState=1; DefaultCallHandling =1; DstNumberNAI=0]
```

### Detection Points for Camel U-CSIs

#### Name

CamelCsiDP\_Ussd

#### Description

This entity allows you to provision CamelCsiDP\_Ussd for Camel U-CSIs.

#### CLI Navigation

```
Subscriptions[ ]> Subscription [SubscriptionID]> SubscriberProfile
[HlrServiceProfileID]>CamelData[ ]> CamelCsiData[CsiType = 8]>
CamelCsiDP_Ussd[ ]
```

#### CLI Inherited Attributes

SubscriptionID, HlrServiceProfileID, CsiType

#### CLI Command Syntax

```
Subscriptions[]> Subscription[SubscriptionID= <string>]>
SubscriberProfile[HlrServiceProfileID =
<string>]:CamelData[]:CamelCsiData[CsiType = 8]>add CamelCsiDP_Ussd [GsmScfId
=<value>; ServiceCode=1-999; ProvisionState=0,1]
```

#### Operations Permitted

Add, modify, delete, display

Attributes and Values

Table 62: CamelCsiDP\_Ussd attributes

Mandatory Attributes			
Attribute	Value Range	Default	Description
CamelCsiDP_Ussd	CamelCsiDP_Ussd	N/A	Dp Type with unique possible value.
GsmScfId	0 to 2147483647	N/A	ID of list containing the CAMEL server addresses.
ServiceCode	1 to 999	N/A	Service Code. This must be unique.

Table 63: CamelCsiDP\_Ussd attributes

Optional Attributes			
Attribute	Value Range	Default	Description
ProvisionState	0,1	0	This flag can be provisioned to indicate the Provision state of a specific Camel CsiDp Data.  <b>Note:</b> Setting this parameter to 0 (not provisioned) doesn't delete the entry provisioned in the database, it simply means that the system won't support this service for the subscriber.

CLI Example

```
Subscriptions[]> Subscription[SubscriptionID= sub-1]>
SubscriberProfile[HlrServiceProfileID = 1]:CamelData[]:CamelCsiData[CsiType
= 8]>add CamelCsiDP_Ussd [GsmScfId =2; ServiceCode=147; ProvisionState=1]
```

## Closed User Group (CUG) Basic Service

### Closed User Group Basic Service

Name

CugBasicService

**Description**

To provision Basic Service permissions for communication between subscribers in a Closed User Group.

**CLI Navigation**

```
Subscriptions[ ]> Subscription [SubscriptionID]> SubscriberProfile
[HlrServiceProfileID]> CugBasicService
```

**CLI Inherited Attributes**

SubscriptionID, HlrServiceProfileID.

**CLI Command Syntax**

```
Subscriptions[]> Subscription[SubscriptionID= <string>]>
SubscriberProfile[HlrServiceProfileID = <string>]>add CugBasicService
[CugProvisionStatus = 0,1; CugBearerServList = BSxx; CugTeleServList = TSxx]
```

**Operations Permitted**

Add, modify, delete, display

**Table 64: CugBasicService attributes**

Optional Attributes			
Attribute	Value Range	Default	Description
CugProvision- Status	0 or 1	0	Closed User Group service status 0= not provisioned 1= provisioned.
CugBearer- ServList	BS20 to BS29 BS2A to BS2F BS30 to BS36 BS38	N/A	Bearer services for Closed User Group. BS20=All Pad Access CA services BS21=Data PDS CA 300bps BS22=Data PDS CA 1200bps BS23=Data PDS CA 1200-75bps BS24=Data PDS CA 2400bps BS25=Data PDS CA 4800bps BS26=Data PDS CA 9600bps BS27= General PAD Access CA BS28=All Data PDS Services BS29-BS2B=Unspecified

Optional Attributes			
Attribute	Value Range	Default	Description
			BS2C=Data PDS 2400bps BS2D=Data PDS 4800bps BS2E=Data PDS 9600bps BS2F=General Data PDS Services BS30=All Alternate Speech CDA BS31-BS36=Unspecified BS37=Undefined BS38=All Alternate Speech CDS
CugTele-ServList	TS11, TS60 to TS63 TS91, TS92	N/A	Teleservices for Closed User Group. TS11=Speech (Telephony) TS60=All Facsimile Services TS61=Facsimile Services (Alternate Speech and Facsimile Group 3) TS62=Facsimile Services (Automatic Facsimile Group 3) TS63= Facsimile Services (Facsimile Group 4) TS91=Voice Group Services (Voice Group Call Service) TS92=Voice Group Services (Voice Broadcast Service)

**CLI Example**

```
Subscriptions[]> Subscription[SubscriptionID= sub-1]>
SubscriberProfile[HlrServiceProfileID =1]>add CugBasicService
[CugProvisionStatus = 1; CugBearerServList = BS21; CugTeleServList = TS11]
```

**Closed User Group Features**

**Name**

CugFeature

**Description**

To provision service capabilities for a Closed User Group.

**CLI Navigation**

```
Subscriptions[ ]> Subscription [SubscriptionID]> SubscriberProfile
[HlrServiceProfileID]> CugFeature
```

**CLI Inherited Attributes**

SubscriptionID, HlrServiceProfileID.

**CLI Command Syntax**

```
Subscriptions[ ]> Subscription[SubscriptionID= <string>]>
SubscriberProfile[HlrServiceProfileID = <string>] >add CugFeature[BsgId =
1,6,7,8,12; InterCugRestriction = 0-3; PreferentialCugIndex = integer]
```

**Operations Permitted**

Add, modify, delete, display

**Attributes and Values**

**Table 65: CugFeature attributes**

Mandatory Attributes			
Attribute	Value Range	Default	Description
BsgId	1 (Speech), 6 (Facsimile Services), 7 (AllDataCircuit Asynchronous), 8 (AllDataCircuit Synchronous), 12 (VoiceGroup Services)	N/A	BsgId identifies the service capabilities for a subscriber, as defined in TeleServiceList and BearerServiceList fields, into five groups as follows:  1=Speech (TS11)  6=Facsimile Services (TS6x)  7=All Data Circuit Asynchronous (BS10)  8=All Data Circuit Synchronous (BS18)  12=Voice group service (TS91, TS92)

**Table 66: CugFeature attributes**

Optional Attributes			
Attribute	Value Range	Default	Description
InterCug-Restriction	0 (CugOnly) 1 (CugAnd OutgoingAccess)	0	Service restrictions between Closed User Groups, applied to a specific subscriber.

Optional Attributes			
Attribute	Value Range	Default	Description
	2 (CugAnd IncomingAccess) 3 (CugAnd IncomingAccess AndOutgoing Access)		0=CUG only (no Incoming Access (IA), no Outgoing Access (OA)) 1=CUG + Outgoing Access (OA) 2=CUG + Incoming Access (IA) 3=CUG + IA + OA
Preferential-CugIndex	0 to 32767	0	A CugIndex which the network uses as a default to identify the required CUG in the absence of any CUG information in the outgoing call request. The PreferentialCugIndex applies to a particular subscriber and not to a specific CUG.

#### CLI Example

```
Subscriptions[]> Subscription[SubscriptionID= sub-1]>
SubscriberProfile[HlrServiceProfileID=1]>add CugFeature[BsgId = 1;
InterCugRestriction = 1; PreferentialCugIndex = 22653]
```

## Closed User Group Subscription

#### Name

CugSubscription

#### Description

To provision a subscriber's membership to a specific Closed User Group.

#### CLI Navigation

```
Subscriptions[ ]> Subscription [SubscriptionID]> SubscriberProfile
[HlrServiceProfileID]> CugSubscription
```

#### CLI Inherited Attributes

SubscriptionID, HlrServiceProfileID.

#### CLI Command Syntax

```
Subscriptions[]> Subscription[SubscriptionID= <string>]>
SubscriberProfile[HlrServiceProfileID = <string>]>add
CugSubscription[CugInterLock = text; CugIndex = integer; IntraCugOption =
0-2; BsgList = text]
```

**Operations Permitted**

Add, modify, delete, display

**Attributes and Values**

**Table 67: CugSubscription attributes**

Mandatory Attributes			
Attribute	Value Range	Default	Description
CugInterLock	8 or more digits and/or letters	N/A	CUG membership ID within the network. Maximum of 10 memberships per subscriber.

**Table 68: CugSubscription attributes**

Optional Attributes			
Attribute	Value Range	Default	Description
CugIndex	0 to 32767	0	Parameter used by the calling user to select a particular CUG when originating a call. Also used by the network to indicate to the called user the CUG from which an incoming call has originated.
IntraCug-Option	0 (NoRestriction), 1 (Incoming CallBarred), 2 (Outgoing CallBarred)	0	Service options for users within a Closed User Group: 0=no CUG restriction 1=Incoming Calls (IC) barred 2=Outgoing Calls (OC) barred
BsgList	None, some or all of: Speech, FacsimileServices, AllDataCircuit Asynchronous, AllDataCircuit Synchronous,	Null	List of Basic Call Group service identifications, corresponding to CugBearerServList and CugTeleServList.

Optional Attributes			
Attribute	Value Range	Default	Description
	VoiceGroup Services		

### CLI Example

```
Subscriptions[]> Subscription[SubscriptionID= Sub-1]>
SubscriberProfile[HlrServiceProfileID=1]> Add CugSubscription [CugInterLock
= A100; CugIndex = 1234; IntraCugOption = 1; BsgList = Speech]
```

## GPRS Services

### Name

GprsContext

### Description

To provision the General Packet Radio Service (GPRS) parameters for a subscriber.

### CLI Navigation

```
Subscriptions[ ]> Subscription [SubscriptionID]> SubscriberProfile
[HlrServiceProfileID]> GprsContext
```

### CLI Inherited Attributes

SubscriptionID, HlrServiceProfileID.

### CLI Command Syntax

```
Subscriptions[]> Subscription[SubscriptionID= <string>]>
SubscriberProfile[HlrServiceProfileID = <string>]> GprsContext [PdpContextId
= 1-50; AccessPointName = text; PdpType = X25,PPP,OspIhoss,IPv4,IPv6;
PdpAddress = text; VplmnAddressAllowed = 0,1; QosDelayClass = 1-4;
QosReliabilityClass = 1-5; QosPeakThroughput = 1-9; QosPrecedenceClass =
1-3; QosMeanThroughput = 1-18,31; PdpChargingCharacteristics =
HotBilling,FlatRate,Prepaid,Normal; QosAllocationRetentionPriority = 1-3;
QosTrafficClass = 0-4; QosDeliveryErroneousSDU = 0-3; QosMaxSDUSize = 0-1520
; QosDeliveryOrder = 0-2; QosMaxBitRateDown =0-16000; QosMaxBitRateUp =
0-8400; QosResidualBER = Unknown,5E-2,1E-2,5E-3,4E-3,1E-3,1E-4,1E-5,1E-6,6E-8
; QosSDUErrorRatio = Unknown,1E-2,7E-3,1E-3,1E-4,1E-5,1E-6,1E-1;
QosTransferDelay = 10-4000; QosTrafficHandlingPriority = 0-3;
QosGuaranteedBitRateUp = 0-8400; QosGuaranteedBitRateDown = 0-16000;
QosSignallingIndication = 0-1]
```

```
Subscriptions[]> Subscription[SubscriptionID= <string>]>
SubscriberProfile[HlrServiceProfileID = <string>]> GprsContext [PdpContextId
```

```
= 1-50; AccessPointName = text; PdpType = X25,PPP,OspIhoss,IPv4,IPv6;
PdpAddress = text; VplmnAddressAllowed = 0,1; QosDelayClass = 1-4;
QosReliabilityClass = 1-5; QosPeakThroughput = 1-9; QosPrecedenceClass =
1-3; QosMeanThroughput = 1-18,31; PdpChargingCharacteristics =
HotBilling,FlatRate,Prepaid,Normal; QosAllocationRetentionPriority = 1-3;
QosTrafficClass = 0-4; QosDeliveryErroneousSDU = 0-3; QosMaxSDUSize = 0-1520
; QosDeliveryOrder = 0-2; QosMaxBitRateDown =0-256000; QosMaxBitRateUp =
0-256000; QosResidualBER =
Unknown,5E-2,1E-2,5E-3,4E-3,1E-3,1E-4,1E-5,1E-6,6E-8,Reserved;
QosSDUErrorRatio = Unknown,1E-2,7E-3,1E-3,1E-4,1E-5,1E-6,1E-1,Reserved;
QosTransferDelay = 10-4000; QosTrafficHandlingPriority = 0-3;
QosGuaranteedBitRateUp = 0-256000; QosGuaranteedBitRateDown = 0-256000;
QosSignallingIndication = 0-1]
```

**Operations Supported**

Add, modify, delete, display

**Attributes and Values**

**Table 69: GprsContext mandatory attributes**

Attribute	Value Range	Default	Description
PdpContextId	1 to 50	N/A	Index of the PDP context. Each Imsi can have up to 50 PDP contexts.
AccessPointName	up to 63 digits and/or letters	N/A	A label according to DNS naming conventions describing the access point to the external packet data network. Access Point Name (APN) in the HLR contains either only an APN Network Identifier (i.e., an APN without APN Operator Identifier) or the wild card value (indicates that the user may select an APN that is not stored in the HLR).  <b>Note:</b> Do not use the following characters in the AccessPointName: _ , ; , & , > , < , ' , \ ,   , @ , ! , { , [ , ~ , # , % , ^ , ( , ) , + , " , ' .

**Table 70: GprsContext optional attributes**

Attribute	Value Range	Default	Description
PdpType	0 (X25), 1 (PPP), 2 (OspIhoss), 33 (IPv4), 87 (IPv6)	87 (IPv6)	PDP Type indicates which type of protocol is used by the MS for a certain service.
PdpAddress	up to 127 digits and/or letters	N/A	PDP Address holds the address of the MS for a certain service, i.e., an IP or

Attribute	Value Range	Default	Description
	(including the character ".")		X.121 address. If dynamic addressing is allowed, PDP Address is empty in the HLR.
VplmnAddress-Allowed	0 or 1	0	VPLMN Address Allowed specifies whether the MS is allowed to use a dynamic address allocated in any VPLMN.  0 = not allowed 1 = allowed
QosDelayClass	1 (DelayClass1), 2 (DelayClass2), 3 (DelayClass3), 4 (BestEffort-DelayClass4)	4	The delay incurred in end-to-end transmission of Service Data Units through the GPRS networks.
QosReliability-Class	1 (AckGtpLlcRlc ProtData), 2 (UnackGtpAck LlcRlc ProtData), 3 (UnackGtpLlcAckRlc ProtData), 1 (UpTo1K-octetPerS) 4 (UnackGtpLlcRlc ProtData), 5 (UnackGtpLlcRlc UnprotData)	2	Defines the probability of loss, duplication, missequencing or corruption of Service Data Units.
QosPeak-Throughput	1 (UpTo1KoctetPerS) 2 (UpTo2KoctetPerS) 3 (UpTo4KoctetPerS) 4 (UpTo8KoctetPerS) 5 (UpTo16KoctetPerS) 6 (UpTo32KoctetPerS) 7 (UpTo64KoctetPerS) 8 (UpTo128Koctet PerS)	1	Maximum rate at which data is expected to be transferred across the network.  Transfer rate = octets per second  <b>Note:</b> The QosPeakThroughput is the binary representation of the peak throughput class. If the Network Operator changes the values of the QosMaxBitRateUp, QosMaxBitRateDown, QosGuaranteedBitRateUp or QosGuaranteedBitRateDown then the

Attribute	Value Range	Default	Description
	9 (UpTo256KoctetPerS)		value of the QosPeakThroughput is generated by the ngHLR using rules specified in the 3GPP TS 24.008 V8.13.0 (2011-03) standard.
QosPrecedence-Class	1 (HighPriority), 2 (NormalPriority), 3 (LowPriority)	2	Indicates relative importance of maintaining the service commitments under abnormal conditions.
QosMean-Throughput	1 (100octetPerH), 2 (200octetPerH), 3 (500octetPerH), 4 (1KoctetPerH), 5 (2KoctetPerH), 6 (5KoctetPerH), 7 (10KoctetPerH), 8 (20KoctetPerH), 9 (50KoctetPerH), 10 (100KoctetPerH), 11 (200KoctetPerH), 12 (500KoctetPerH), 13 (1MoctetPerH), 14 (2MoctetPerH), 15 (5MoctetPerH), 16 (10MoctetPerH), 17 (20MoctetPerH), 18 (50MoctetPerH), 31 (BestEffort)	31	The average rate which data is expected to be transferred across the GPRS network during the remaining lifetime of an activated PDP context.  Transfer rate = octets per hour
PdpCharging-Characteristics	None, some or all of: HotBilling, FlatRate, Prepaid, Normal	NULL	The charging methods to be used for this PDP context.
QosAllocationRetentionPriority	1 (HighPriority), 2 (NormalPriority),	2	Specifies the relative importance compared to other UMTS bearers for allocation and retention of the UMTS

Attribute	Value Range	Default	Description
	3 (LowPriority)		bearer. The Allocation/Retention Priority attribute is a subscription attribute which is not negotiated from the mobile terminal, but the value might be changed either by the SGSN or the GGSN network element.
QoSTrafficClass	0 (Unknown), 1 (Conversational), 2 (Streaming), 3 (Interactive), 4 (Background)	0	<p>UMTS QoS classes, also referred to as traffic classes. The main distinguishing factor between these QoS classes is how delay sensitive the traffic is: Conversational class is meant for traffic which is very delay sensitive while Background class is the most delay insensitive traffic class.</p> <p>Conversational and Streaming classes are mainly intended to be used to carry real-time traffic flows. Conversational real-time services, like video telephony, are the most delay sensitive applications and those data streams should be carried in Conversational class.</p> <p>Interactive class and Background are mainly meant to be used by traditional Internet applications like WWW, Email, Telnet, FTP and News.</p> <p>It is the type of application for which the UMTS bearer service is optimized. By including the traffic class itself as an attribute, UMTS can make assumptions about the traffic source and optimize the transport for that traffic type.</p>
QoSDeliveryErroneousSDU	0 (Unknown), 1 (NoDetect), 2 (Yes), 3 (No)	0 (Unknown)	<p>Indicates whether SDUs detected as erroneous shall be delivered or discarded.</p> <p>'yes' = the error detection is employed and that erroneous SDUs are delivered together with an error indication.</p> <p>'no' = the error detection is employed and that erroneous SDUs are discarded.</p> <p>Otherwise, the SDUs are delivered without considering error detection.</p>

Attribute	Value Range	Default	Description
QosMaxSDUSize	Unsigned integer (0 to 1520)	N/A	the maximum SDU size for which the network shall satisfy the negotiated QoS. The maximum SDU size is used for admission control and policing and/or optimizing transport.
QosDelivery Order	0 (Unknown), 1 (Yes), 2 (No)	0	indicates whether the UMTS bearer shall provide in-sequence SDU delivery or not.  Delivery order should be set to 'no' for PDP Type = 'IPv4' or 'IPv6'
QosMaxBitRate Down	Unsigned integer (0 to 16 000 kbits/sec)	N/A	Maximum number of bits delivered by UMTS and to UMTS at a SAP within a period of time, divided by the duration of the period.
QosMaxBitRateUp	Unsigned integer (0 to 8400 kbits/sec)	N/A	Maximum bitrate used to make code reservations in the uplink of the radio interface.
QosResidualBER	0 (Unknown), 1 (5E-2), 2 (1E-2), 3 (5E-3), 4 (4E-3), 5 (1E-3), 6 (1E-4), 7 (1E-5), 8 (1E-6), 9 (6E-8)	0	Indicates the undetected bit error ratio in the delivered SDUs. If no error detection is requested, Residual bit error ratio indicates the bit error ratio in the delivered SDUs.
QosSDUError Ratio	0 (Unknown), 1 (1E-2), 2 (7E-3), 3 (1E-3), 4 (1E-4), 5 (1E-5), 6 (1E-6), 7 (1E-1)	0	Indicates the fraction of SDUs lost or detected as erroneous. SDU error ratio is defined only for conforming traffic.
QosTransfer Delay	Unsigned integer (10 to 4 000)	N/A	Indicates the maximum delay for 95 <sup>th</sup> percentile of the distribution of delay

Attribute	Value Range	Default	Description
			for all delivered SDUs during the lifetime of a bearer service, where delay for an SDU is defined as the time from a request to transfer an SDU at one SAP to its delivery at the other SAP.
QoSTraffic Handling Priority	0 (Unknown), 1 (Level1), 2 (Level2), 3 (Level3)	0	Specifies the relative importance for handling of all SDUs belonging to the UMTS bearer compared to the SDUs of other bearers.
QoSGuaranteed BitRateUp	Unsigned integer (0 to 8400)	N/A	Describes the bitrate the UMTS bearer service shall guarantee to the user or application during the upload.
QoSGuaranteed BitRateDown	Unsigned integer (0 to 16 000)	N/A	Describes the bitrate the UMTS bearer service shall guarantee to the user or application during the download.
QoSSignalling Indication	0 (NonOptimized), 1 (Optimized)	0	Indicates the signalling nature of the submitted SDUs. This attribute is additional to the other QoS attributes and does not over-ride them. This attribute is only defined for the interactive traffic class. If signalling indication is set to 'Optimized', the UE should set the traffic handling priority to '1'.

**CLI example** (version 99 is used as an example)

```
Subscriptions[]> Subscription[SubscriptionID= sub-1]>
SubscriberProfile[HlrServiceProfileID=1]>add GprsContext [PdpContextId =
1; AccessPointName = mcc.mnn.gprs; PdpType = PPP; PdpAddress =
192.168.10.100; VplmnAddressAllowed = 1; QoSAllocationRetentionPriority=
HighPriority ; QoSTrafficClass = Conversational; QoSDeliveryErroneousSDU =
NoDetect ; QoSMaxSDUSize =1000 ; QoSDeliveryOrder =Yes; QoSMaxBitRateDown
=10000; QoSMaxBitRateUp =5000; QoSResidualBER =5E-2; QoSSDUErrorRatio =1E-2;
QoSTransferDelay =1000 ; QoSTrafficHandlingPriority =Level1;
QoSGuaranteedBitRateUp =2500; QoSGuaranteedBitRateDown =8000;
QoSSignallingIndication =Optimized]
```

```
Subscriptions[]> Subscription[SubscriptionID= sub-1]>
SubscriberProfile[HlrServiceProfileID=1]>add GprsContext [PdpContextId =
1; AccessPointName = mcc.mnn.gprs; PdpType = PPP; PdpAddress =
192.168.10.100; VplmnAddressAllowed = 1; QoSAllocationRetentionPriority=
HighPriority ; QoSTrafficClass = Conversational; QoSDeliveryErroneousSDU =
NoDetect ; QoSMaxSDUSize =1000 ; QoSDeliveryOrder =Yes; QoSMaxBitRateDown
=10000; QoSMaxBitRateUp =5000; QoSResidualBER =1; QoSSDUErrorRatio =1;
```

```
QosTransferDelay =1000 ; QosTrafficHandlingPriority =Level1;
QosGuaranteedBitRateUp =2500; QosGuaranteedBitRateDown =8000;
QosSignallingIndication =Optimized]
```

## MSISDN Provisioning

### Msisdn

#### Name

MSISDN

#### Description

This entity allows to define MSISDN(s) for a specific Subscription. Multiple MSISDNs can be defined for one subscription.

#### CLI Navigation

```
Subscriptions[ ]> Subscription [SubscriptionID]> MSISDN
```

#### Inherited Attribute

SubscriptionID.

#### CLI Command Syntax

```
Subscriptions[ ]> Subscription[SubscriptionID= <string>]>add MSISDN[MsIsdn
= integer; Published = 0,1; DefaultBsg=0,1,2,6,7,8,12 ;BsgOverride=0,1;
BearerCapName=vchar; PortingStatus=0,1,2; Shared=0,1; ForceToSip=0,1];
SriTemplateId=integer; SmsTemplateId=0]
```

#### Operations Permitted

Add, modify, display.

#### Attributes and Values.

Table 71: MSISDN mandatory attributes

Attribute	Value Range	Default	Description
MsIsdn	up to 15 digits	N/A	MS international PSTN/ISDN number=Country Code (CC) + National (significant) mobile number (National Destination Code (NDC) + Subscriber Number (SN)). National format not supported.

Table 72: MSISDN optional attributes

Attribute	Value Range	Default	Description
BearerCapName	Varchar (15)	N/A	Identifier of the Bearer Capabilities information.
Published	0 or 1	0	<p>The Alternate MsIsdn flag defines whether SRIs for a given MSISDN are accepted or rejected by the Tekelec ngHLR. The Tekelec ngHLR rejects MT calls to unpublished multipleAlternate MsIsdns and allows MT calls to be received for published MSISDNs. An “Unpublished” Alternate multiple MsIsdn also prevents such MSISDNs from being displayed in the ISD message.</p> <p>0= the multipleAlternate MsIsdn is unpublished.</p> <p>1= the multipleAlternate MsIsdn is published.*</p> <p>This attribute is mandatory only if:</p> <ul style="list-style-type: none"> <li>- In the case that a Subscriber has multiple alternate MsIsdns that are the same, they all have to be either published or not published. One cannot be published and the other one unpublished.</li> <li>- multiple MSISDNs are the same for the AltMsIsdn is the same as the Primary MsIsdn of this subscriber and the entered value must be published.</li> </ul>
DefaultBsg	0 None 1 Speech 2 ShortMessage Service 6 FacsimileServices 7 AllDataCircuit Asynchronous 8 AllDataCircuit Synchronous 12 VoiceGroup Services	0 None	<p>The Tekelec ngHLR uses this default BSG for basic and supplementary service validation and to invoke SS when handling the SRI request, in either one of these situations:</p> <ul style="list-style-type: none"> <li>-When the SRI message doesn’t include the Network Signaling Information.</li> <li>- When the SRI message includes the Network Signaling Information and</li> <li>- The “BsgOverride” flag is set to On (1=True) or the BSG derivation is not possible.</li> </ul>

Attribute	Value Range	Default	Description
			If the "DefaultBsg" attribute is not provisioned, the value used for the default BSG corresponds to SPEECH.
BsgOverride	0,1	0 (Off)	<p>This attribute represents a flag that indicates whether the Tekelec ngHLR needs to:</p> <p>bypass the analysis of the Network Signaling Information, retrieved from the SRI message, and take the BSG directly from the value provisioned in the Tekelec ngHLR's "DefaultBsg" attribute. The Tekelec ngHLR takes on this behavior if the BsgOverride parameter is set to 0 (Off).</p> <p>analyse the Network Signaling Information retrieved from the SRI message in order to derive a BSG. The Tekelec ngHLR takes on this behavior if the BsgOverride parameter is set to 1 (On).</p>
PortingStatus	0 (NotPortedOut) 1 (PortedOut) 2 (PortedIn)	0 (Not PortedOut)	Porting status of the MSISDN.
Shared	Bool	0	<p>This parameter indicates whether the MSISDN can be shared or not by other mobiles/SIMs.</p> <p>1: The MSISDN can be shared by different SIMs.</p> <p>0: The MSISDN cannot be shared by different SIMs.</p> <p>Provisioning TIP:</p> <p><b>Note:</b> Changing the 'Shared' flag of a subscription's MSISDN from '1' (MSISDN shared) to '0' (MSISDN not shared) will not be accepted by the Tekelec ngHLR's provisioning process if this MSISDN is used by another mobile/SIM. The Network Operator must first make sure that no MSISDN-IMSI association uses the MSISDN that will be changed to "not shared".</p>

Attribute	Value Range	Default	Description
ForceToSip	Bool (0 or 1)	0	<p>This parameter indicates whether or not the Tekelec ngHLR must follow the procedures to perform SimRing.</p> <p>0: The Tekelec ngHLR doesn't perform the SimRing solution when receiving a voice call for this MSISDN.</p> <p>1: The MSISDN is considered the "Main" MSISDN and the Tekelec ngHLR skips the normal SRI procedure in order to perform the SimRing solution upon reception of a voice call for this "Main" MSISDN. The Tekelec ngHLR retrieves the user's VoIP Directory Number and sends back a SRI-ack with the VoIP DN in order to transfer the call processing to the SIP Domain.</p> <p>See more details of the Tekelec ngHLR's behavior for the SimRing solution in the SDM Product Description's "SIP based SimRing" section.</p>
SriTemplateId	Integer	Null	<p>Template ID for SRI, SRI-LCS, and ATI</p> <p>Null: No template set, use the system level setting.</p>
SmsTemplateId	Integer	0	<p>Template ID for SMS (SRI-SM)</p> <p>When the SDM receives an MT-SMS message it will check the MSISDN table to see if there is an SmsTemplateId. If one is present then it will use it. If the SmsTemplateId has a value of 0 that means no template is available. The SDM then checks the Subscriber Profile for an SmsTemplateId and uses the one provisioned there.</p>

\*

**Note:** The MSISDN that will be defined as the Primary MSISDN in the MsIsdnImsiProfileAssociation entity, must be set to Published (Published=1).

### CLI Example

```
Subscriptions[]> Subscription[SubscriptionID= Sub-1]> Add MSISDN[MsIsdn =  
15148881111; Published = 0; DefaultBsg=0;BsgOverride=1;  
BearerCapName=Bearer1;SriTemplateId=0; SmsTemplateId=0]
```

## MSISDN-IMSI Profile Association

### Name

MsIsdnImsiProfileAssociation

### Description

This entity allows the operator to provision the Multi-IMSI feature by defining the following for each subscriber (SubscriptionID) and HLR subscriber profile (HlrServiceProfileID)\*:

- MSISDN-IMSI couples.
- The Primary MSISDN-IMSI couple.
- Whether the Alternate MSISDN can be displayed or not.

\*

**Note:** In the current release, a subscriber (SubscriptionID) can only have one single HLR subscriber profile (HlrServiceProfileID).

### CLI Navigation

```
Subscriptions[ ]> Subscription [SubscriptionID]> SubscriberProfile  
[HlrServiceProfileID]> MsIsdnImsiProfileAssociation
```

### CLI Inherited Attributes

SubscriptionID, HlrServiceProfileID

### CLI Command Syntax

```
Subscriptions[]> Subscription[SubscriptionID= <string>]>  
SubscriberProfile[HlrServiceProfileID = <string>]> Add  
MsIsdnImsiProfileAssociation[imsi = Integer; MsIsdn = integer;Deferred  
=0,1;Displayed =0,1; Reachable =0,1]
```

### Operations Permitted

Add, display, delete, modify.

**Note:** Not all users (User Groups) are allowed to perform these operations.

Attributes and Values

Table 73: MsIsdnImsiProfileAssociation Mandatory Attributes

Attribute	Value Range	Default	Description
Imsi	5 to 15 digits	N/A	<p>IMSI that can be used by the subscriber's SIM card. The IMSI can be a Primary (used in the Home PLMN) or Alternate IMSI (used in a Visited PLMN).</p> <p>Multiple MSISDN-IMSI couples can have identical Alternate IMSIs.</p> <p>Subscriber's MSISDN number that can be used by the subscriber's SIM card. The MSISDN can be used in the Home PLMN or used in a Visited PLMN. be a Primary (used in the Home PLMN) or Alternate MSISDN (used in a Visited PLMN).</p>
MsIsdn	up to 15 digits	N/A	<p>MS international PSTN/ISDN number=Country Code (CC) + National (significant) mobile number (National Destination Code (NDC) + Subscriber Number (SN)). National format not supported.</p> <p>Multiple MSISDN-IMSI couples can have identical Alternate MSISDNs. These Alternate MSISDNs can be different or the same as the Primary MSISDN.</p> <p>Multiple alternate MSISDNs can be associated to the same alternate IMSI. Multiple alternate MSISDNs can be associated to the same Primary IMSI.</p> <p><b>Provisioning Tips:</b></p> <ul style="list-style-type: none"> <li>-The displayed MSISDN must be added first in MsIsdnImsiProfileAssociation entity.</li> <li>-The displayed MSISDN must be removed last when deleting an entry from the MsIsdnImsiProfileAssociation entity.</li> </ul>

Table 74: MsIsdnImsiProfileAssociation optional attributes

Attribute	Value Range	Default	Description
Deferred	0 or 1	0	This parameter indicates whether the execution of the SIM-swap operation is deferred or not until the first Update

Attribute	Value Range	Default	Description
			<p>Location of one of the new SIM card's IMSIs.</p> <p>0: The Tekelec ngHLR performs the SIM swapping upon execution of the SIM-swap operation.</p> <p>1: The execution of the SIM-swap operation is deferred until the first Update Location of one of the new SIM card's IMSIs.</p>
Displayed	0 or 1	0	<p>This parameter allows the operator to define whether the multipleAlternate MSISDN can be transmitted or not in an ISD message. A "displayed" Alternate MSISDN is transmitted in an ISD message but a "Not displayed" Alternate MSISDN is not.</p> <p>0= the multipleAlternate MSISDN is not displayed.(The Primary MsIsdn is transmitted instead)</p> <p>1= the multipleAlternate MSISDN is displayed.</p> <p>This attribute is mandatory only if:</p> <ul style="list-style-type: none"> <li>- multiple MSISDNs are the same for the Alternate MSISDN is the same as the Primary MsIsdn of this subscriber and the entered value must be displayed.</li> <li>- the Alternate Imsi is the same as the Primary Imsi of this subscriber and the entered value must not be displayed</li> </ul>
Priority	0, 1, 2	0	<p>Allows to set a priority (1 being the first choice and 2 being the second choice) between a subscriber's MSISDNs in the case where the subscriber has two devices (two SIMs).</p> <p>0: Dual-SIM feature disabled.</p> <p>The Dual-SIM feature is enabled when:</p> <p>For one of the two SIMs of a subscriber (SubscriptionID), one of its provisioned IMSI-MSISDN couple must have a Priority set to '1' and for the other one of the two SIMs, one of its provisioned IMSI-MSISDN couple must have a Priority set to '2'.</p>

Attribute	Value Range	Default	Description
			<p>CLI example:</p> <p>If the MSISDN with Priority '1' on SIM 1 cannot be reached for any CFNRc scenario, the Tekelec ngHLR automatically sends the MSISDN with Priority '2' of the SIM 2 as the ForwardToNumber in the SRI-ack. This allows the call to be redirected to the SIM for which the MSISDN is set to Priority '2'.</p>
Reachable	Bool	1	<p>This parameter indicates to the Tekelec ngHLR which MSISDN-IMSI association to choose among all the different associations in order to find out which SIM can be reached.</p> <p>0: The MSISDN-IMSI association is not reachable.</p> <p>1: The MSISDN-IMSI association is reachable, which means that the SIM associated to this IMSI will be reached by incoming calls.</p> <p><b>Provisioning TIPS:</b></p> <ul style="list-style-type: none"> <li>• All the MSISDN-IMSI profile associations defined for one single SIM with the same MSISDN must all have the 'Reachable' flag set to the same value.</li> <li>• There must be one and only one reachable SIM among the ones that have MSISDN-IMSI associations that use the same shared MSISDN. A SIM is reachable if the MSISDN's 'Published' flag and the MSISDN-IMSI association's 'Reachable' flag are both set to '1' (true). By default, the 'Reachable' flag is set to '1'. For a MSISDN, if there is no 'Reachable' flag set to true ('Reachable=1') for one of its MSISDN-IMSI associations, all the MSISDN based messages will fail for this specific MSISDN.</li> </ul> <p>In a Dual SIM context (see "Dual-SIM priority calling" section of the SDM Product Description), if the 'Reachable' flag is not set for the MSISDN priority 1, the call will fail and will not be sent to</p>

Attribute	Value Range	Default	Description
			MSISDN priority 2. The MSISDN priority 1 must be reachable in order for the Dual-SIM priority calling logic to take effect.

The Alternate MSISDN-IMSI associations (couples) as well as the Displayed flag can easily be dynamically modified.

If an Alternate MsIsdn is unpublished (as provisioned in the MSISDN entity), then the HLR will reject Mobile Terminating calls and will not be displayed as “Caller ID” for Mobile Originating calls.

**Note: 1:** In the case where you wish to define an alternate IMSI-MSISDN couple using the same IMSI as the Primary IMSI, the corresponding alternate MsIsdn cannot be displayed. (Displayed = 0).

**CLI example**

```
(Primary Imsi: 310910421000100)Subscriptions[]>
Subscription[SubscriptionID=sub-1]> SubscriberProfile[HlrServiceProfileID
= 1]>add MsIsdnImsiProfileAssociation[Imsi = 310910421000100; MsIsdn =
2344456660;Deferred =0;Displayed =0]
```

**Note: 2:** Multiple MSISDNsAn alternate MSISDN that is the same as the Primary MSISDN cannot be unpublished and not displayed. In this case, the multiple alternate MSISDNs must be published and displayed (Published = 1 and Displayed = 1), just like the published and displayed settings for the Primary MSISDN. (refer to the MSISDN entity to set the Published field for a specific MsIsdn).

**CLI example**(Primary MSISDN: 2344456661)

```
Subscriptions[]> Subscription[SubscriptionID=sub-1]>
SubscriberProfile[HlrServiceProfileID = sub-1]>add
MsIsdnImsiProfileAssociation[HlrServiceProfileID= 1; Imsi = 310910421000100;
MsIsdn = 2344456661;Deferred=0;Displayed =1]
```

## North American Equal Access Carrier

**Name**

NaeaPreferredCarrier

**Description**

To provision the North American Equal Access Preferred Carrier.

**CLI Navigation**

```
Subscriptions[ ]> Subscription [SubscriptionID]> SubscriberProfile
[HlrServiceProfileID]> NaeaPreferredCarrier
```

**CLI Inherited Attributes**

SubscriptionID, HlrServiceProfileID.

### CLI Command Syntax

```
Subscriptions[]> Subscription[SubscriptionID= <string>]>
SubscriberProfile[HlrServiceProfileID = <string>]> Add NaeaPreferredCarrier
[NetworkIdPlan = 0-2; CarrierId = 0-9999; NetworkIdType = 2]
```

### Operations Permitted

Add, modify, delete, display

### Attributes and Values

Table 75: NaeaPreferredCarrier mandatory attributes

Attribute	Value Range	Default	Description
NetworkIdPlan	0 (Unknown), 1 (3Digits), 2 (4Digits)	0	Identification of Network Plan 0=Unknown (no interpretation) 1=Three-digit carrier identification 2=Four-digit carrier identification
CarrierId	0 to 9999	0000	Identification of network carrier.

Table 76: NaeaPreferredCarrier optional attributes

Attribute	Value Range	Default	Description
NetworkIdType	2 (National NetworkId)	2	The North American Equal Access preferred Carrier Id refers to the carrier identity preferred by the subscriber for calls requiring routing via an inter-exchange carrier. This identity is used at: outgoing calls (when the subscriber does not specify at call set-up a carrier identity), forwarded calls (when a call is forwarded by the subscriber), incoming calls (applicable to the roaming leg of the call).  2=National network identification.

### CLI Example

```
Subscriptions[]> Subscription[SubscriptionID= Sub-1]>
SubscriberProfile[HlrServiceProfileID = 1]> Add NaeaPreferredCarrier
[NetworkIdPlan = 2; CarrierId = 1234; NetworkIdType = 2]
```

## Access Restriction Data

### Name

AccessRestrictionData

### Description

This entity allows the operator to provision subscriber profiles with access restrictions.

### CLI Navigation

```
Subscriptions[ ]> Subscription [SubscriptionID]> SubscriberProfile
[HlrServiceProfileID]> AccessRestrictionData
```

### CLI Inherited Attributes

SubscriptionID, HlrServiceProfileID.

### CLI Command Syntax

```
Subscriptions[]> Subscription[SubscriptionID= <string>]>
SubscriberProfile[HlrServiceProfileID = <string>]> Modify
AccessRestrictionData[] UtranNotAllowed = 0,1; GeranNotAllowed = 0,1;
GanNotAllowed= 0,1; IHspaEvolutionNotAllowed=0,1; EutranNotAllowed=0,1;
HotoNon3GPPAccessNotAllowed=0,1;ARDBit6=0,1; ARDBit7=0,1
```

### Operations Permitted

Modify, display

### Attributes and Values

Table 77: AccessRestrictionData attributes

Mandatory Attributes			
Attribute	Value Range	Default	Description
UtranNotAllowed*	0,1	0 (Off)	Bit that indicates whether the Utran radio access technology is restricted or not for the subscriber.
GeranNotAllowed*	0,1	0 (Off)	Bit that indicates whether the Geran radio access technology is restricted or not for the subscriber.
GanNotAllowed **	0,1	0 (Off)	Bit that indicates whether the Gan radio access technology is

Mandatory Attributes			
Attribute	Value Range	Default	Description
			restricted or not for the subscriber.
IHspaEvolutionNotAllowed **	0,1	0 (Off)	Bit that indicates whether the IHspaEvolution radio access technology is restricted or not for the subscriber.
EutranNotAllowed ***	0,1	0 (Off)	Bit that indicates whether the Eutran radio access technology is restricted or not for the subscriber.
HotoNon3GPPAccessNotAllowed ***	0,1	0 (Off)	Bit that indicates whether the HotoNon3GPP radio access technology is restricted or not for the subscriber.
ARDBit6	0,1	0 (Off)	Not yet defined in the standards. For future use only.
ARDBit7	0,1	0 (Off)	Not yet defined in the standards. For future use only.

\* These attributes are defined in MAP R6.

\*\* These attributes are defined in MAP R7.

\*\*\* These attributes are defined in MAP R8.

### CLI Example

```
Subscriptions[]> Subscription[SubscriptionID= sub-1]>
SubscriberProfile[HlrServiceProfileID = 1]>modify AccessRestrictionData[]
UtranNotAllowed = 1; GeranNotAllowed = 1]
```

## Supplementary Services Provisioning (AoCI, AoCC, CLIP, CLIR, COLP, COLR, Hold, Wait, MPTY)

### Name

SSProvisionStatus

### Description

To provision parameters for Supplementary Services for a subscriber.

### CLI Navigation

```
Subscriptions[ ]> Subscription [SubscriptionID]> SubscriberProfile  
[HlrServiceProfileID]> SSProvisionStatus
```

### CLI Inherited Attributes

SubscriptionID, HlrServiceProfileID.

### CLI Command Syntax

```
Subscriptions[]> Subscription[SubscriptionID= <string>]>  
SubscriberProfile[HlrServiceProfileID = <string>]> Add SSProvisionStatus[AocC  
= 0,1; AocI = 0,1; CallWaiting = 0,1; CallHold = 0,1; Clip = 0,1;  
ClipOverride = 0,1; Clir = 0,1; ClirPresentationMode = 0-2; Colp = 0,1;  
ColpOverride = 0,1; Colr = 0,1; Ect = 0,1; MultiParty = 0,1]
```

### Operations Permitted

Add, modify, and display.

**Note:** Not all users (User Groups) are allowed to perform these operations.

**Table 78: SSProvisionStatus optional attributes**

Attribute	Value Range	Default	Description
AocC	0 or 1	0	Advice of Charge Charging 0 = disabled. 1 = enabled
AocI	0 or 1	0	Advice of Charge Information 0 = disabled 1 = enabled
CallWaiting	0 or 1	0	Call Waiting 0 = disabled 1 = enabled
CallHold	0 or 1	0	Call Hold 0 = disabled. 1 = enabled
Clip	0 or 1	0	Calling Line Identification Presentation 0 = disabled 1 = enabled

Attribute	Value Range	Default	Description
ClipOverride	0 or 1	0	Calling Line Identification Presentation Override 0 = disabled 1 = enabled (regardless of Clip value above)
Clir	0 or 1	0	Calling Line Identification Restriction (CLIR) 0 = disabled 1 = enabled
ClirPresentation-Mode	0, 1, or 2	0	0 = Permanent 1 = Temporary (presentation is restricted) 2 = Temporary (presentation allowed)
Colp	0 or 1	0	Connected Line Identification Presentation (COLP) 0 = disabled 1 = enabled
ColpOverride	0 or 1	0	Connected Line Identification Presentation Override 0 = disabled 1 = enabled (regardless of COLP value above)
Colr	0 or 1	0	Connected Line Identification Restriction (COLR) 0 = disabled 1 = enabled
Ect	0 or 1	0	Explicit Call Transfer 0 = disable 1 = enabled
MultiParty	0 or 1	0	Multiparty (MPTY) Call 0 = disabled 1 = enabled

### CLI Example

```
Subscriptions[ ]> Subscription[SubscriptionID= Sub-1]>
SubscriberProfile[HlrServiceProfileID = 1]> Add SSProvisionStatus [AocC =
0; AocI = 0; CallWaiting = 0; CallHold = 0; Clip = 0; ClipOverride = 1;
Clir = 0; ClirPresentationMode = 0; Colp = 0; ColpOverride = 1; Colr = 0;
Ect = 0; MultiParty = 0]
```

## PLMN provisioning

### Subscriber Public Land Mobile Network ID

#### Name

SubscriberPlmnZone

#### Description

To provision codes for Public Land Mobile Network (PLMN) identification names.

#### CLI Navigation

```
Subscriptions[ ]> Subscription [SubscriptionID]> SubscriberProfile
[HlrServiceProfileID]> SubscriberPlmnZone
```

#### CLI Inherited Attributes

SubscriptionID, HlrServiceProfileID.

#### CLI Command Syntax

```
Subscriptions[ ]> Subscription[SubscriptionID= <string>]>
SubscriberProfile[HlrServiceProfileID = <string>]> Add
SubscriberPlmnZone[PlmnId = Text; ZoneCode = Integer]
```

#### Operations Permitted

Add, modify, delete, display

**Note:** Not all users (User Groups) are allowed to perform these operations.

#### Attributes and Values

Table 79: SubscriberPlmnZone mandatory attributes

Attribute	Value Range	Default	Description
PlmnId	up to 10 digits and/or letters	N/A	Logical name for a PLMN, e.g., Montreal

Attribute	Value Range	Default	Description
ZoneCode	0 to 65535	N/A	Up to 10 zone codes per PlmnId

### CLI Example

```
Subscriptions[]> Subscription[SubscriptionID= Sub-1]>
SubscriberProfile[HlrServiceProfileID = 1]> Add SubscriberPlmnZone [PlmnId
= Montreal; ZoneCode = 12345]
```

## PLMN Specific Supplementary Services Provisioning

### Name

PlmnSpecificSS

### Description

To enable or disable PLMN Specific Supplementary services for a subscriber.

### CLI Navigation

```
Subscriptions[ ]> Subscription [SubscriptionID]> SubscriberProfile
[HlrServiceProfileID]> PlmnSpecificSS
```

### CLI Inherited Attributes

SubscriptionID, HlrServiceProfileID.

### CLI Command Syntax

```
Subscriptions[]> Subscription[SubscriptionID= <string>]>
SubscriberProfile[HlrServiceProfileID = <string>]> Add PlmnSpecificSS[Type=
241-255 ; ProvisionState=0,1]
```

### Operations Permitted

Add, modify, delete and display.

**Note:** Not all users (User Groups) are allowed to perform these operations.

### Attributes and Values

Table 80: PlmnSpecificSS mandatory attributes

Attribute	Value Range	Default	Description
Type	241 (SS-F1) 242 (SS-F2) 243 (SS-F3)	N/A	PLMN Specific Supplementary Service.

Attribute	Value Range	Default	Description
	244 (SS-F4) 245 (SS-F5) 246 (SS-F6) 247 (SS-F7) 248 (SS-F8) 249 (SS-F9) 250 (SS-FA) 251 (SS-FB) 252 (SS-FC) 253 (SS-FD) 254 (SS-FE) 255 (SS-FF)		
ProvisionState	0 or 1	0	The PLMN Specific Supplementary Service Provision State 0 = disabled 1 = enabled  <b>Note:</b> Setting this parameter to 0 (disabled) doesn't delete the entry provisioned in the database, it simply means that the system won't support this service for the subscriber.

**CLI Example**

```
Subscriptions[]> Subscription[SubscriptionID= Sub-1]>
SubscriberProfile[HlrServiceProfileID = 1]> Add PlmnSpecificSS[Type = 245;
ProvisionState=1]
```

**PLMN Specific Supplementary Services Basic Service Group**

**Name**

PlmnSpecificSSBsg

**Description**

To provision PLMN Specific SS Basic Service Group parameters for a subscriber.

**CLI Navigation**

```
Subscriptions[ ]> Subscription [SubscriptionID]> SubscriberProfile
[HlrServiceProfileID]> PlmnSpecificSSBsg
```

**CLI Inherited Attributes**

SubscriptionID, HlrServiceProfileID.

**CLI Command Syntax**

```
Subscriptions[]> Subscription[SubscriptionID= <string>]>
SubscriberProfile[HlrServiceProfileID = <string>]> Add
PlmnSpecificSSBsg[BsgId = 1,6,7,8,12; ActState_A = 0,1; ActState_Q = 0,1;
RegState = 0,1]
```

**Operations Permitted**

Add, modify, delete, display

**Note:** Not all users (User Groups) are allowed to perform these operations.

**Attributes and Values**

**Table 81: PlmnSpecificSSBsg mandatory attributes**

Attribute	Value Range	Default	Description
BsgId	1 (Speech), 6 (Facsimile Services), 7 (AllDataCircuit Asynchronous), 8 (AllDataCircuit Synchronous), 12 (VoiceGroup Services)	1 (Speech)	BsgId identifies the service capabilities for a subscriber: 1-Speech (TS11,TS12), 6-Facsimile Services (TS61, TS62), 7-All Data Circuit Asynchronous (BS10), 8-All Data Circuit Synchronous (BS18), 12-Voice Group Services (TS91, TS92)

**Table 82: PlmnSpecificSSBsg optional attributes**

Attribute	Value Range	Default	Description		
ActState_A	0 or 1	0	Activation state: Active & Operative	Set A bit to:	Set Q bit to:
ActState_Q	0 or 1	0		1	0

Attribute	Value Range	Default	Description
			Active & Quiescent
			Not Active
			<p><b>Note:</b> 1: Service can only be invoked if Activation State is Active and Operative (A=1, Q = 0).</p> <p><b>Note:</b> 2: Keep in mind that setting this parameter to 0 (not provisioned) doesn't delete the entry provisioned in the database, it simply means that the system won't invoke this service for the subscriber.</p>
RegState	0 or 1	0	Supplementary Service Registration State 0 = not registered 1 = registered

**Note:** To activate this service, the Registration State must be set to 1, ActState\_A must be set to 1, and the ActState\_Q must be set to 0.

**CLI Example**

```
Subscriptions[]> Subscription[SubscriptionID= sub-1]>
SubscriberProfile[HlrServiceProfileID = 1]:PlmnSpecificSS[Type = 245]>add
PlmnSpecificSSBsg[BsgId = 1; ActState_A = 1; ActState_Q = 0; RegState = 1]
```

**Enhanced Multi-Level Priority & Precedence (EMLPP)**

**Name**

Emlpp

**Description**

To provision the Enhanced Multi-Level Priority & Precedence supplementary service parameters for a subscriber.

**CLI Navigation**

```
Subscriptions[ ]> Subscription [SubscriptionID]> SubscriberProfile
[HlrServiceProfileID]> Emlpp
```

**CLI Inherited Attributes**

SubscriptionID, HlrServiceProfileID.

**CLI Command Syntax**

```
Subscriptions[]> Subscription[SubscriptionID= <string>]>
SubscriberProfile[HlrServiceProfileID = <string>]> Add Emlpp[ProvisionState=
0,1; ActState_A = 0,1; RegState = 0,1; DefaultPriority= Int ;
MaximumPriority= Int]
```

**Operations Permitted**

Add, modify, delete, display

**Note:** Not all users (User Groups) are allowed to perform these operations.

**Attributes and Values**

**Table 83: Emlpp mandatory attributes**

Attribute	Value Range	Default	Description
ProvisionState	0 or 1	0	The EMLPP service Provision State  0 = disabled 1 = enabled  <b>Note:</b> Setting this parameter to 0 (disabled) doesn't delete the entry provisioned in the database, it simply means that the system won't support this service for the subscriber.
DefaultPriority	integer	0	Defines the priority level which shall be assigned to a call if no explicit priority is indicated during call set-up.
MaximumPriority	integer	0	Indicates the highest priority level the subscriber is allowed to apply for an outgoing call set-up.

**Table 84: Emlpp optional attributes**

Attribute	Value Range	Default	Description
ActState_A	0 or 1	0	<b>Identifies the active state of the service.</b>  <b>Note:</b> Service can only be invoked if Activation State is Active and Operative (A=1).  <b>1=active and operative service</b>

Attribute	Value Range	Default	Description
			<b>0=inactive service</b> <b>Note:</b> Setting this parameter to 0 (not provisioned) doesn't delete the entry provisioned in the database, it simply means that the system won't invoke this service for the subscriber.
RegState	0 or 1	0	Supplementary Service Registration State 0 = not registered 1 = registered

## LCS Privacy Profile

### LCS Privacy Exception List

#### Name

LCSPrivacyExceptionList

#### Description

To provision service capabilities for LCS privacy profile.

#### CLI Navigation

```
Subscriptions[ ]> Subscription [SubscriptionID]> SubscriberProfile
[HlrServiceProfileID]> LCS[ ]> LCSPrivacyExceptionList
```

#### CLI Inherited Attributes

SubscriptionID, HlrServiceProfileID.

#### CLI Command Syntax

```
Subscriptions[ ]> Subscription[SubscriptionID= <string>]>
SubscriberProfile[HlrServiceProfileID = <string>] >
LCSPrivacyExceptionList[SSCode = integer]
```

#### WebCI Navigation Path

Subscriber Management > Subscription Management > HLR Subscriber Profile > Subscriber ProfileID > LCS > AddLCSPrivacyExceptionList

**Operations Permitted**

Add, modify, delete, display

**Note:** Not all users (User Groups) are allowed to perform these operations. Please see Table 2-2 to know which ones have access to this entity and which operations they have permission to do.

**Attributes and Values**

**Table 85: LCSPrivacyExceptionList - mandatory attributes**

Mandatory Attributes			
Attribute	Value Range	Default	Description
SSCode	TINYINT UNSIGNED Values Supported: 177 (Universal) 180 (PLMN operator class) <b>Note:</b> Values 178, 179 and 181 are not supported in Release 7.7. These values will return an error to the user.	177	Supplementary Service Code Each LCS privacy class is identified with a distinct Supplementary Service Code: 177 = Privacy settings applicable to any LCS client 180 = Privacy settings applicable to designated PLMN operator LCS clients 178 = Privacy settings applicable to value added LCS client(s) to which a call/session is established from the target MS - Not supported in Release 7.7 (see note). 179 = Privacy settings applicable to designated external value added LCS clients- Not supported in Release 7.7 (see note). 181 = Privacy settings applicable to LCS clients of a designated LCS service type- Not supported in Release 7.7 (see note). <b>Note:</b> Values 178, 179 and 181 are not supported in Release 7.7. These values will return an error to the user.
SSStatus	BOOL 0, 1	False (0)	This refers to the state information of individual LCS privacy classes (provisioned, active, etc).

Mandatory Attributes			
Attribute	Value Range	Default	Description
			<p>False (0) = Logical state of "provisioned, not active."</p> <p>True (1) = logical state of "provisioned, active, and operative."</p>

Table 86: LCSPrivacyExceptionList - optional attributes

Optional Attributes			
Attribute	Value Range	Default	Description
InternalClient	<p>SET - Possible Values:</p> <ul style="list-style-type: none"> <li>• broadcastService</li> <li>• OandMHPLMN</li> <li>• OandMVPLMN</li> <li>• anonymousLocation</li> <li>• targetMSsubscribedService</li> </ul> <p>Extra Validation: This field may be non-NULL only when SS-Code is equal to PLMN Operator Class</p>	Null	<p>This attribute is only applicable to the PLMN operator privacy class and gives the identities of the internal PLMN operator clients that are allowed to locate a target MS for an NI-LR or MT-LR. Up to five internal clients are supported.</p> <p><b>Note:</b> For Universal Calss the InternalClient must be NULL.</p> <p><b>Note:</b> For PLMN Operator class, the InternalClient must be set.</p>
NotificationToMsUser	TINYINT UNSIGNED	NULL	<p>This per-class attribute applies to the call/session related privacy class for any LCS client that is not specifically included in the External Client List.</p> <p>It indicates if the MS user is to be notified of the MT-LR and if user authorization is required.</p> <p>A null value (0) indicates that positioning of the subscriber is allowed with no notification to the MS User.</p> <p><b>Note:</b> This field is not used in the present implementation as the call/session related and call/session unrelated classes are not supported.</p>

**CLI Example**

```
Subscriptions[]> Subscription[SubscriptionID= sub-1]>
SubscriberProfile[HlrServiceProfileID=1]> add LCSPrivacyExceptionList[SSCode
```

```
= 177; SSStatus = 1; NotificationToMsUser = 0; InternalClient =  
AnonymousLocation]
```

## HLR Volatile Data Provisioning

### HLR volatile data

The entities used depend on the value configured for the HlrConfig entity's 'VolDataOptimizationOn' flag:

- If flag is set to 'OFF' (0), the HlrBinaryVolData entity is the only one used to store volatile data.
- If the flag is set to 'ON' (1), these entities store volatile data:
  - HlrVolatileData
  - HlrVolMwData
  - HlrSpVolGgsnData

All subscriber volatile data can be viewed by displaying these three entities.

#### Notes for upgrades from Release 4.1 or earlier

If the software has been upgraded just recently from release 4.1 or earlier (releases that used the HlrBinaryVolData entity) the HlrBinaryVolData entity will remain in use only until the data is being migrated from the HlrBinaryVolData to the HlrVolatileData entity.

During this transitional period, the volatile data of the subscribers for which MAP transactions occurred prior to the upgrade of the system can be viewed in the HlrBinaryVolData entity. Gradually, this entity will empty out due to the transfer of the volatile data into the new entities. A month after the upgrade of the system, the inactive subscribers left in this entity are all transferred at a rate of 200 subscribers per night, starting at 3:00am. Eventually, the HlrBinaryVolData entity will empty out completely, at which point it will become obsolete and the transitional period will be over.

During this transitional period, the operator has to access, through the Tekelec CLI, the HlrBinaryVolData entity in addition to the HlrVolatileData[],HlrVolMwData[] and HlrVolGgsnData[] entities in order to get the volatile data information for all the active subscribers.

Once the migration is completed, the only entities used will be the HlrVolatileData, HlrVolMwData and HlrSpVolGgsnData entities.

Once the data has been provisioned into the HLR, the user can only view this data. It cannot be modified. For more information on the transitional period and the Volatile Data Optimization that has been implemented, refer to the *CD-0072 Main Release Notes Rel4.1*.

### HLR Binary Volatile Data

#### Name

HlrBinaryVolData

**Description**

Entity that contains the binary volatile data.

**CLI Navigation**

```
Subscriptions[ ]> Subscription [SubscriptionID]> SubscriberProfile
[HlrServiceProfileID]> HlrBinaryVolData
```

**CLI Inherited Attributes**

SubscriptionID, HlrServiceProfileID.

**CLI Command Syntax**

```
Subscriptions[ ]> Subscription[SubscriptionID= <string>]>
SubscriberProfile[HlrServiceProfileID = <string>]> Display HlrBinaryVolData[ ]
```

**Operations permitted**

Display

**Attributes and values**

**Table 87: HlrBinaryVolData mandatory attributes**

Attribute	Value Range	Default	Description
Imsi	5 to 15 digits	N/A	Primary IMSI of this subscriber.

**Table 88: HlrBinaryVolData optional attributes**

Attribute	Value Range	Default	Description
NetworkAccess Mode	See description	N/A	Set the Network Access Mode. 0 (NonGprsAndGprs), 1 (NonGprsOnly), 2 (GprsOnly)
CurrImsi	5 to 15 digits	N/A	Local Mobile Station Identity of this subscriber given by the current VLR.
PrevImsi	5 to 15 digits	N/A	Local Mobile Station Identity of this subscriber given by the previous VLR.
CurrVlrNumber	up to 15 digits	N/A	Number of VLR where subscriber is currently located. Read only
PrevVlrNumber	up to 15 digits	N/A	Number of previous VLR where subscriber was previously located. Read only
CurrLmsi	up to 8 digits	N/A	Local Mobile Station Identity of this subscriber given by the current VLR.

Attribute	Value Range	Default	Description
PrevLmsi	up to 8 digits	N/A	Local Mobile Station Identity of this subscriber given by the previous VLR.
MscNumber	up to 15 digits	N/A	Number of MSC current serving the subscriber.
VlrUnsuppBsList	BS11 to BS17 BS19 BS1A to BS1F BS21 to BS27 BS29 BS2A to BS2F BS31 to BS36 BSD1 to BSD9 BSDA to BSDF	N/A	VLR unsupported Bearer Services list: BS01-BS0F=Undefined BS11=Data CDA 300bps BS12= Data CDA 1200bps BS13= Data CDA 1200-75bps BS14= Data CDA 2400bps BS15= Data CDA 4800bps BS16= Data CDA 9600bps BS17= General Data CDA BS19=Unspecified BS1A= Data CDS 1200bps BS1B=Unspecified BS1C= Data CDS 2400bps BS1D= Data CDS 4800bps BS1E= Data CDS 9600bps BS1F= General Data CDS BS21=Data PDS CA 300bps BS22=Data PDS CA 1200bps BS23=Data PDS CA 1200-75bps BS24=Data PDS CA 2400bps BS25=Data PDS CA 4800bps BS26=Data PDS CA 9600bps BS27= General PAD Access CA BS29-BS2B=Unspecified BS2C=Data PDS 2400bps BS2D=Data PDS 4800bps BS2E=Data PDS 9600bps BS2F=General Data PDS Services BS31-BS36=Unspecified BS37=Undefined

Attribute	Value Range	Default	Description
			BS39-BS3F=Undefined BS41-BS47=Undefined BS49-BS4F=Undefined BS51-BS57=Undefined BS59-BS5F=Undefined BS61-BS67=Undefined BS69-BSCF=Undefined BSD1=operator-defined PLMN-specific BS1 BSD2=operator-defined PLMN-specific BS2 BSD3=operator-defined PLMN-specific BS3 BSD4=operator-defined PLMN-specific BS4 BSD5=operator-defined PLMN-specific BS5 BSD6=operator-defined PLMN-specific BS6 BSD7=operator-defined PLMN-specific BS7 BSD8=operator-defined PLMN-specific BS8 BSD9=operator-defined PLMN-specific BS9 BSDA=operator-defined PLMN-specific BSA BSDB=operator-defined PLMN-specific BSB BSDC=operator-defined PLMN-specific BSC BSDD=operator-defined PLMN-specific BSD BSDE=operator-defined PLMN-specific BSE BSDF=Operator-defined PLMN-specific BSF BSE0-BSFF=Undefined
VlrUnsuppTsList	TS11, TS12, TS21, TS22, TS61 to TS63 TS91, TS92, TSD1 to TSD9 TSDA to TSDF,	N TSD1, /A	VLR unsupported TeleServices list: TS11=Speech (Telephony) TS12=Speech (Emergency Call) TS21=Short Message Service (Short message MT/ PP) TS22=Short Message Service (Short message MO/PP) TS61=Facsimile Services (Alternate Speech and Facsimile Group 3) TS62=Facsimile Services (Automatic Facsimile Group 3)

Attribute	Value Range	Default	Description
			TS63= Facsimile Services (Facsimile Group 4) TS91=Voice Group Services (Voice Group Call Service) TS92=Voice Group Services (Voice Broadcast Service) TSD1=operator defined PLMN specific TS-1 TSD2=operator defined PLMN specific TS-2 TSD3=operator defined PLMN specific TS-3 TSD4=operator defined PLMN specific TS-4 TSD5=operator defined PLMN specific TS-5 TSD6=operator defined PLMN specific TS-6 TSD7=operator defined PLMN specific TS-7 TSD8=operator defined PLMN specific TS-8 TSD9=operator defined PLMN specific TS-9 TSDA=operator defined PLMN specific TS-A TSDB=operator defined PLMN specific TS-B TSDC=operator defined PLMN specific TS-C TSDD=operator defined PLMN specific TS-D TSDE=operator defined PLMN specific TS-E TSDF=operator defined PLMN specific TS-F
MscArea Restricted	0 or 1	N/A	Mobile Switching Center area restricted flag: 0 = MSC area not restricted 1 = MSC area restricted
Roaming Restricted	0 or 1	N/A	Roaming restriction due to unsupported feature: 0 = roaming not restricted 1 = roaming restricted
CheckSs Indicator	0 or 1	N/A	Check Supplementary Services (SS) indicator: 0 = Check not required when the HLR restarts after a failure 1 = Check required
MsPurged	0 or 1	N/A	Mobile Station purged for non-GPRS flag: 0 = Mobile Station not purged 1 = Mobile Station purged

Attribute	Value Range	Default	Description
MsNotReachable	0 or 1	N/A	Mobile Station reachable indicator: 0 = Mobile Station reachable 1 = Mobile Station not reachable
MsNotReachable Reason	0, 1, 2, 3	N/A	Reason Mobile Station is not reachable: 0 = MS purged 1 = IMSI Detached 2 = Restricted Area 3 = Not registered
NumberOf-Messages-WaitingData	See description	N/A	The number of messages in the HLR waiting for data
MsMemory-Capacity-Exceeded	0 or 1	N/A	The Mobile Station (MS) Memory Capacity Exceeded Flag (MCEF): 0= memory capacity not exceeded 1= memory capacity exceeded
Subscriber Reachable	0 or 1	N/A	Indicator Subscriber status 0 = not registered 1= registered
VlrCamelPhase	1 or 2	N/A	CAMEL phase supported by VLR
LongFtn Supported	0 or 1	N/A	Long Forward-to-number support. 0=supported 1=not supported
AgeIndicator	See description	N/A	Age of subscriber data registered in HLR, given as second, minute, hour, day, month, and year. (GMT)
CurrVlrSuperChargerSupport	0 or 1	N/A	Current VLR supercharged 0= not supercharged 1= supercharged
PrevVlrSuperChargerSupport	0 or 1	N/A	Previous VLR supercharged 0= not supercharged 1= supercharged
CurrSgsnNumber	up to 15 digits	N/A	Number of SGSN where GPRS Mobile Station is currently located

Attribute	Value Range	Default	Description
PrevSgsnNumber	up to 15 digits	N/A	Number of SGSN where GPRS Mobile Station was previously located
SgsnAddress	xxx.xxx. xxx.xxx	N/A	IP address of SGSN currently servicing GPRS MS
SgsnUnsuppTs List	TS11, TS12, TS21, TS22, TS61 to TS63 TS91, TS92, TSD1 to TSD9 TSDA to TSDF,	N/A	SGSN unsupported TS list: TS11=Speech (Telephony) TS12=Speech (Emergency Call) TS21=Short Message Service (Short message MT/ PP) TS22=Short Message Service (Short message MO/PP) TS61=Facsimile Services (Alternate Speech and Facsimile Group 3) TS62=Facsimile Services (Automatic Facsimile Group 3) TS63= Facsimile Services (Facsimile Group 4) TS91=Voice Group Services (Voice Group Call Service) TS92=Voice Group Services (Voice Broadcast Service) TSD1=operator-defined PLMN-specific TS-1 TSD2=operator-defined PLMN-specific TS-2 TSD3=operator-defined PLMN-specific TS-3 TSD4=operator-defined PLMN-specific TS-4 TSD5=operator-defined PLMN-specific TS-5 TSD6=operator-defined PLMN-specific TS-6 TSD7=operator-defined PLMN-specific TS-7 TSD8=operator-defined PLMN-specific TS-8 TSD9=operator-defined PLMN-specific TS-9 TSDA=operator-defined PLMN-specific TS-A TSDB=operator-defined PLMN-specific TS-B TSDC=operator-defined PLMN-specific TS-C TSDD=operator-defined PLMN-specific TS-D TSDE=operator-defined PLMN-specific TS-E TSDF=operator-defined PLMN-specific TS-F

Attribute	Value Range	Default	Description
SgsnUnsuppBs List	BS11 to BS17 BS19 BS1A to BS1F BS21 to BS27 BS29 BS2A to BS2F BS31 to BS36 BSD1 to BSD9 BSDA to BSDF	N/A	SGSN unsupported Bearer Services list: BS01-BS0F=Undefined BS11=Data CDA 300bps BS12= Data CDA 1200bps BS13= Data CDA 1200-75bps BS14= Data CDA 2400bps BS15= Data CDA 4800bps BS16= Data CDA 9600bps BS17= General Data CDA BS19=Unspecified BS1A= Data CDS 1200bps BS1B=Unspecified BS1C= Data CDS 2400bps BS1D= Data CDS 4800bps BS1E= Data CDS 9600bps BS1F= General Data CDS BS21=Data PDS CA 300bps BS22=Data PDS CA 1200bps BS23=Data PDS CA 1200-75bps BS24=Data PDS CA 2400bps BS25=Data PDS CA 4800bps BS26=Data PDS CA 9600bps BS27= General PAD Access CA BS29-BS2B=Unspecified BS2C=Data PDS 2400bps BS2D=Data PDS 4800bps BS2E=Data PDS 9600bps BS2F=General Data PDS Services BS31-BS36=Unspecified BS37=Undefined BS39-BS3F=Undefined BS41-BS47=Undefined BS49-BS4F=Undefined

Attribute	Value Range	Default	Description
			BS51-BS57=Undefined BS59-BS5F=Undefined BS61-BS67=Undefined BS69-BSCF=Undefined BSD1=operator-defined PLMN-specific BS1 BSD2=operator-defined PLMN-specific BS2 BSD3=operator-defined PLMN-specific BS3 BSD4=operator-defined PLMN-specific BS4 BSD5=operator-defined PLMN-specific BS5 BSD6=operator-defined PLMN-specific BS6 BSD7=operator-defined PLMN-specific BS7 BSD8=operator-defined PLMN-specific BS8 BSD9=operator-defined PLMN-specific BS9 BSDA=operator-defined PLMN-specific BSA BSDB=operator-defined PLMN-specific BSB BSDC=operator-defined PLMN-specific BSC BSDD=operator-defined PLMN-specific BSD BSDE=operator-defined PLMN-specific BSE BSDF=operator-defined PLMN-specific BSF BSE0-BSFF=Undefined
SgsnArea- Restricted	0 or 1	N/A	SGSN area restricted flag: 0 = SGSN area not restricted 1 = SGSN area restricted
CurrGprsImsi	Up to 15 digits	N/A	Local Mobile Station Identity of this subscriber given by the current GPRS.
PrevGprsImsi	Up to 15 digits	N/A	Local Mobile Station Identity of this subscriber given by the previous GPRS.
GprsRoaming- Restricted	0 or 1	N/A	Roaming restriction due to unsupported feature for GPRS: 0 = roaming not restricted 1 = roaming restricted
GprsMsPurged	0 or 1	N/A	Mobile Station purged for GPRS flag: 0 = MS not purged

Attribute	Value Range	Default	Description
			1 = MS purged
GprsMsNotReachable	0 or 1	N/A	Mobile Station reachable indicator for GPRS: 0 = Mobile Station not reachable 1 = Mobile Station reachable
GprsMsNotReachableReason	0, 1, 2, 3	N/A	Reason GPRS MS is not reachable: 0 = MS purged 1 = IMSI Detached 2 = Restricted Area 3 = Not registered
SgsnCamelPhase	1 or 2	N/A	CAMEL phase supported by SGSN
GgsnList	up to 28 digits	N/A	List of GGSN numbers and addresses this subscriber visited. A string of E.164 number (15 digits) and IP addresses is displayed.
CurrSgsnSuperChargerSupport	0 or 1	N/A	Current SGSN Super-Charged 0=not Super-Charged 1=Super-Charged
PrevSgsnSuperChargerSupport	0 or 1	N/A	Previous SGSN Super-Charged 0=not Super-Charged 1=Super-Charged

### CLI Example

```
Subscriptions[]> Subscription[SubscriptionID= sub-1]>
SubscriberProfile[HlrServiceProfileID = 1]> display HlrBinaryVolData[]
```

## HLR volatile data

### Name

HlrVolatileData

### Description

This entity contains most of the volatile data information of a subscriber in non-binary data (human readable data).

### Note:

In the case where the migration of the volatile data is ongoing, following an upgrade of the software from any release prior to rel4.1 to a release higher than 4.1, this entity allows the operator to view most

of the volatile data of the active subscribers for which a MAP transaction occurred since the upgrade of the system and eventually of every active subscriber once the transitional period of the Volatile Data Optimization is over. Refer to the CD-0072 Main Release Notes Rel4.1 for more details. The rest of the volatile data of a subscriber can be viewed from the HlrVolMwData and HlrVolGgsnData entities.

### CLI Navigation

```
Subscriptions[ ]> Subscription [SubscriptionID]> SubscriberProfile
[HlrServiceProfileID]> HlrVolatileData
```

### CLI Inherited Attributes

SubscriptionID, HlrServiceProfileID.

### CLI Command Syntax

```
Subscriptions[ ]> Subscription[SubscriptionID= <string>]>
SubscriberProfile[HlrServiceProfileID = <string>]> Display
HlrVolatileData[Imsi=PrimaryImsi]
```

### Operations Permitted

Display.

### Attributes and Values

**Table 89: HlrVolatileData mandatory attributes**

Attribute	Value Range	Default	Description
Imsi	5 to 15 digits	N/A	Enter the Primary IMSI for this subscriber.

**Table 90: HlrVolatileData optional attributes**

Attribute	Value Range	Default	Description
CurrImsi	5 to 15 digits	N/A	Local Mobile Station Identity of this subscriber given by the current VLR.
PrevImsi	5 to 15 digits	N/A	Local Mobile Station Identity of this subscriber given by the previous VLR.
CurrVlrNumber	up to 20 digits	N/A	Number of VLR where subscriber is currently located. Read only
PrevVlrNumber	up to 20 digits	N/A	Number of previous VLR where subscriber was previously located. Read only

Attribute	Value Range	Default	Description
MscNumber	up to 20 digits	N/A	Number of MSC current serving the subscriber.
NetworkAccessMode	See description	N/A	Set the Network Access Mode. 0 (NonGprsAndGprs), 1 (NonGprsOnly), 2 (GprsOnly)
VlrFlags	'VlrCugCapable', 'CheckSsIndicator', 'MscAreaRestricted', 'RoamingRestricted', 'MsPurged', 'MsNotReachableReason Set', 'MsNotReachable', 'MsMemoryCapacity Exceeded', 'SubscriberReachable', 'CurrVlrSuperCharger Support', 'PrevVlrSuperCharger Support', 'LongFtnSupported', 'ISDFailed'	N/A	VLR Flags:
MsNotReachable Reason	0, 1, 2, 3	N/A	Reason Mobile Station is not reachable: 0 = MS purged 1 = IMSI Detached 2 = Restricted Area 3 = Not registered
VlrCamelPhase	1,2,3	N/A	CAMEL phase supported by VLR
VlrUnsuppOdbMask			List of OdbMask not supported by the VLR AlLOGCalls AlLOGInternatCalls

Attribute	Value Range	Default	Description
			AllOGInternatCallsExcept Hplmn AllOGInterzonalCalls AllOGInterzonalCalls ExceptHplmn AllOGInternatExcept HplmnAndBarring InterzonalCalls AllOGWhenRoaming OutsideHPLMNcountry AllICCalls AllICCallsWhen RoamingOutsideHplmn AllICCallsWhen RoamingOutsideZone OfHplmn RoamingOutsideHplmn RoamingOutsideHplmn Country PremiumRateInfo PremiumRateEntertainment PremiumRateInfoAnd Entertainment SuppServicesManagement RegistrationAnyFtn RegistrationInternat Ftn RegistrationInternat FtnExceptHplmn RegistrationAny InterzonalFtn RegistrationInterzonal FtnExceptHplmn CallTransfer CallTransferAnyCharged ToServed CallTransferAnyInternat ChargedToServed CallTransferAnyInterzonal ChargedToServed

Attribute	Value Range	Default	Description
			<p>CallTransferBothChargedToServed</p> <p>CallTransferExistingTransferForServed</p> <p>PacketServices</p> <p>PacketServicesFromHplmnWhileInVplmn</p> <p>PacketServicesWithinVplmn</p> <p>OperatorSpecificType1</p> <p>OperatorSpecificType2</p> <p>OperatorSpecificType3</p> <p>OperatorSpecificType4</p> <p>Where OG = Outgoing, Internat = International, Hplmn = Home PLMN country, Vplmn = Visiting PLMN country</p> <p>IC = Incoming Calls</p> <p>Supp = Supplementary</p> <p>Ftn = Forward to number</p> <p>ChargedToServed = Call charged to served subscriber</p> <p>OperatorSpecificType = Defined by Operator</p>
InducedBaocVlr	<p>'Speech'</p> <p>'ShortMessageService'</p> <p>'FacsimileServices'</p> <p>'AllDataCircuitAsynchronous'</p> <p>'AllDataCircuitAsynchronous'</p> <p>'VoiceGroupServices'</p>	null	All induced BAOC Bsgs sent to the VLR.
InducedBaocVlr ServScr	<p>'Speech'</p> <p>'ShortMessageService'</p> <p>'FacsimileServices'</p>	null	Service Screening Induced BAOC Bsgs sent to the VLR.

Attribute	Value Range	Default	Description
	'AllDataCircuit Asynchronous' 'AllDataCircuit Asynchronous' 'VoiceGroupServices'		
CurrGprsImsi	up to 15 digits	N/A	Local Mobile Station Identity of this subscriber given by the current Sgsn
PrevGprsImsi	up to 15 digits	N/A	Local Mobile Station Identity of this subscriber given by the previous Sgsn.
CurrSgsnNumber	up to 20 digits	N/A	Number of SGSN where GPRS Mobile Station is currently located
PrevSgsnNumber	up to 20 digits	N/A	Number of SGSN where GPRS Mobile Station was previously located
GprsMsNotReachable Reason	0, 1, 2, 3	N/A	Reason GPRS MS is not reachable: 0 = MS purged 1 = IMSI Detached 2 = Restricted Area 3 = Not registered
SgsnFlags	'SgsnCugCapable', 'CheckSsIndicator', 'MscAreaRestricted', 'RoamingRestricted', 'MsPurged', 'MsNotReachableReason Set', 'MsNotReachable', 'MsMemoryCapacity Exceeded', 'SubscriberReachable', 'CurrVlrSuperCharger Support', 'PrevVlrSuperCharger Support',	N/A	SGSN Flags.

Attribute	Value Range	Default	Description
	'LongFtnSupported', 'ISDFailed'		
SgsnCamelPhase	1 or 2	N/A	CAMEL phase supported by current SGSN
AgeIndicator	See description	N/A	Age of subscriber data registered in HLR, given as year, month, date, hour, min and second  Ex : 2009-03-20 13:04:00
OriginLteHost	Fully Qualified Domain Name	NULL	FQDN of the MME or SGSN managing the current User Equipment network access, as defined by 3GPP TS 29.272.
OriginLteRealm	Fully Qualified Domain Name	NULL	FQDN Diameter realm of the MME or SGSN managing the current User Equipment network access, as defined by 3GPP TS 29.272.
MmeFlags	MmeAreaRestricted, MmeMsPurged	NULL	MME-SGSN access-restriction related flags, as defined by 3GPP TS 29-272 (see ULR and IDA flags).
S6adFeatureList	32-bits bit map.	NULL	Supported features as advertised by the MME or SGSN managing the current User Equipment network access. For reference, see 3GPP 29.272, 7.3.10 Feature-List AVP.
Network RegistrationType	5 bits bitmap: SGSN_Pre_Release_8 SGSN_Release_8 MME MME_SGSN_ Combined HLR_Proxy_Registration	NULL	Indicates the type of network access through which the User Equipment network registration was done. This field is also managed by the SDM ngHLR, allowing 3G-4G mobility management.  SGSN_Pre_Release_8 : the user is registered in a 3G network (SDM ngHLR).  SGSN_Release_8 : the user is registered in a 4G network (the LTE SGSN)

Attribute	Value Range	Default	Description
			<p>MME: the user is registered in a 4G network (the LTE MME)</p> <p>MME_SGSN_Combined: the user is registered in a 4G network (LTE MME/SGSN combined )</p> <p>HLR_Proxy_Registration : the user is registered in a 3G network on the remote legacy HLR.</p>
UrrpMme	<p>MME</p> <p>MME_NONE</p> <p>SGSN</p> <p>SGSN_NONE</p>		User Reachability Request Parameter for MME. If set, the HSS clears the URRP-MME parameter and sends an indication to the corresponding Service Related Entities.
UrrpSgsn	<p>MME</p> <p>MME_NONE</p> <p>SGSN</p> <p>SGSN_NONE</p>		User Reachability Request Parameter for SGSN. If set, the HSS clears the URRP-SGSN parameter and sends an indication to the corresponding Service Related Entities.
HomogeneousSupp IMSVoiceOverPS Sessions	<p>MME_Not_Supported</p> <p>MME_Supported</p> <p>SGSN_Not_Supported'</p> <p>SGSN_Supported</p>		Indicates whether IMS Voice over PS Sessions is supported, homogeneously in any of the TAs or RAs associated to the serving node.
GMLCAddress	string		Displays the IPv4 or IPv6 address of the V-GMLC associated with the serving node.
PSLCSNotSupported ByUE	<p>MME_Not_Supported</p> <p>MME_Supported</p> <p>SGSN_Not_Supported'</p> <p>SGSN_Supported</p>		Indicates to the HSS that the UE does not support neither UE-Based nor UE-Assisted positioning methods for Packet Switched Location Services. The MME or SGSN sets this bit on the basis of the UE capability information and the access technology supported by the SGSN or MME.

**CLI Example:**

```
Subscriptions[]> Subscription[SubscriptionID= sub-1]>
SubscriberProfile[HlrServiceProfileID = 1]>display
HlrVolatileData[Imsi=31091042100100]
```

**HLR subscriber profile volatile GGSN data**

**Name**

HlrSpVolGgsnData

**Description**

This entity contains the GGSN number and GGSN address of the GGSN serving the subscriber in non-binary data (human readable data). This entity allows the operator to view this information for active subscribers for which a MAP transaction occurred since the upgrade of the system and eventually of every active subscriber once the transitional period of the Volatile Data Optimization is over. Refer to the CD-0072 Main Release Notes 4.1 for more details. The volatile information in this entity is complimentary to the volatile data in the HlrVolatileData and HlrVolMwData entities.

**CLI Navigation**

```
Subscriptions[ ]> Subscription [SubscriptionID]> SubscriberProfile
[HlrServiceProfileID]> HlrVolGgsnData
```

**CLI Inherited Attributes**

SubscriptionID, HlrServiceProfileID.

**CLI Command Syntax**

```
Subscriptions[]> Subscription[SubscriptionID= <string>]>
SubscriberProfile[HlrServiceProfileID = <string>]> Display HlrVolGgsnData[]
```

**Operation Permitted**

Display

**Attributes and Values**

**Table 91: HlrSpVolGgsnData attributes**

Mandatory Attribute	Value Range	Default	Description
Imsi	5 to 15 digits	N/A	Enter the IMSI for this subscriber.
Optional Attribute	Value Range	Default	Description
GgsnNumber	5 to 15 digits	N/A	Number of GGSN currently serving the subscriber.

**CLI Example:**

```
Subscriptions[]> Subscription[SubscriptionID= sub-1]>
SubscriberProfile[HlrServiceProfileID = 1]>display HlrVolGgsnData[]
```

**HLR Volatile MW Data**

**Name**

HlrVolMwData

**Description**

This entity contains the MsIsdn and Service Center information of a subscriber in non-binary data (human readable data). This entity allows the operator to view this information for active subscribers for which a MAP transaction occurred since the upgrade of the system and eventually of every active subscriber once the transitional period of the Volatile Data Optimization is over. Refer to the CD-0072 Main Release Notes 4.1 for more details. The volatile information in this entity is complimentary to the volatile data in the HlrVolatileData and HlrVolGgsnData entities.

**CLI Navigation**

```
Subscriptions[ ]> Subscription [SubscriptionID]> SubscriberProfile
[HlrServiceProfileID]> HlrVolMwData
```

**CLI Inherited Attributes**

SubscriptionID, HlrServiceProfileID.

**CLI Command Syntax**

```
Subscriptions[]> Subscription[SubscriptionID= <string>]>
SubscriberProfile[HlrServiceProfileID = <string>]> Display HlrVolMwData[]
```

**Operation Permitted :**

Display.

**Attributes and Values**

**Table 92: HlrVolMwData mandatory attribute**

Attribute	Value Range	Default	Description
Imsi	5 to 15 digits	N/A	Enter the IMSI for this subscriber.

Table 93: HlrVolMwData optional attributes

Attribute	Value Range	Default	Description
MsIsdn	up to 15 digits	N/A	MSISDN for which data is required. MS international PSTN/ISDN number=Country Code (CC) + National (significant) mobile number (National Destination Code (NDC) + Subscriber Number (SN)). National format not supported.
ServiceCenter	5 to 15 digits	N/A	Number of ServiceCenter currently serving the subscriber.

#### CLI Example

```
Subscriptions[]> Subscription[SubscriptionID= sub-1]>
SubscriberProfile[HlrServiceProfileID = 1]>display HlrVolMwData[]
```

## Subscription Generic Data

#### Name

SubscriptionGenericData

#### Description

Entity that contains generic subscription data. This entity can be used to store any data that is not part of the regular HLR subscriber profile. Two attributes, GenericName and GenericValue, can be used to store individual data elements of up to 1024 bytes in value.

The entity is associated with a SubscriptionID and can be provisioned via the CLI or using XML scripts (via CFL, SOAP/XML).

#### CLI Navigation

```
Subscriptions[ ]> Subscription [SubscriptionID]> SubscriptionGenericData
Inherited attribute: SubscriptionID.
```

#### CLI Command Syntax

```
Subscriptions[]> Subscription[SubscriptionID= <string>]>
SubscriptionGenericData[GenericName = <string>; GenericValue = <string>]>
```

**Operations Permitted**

Add, modify, display, delete.

**Note:** Not all users (User Groups) are allowed to perform these operations.

**Attributes and Values****Table 94: SubscriptionGenericData mandatory attributes**

Attribute	Value Range	Default	Description
GenericName	Up to 32 bytes	N/A	The name with which the data will be referred to.

**Table 95: SubscriptionGenericData optional attributes**

Attribute	Value Range	Default	Description
GenericValue	Up to 1024 bytes	N/A	The value of the data the entity holds.

**CLI Example:**

```
Subscriptions[]> Subscription[SubscriptionID= sub-1]>add
SubscriptionGenericData[GenericName = integer1; GenericValue = 1]
```

## LTE-HSS profile provisioning

### Service Profile PDN Context

This section describes the entities that allow to provision PDN Contexts for LTE-HSS subscriber profiles.

**Name**

ServiceProfilePDNContext

**Description**

This entity allows to define PDN Context(s) for a LTE-HSS profile. Several PDN Contexts can be configured for the same subscriber profile. Prerequisite: PDN Context Templates must have already been created prior to defining PDN Contexts for a LTE-HSS profile. When defining a PDN Context, you must associate a PDN Context Template to it. For details on the PDNContextTemplate entity, refer to the “PDN Context Template configuration” section of the *SDM System Configuration – Reference Manual*. For details on how to configure PDN Context Templates from the WebCI, refer to the “Provisioning PDN Context Templates” section of the *SDM System Configuration – User Guide*.

### CLI Navigation

```
Subscriptions[ ]> Subscription [SubscriptionID]> SubscriberProfile
[HlrServiceProfileID]> ServiceProfilePDNContext
```

### CLI Inherited Attributes

SubscriptionID, HlrServiceProfileID.

### CLI Command Syntax

```
Subscriptions[ ]> Subscription[SubscriptionID= <string>]>
SubscriberProfile[HlrServiceProfileID = <string>]> Add
ServiceProfilePDNContext[PdnContextId=uint ;PdnType=0-3;PdnAddress1=
string;PdnAddress2=string;PdnTemplateId=uint]
```

### Operations Permitted

add, display, delete.

**Note:** Not all users (User Groups) are allowed to perform these operations.

### Attributes and Values

**Table 96: ServiceProfilePDNContext mandatory attributes**

Attribute	Value Range	Default	Description
PdnContextId	unsigned int 32	N/A	The context identifier for the current PDN

**Table 97: ServiceProfilePDNContext optional attributes**

Attribute	Value Range	Default	Description
PdnType	0 IPv4 1 IPv6 2 IPv4v6 3 IPv4_OR_IPv6	0	The PDN Type for the current PDN.
PdnAddress1	String (IP Address)	Null	This parameter holds the PDN IP address of the user.
PdnAddress2	String (IP Address)	Null	This parameter holds the PDN IP address of the user. Since the subscriber profile can hold two IP addresses, this one is the second one.
PdnTemplateId	unsigned int 32	Null	This is the link with the PDN Template Id. This Id should have been defined in one PDN Context Template.

**CLI Example:**

```
Subscriptions[]> Subscription[SubscriptionID= Ltesub]>
SubscriberProfile[HlrServiceProfileID = 1]> Add
ServiceProfilePDNContext[PdnContextId=uint
;PdnType=0;PdnAddress1=1921682012;PdnTemplateId=1]
```

**HLR SP PDN MIP Agent Info**

**Name**

HlrSpPdnMipAgentInfo

**Description**

This entity allows to define the identity of the PDN GW. This is used to convey the identity of the PDN-GW between the MME/SGSN and the HSS regardless of the specific mobility protocol used (GTP or PMIPv6). Prerequisite: At least one PDN Context must be already defined.

**CLI Navigation**

```
Subscriptions[ ]> Subscription [SubscriptionID]> SubscriberProfile
[HlrServiceProfileID]> ServiceProfilePDNContext[PdnContextId]>
HlrSpPdnMipAgentInfo
```

**CLI Inherited Attributes**

SubscriptionID, HlrServiceProfileID, PdnContextId

**CLI Command Syntax**

```
Subscriptions[]> Subscription[SubscriptionID= <string>]>
SubscriberProfile[HlrServiceProfileID = <string>]>
ServiceProfilePDNContext[PdnContextId=<uint>]> Add
HlrSpPdnMipAgentInfo[AccessPointName=string; MipHaAddress1=string;
MipHaAddress2=string; MipHaDestHost=string; MipHaDestRealm=string;
Mip6HomeLinkPrefix=string]
```

**Operations Permitted**

Add, display, delete.

**Attributes and Values**

**Table 98: HlrSpPdnMipAgentInfo mandatory attribute**

Attribute	Value Range	Default	Description
AccessPointName	string	N/A	The Access Point Name to which this PDN Identity is linked.

Table 99: HlrSpPdnMipAgentInfo optional attributes

Optional Attributes			
Attribute	Value Range	Default	Description
MipHaAddress1	string	Null	This contains the mobile node's home agent IP address.
MipHaAddress2	string	Null	This contains the mobile node's home agent IP address. Since two IP addresses can be configured, this one is the second one.
MipHaDestHost	string	Null	The Host Name of the home agent.
MipHaDestRealm	string	Null	The realm where the home agent is located.
Mip6HomeLinkPrefix	string	Null	Contains the mobile IPv6 home network prefix information in a network byte order.

**CLI Example:**

```
Subscriptions[:Subscription[SubscriptionID =
ltesub]:SubscriberProfile[HlrServiceProfileID =
1]:ServiceProfilePDNContext[PdnContextId = 5]>add
HlrSpPdnMipAgentInfo[SubscriptionID = ltesub; AccessPointName =
apn.tekelec.ca; HlrServiceProfileID = 1; PdnContextId = 5; MipHaAddress1 =
30.30.30.20]
```

**CSG Subscription Data**

**Name**

CSGSubscriptionData

**Description**

This entity allows the Network Operator to define a Closed User Group ID to an LTE-HSS subscriber. Only subscribers with the *indicated CSG ID will be permitted access to a cell broadcasting the corresponding CSG ID.*

**CLI Navigation**

```
Subscriptions[ ]> Subscription [SubscriptionID]> SubscriberProfile
[HlrServiceProfileID]> CSGSubscriptionData
```

### CLI Inherited Attributes

SubscriptionID, HlrServiceProfileID.

### CLI Command Syntax

```
Subscriptions[]> Subscription[SubscriptionID= <string>]>
SubscriberProfile[HlrServiceProfileID = <string>]> Add
CSGSubscriptionData[CSGId=uint; CSGExpirationDate=Date]
```

### Operations Permitted

Add, display, delete.

### Attributes and Values

Table 100: CSGSubscriptionData attributes

Mandatory Attribute	Value Range	Default	Description
CSGId	Unsigned 32	N/A	Identification of the Closed User Group
Optional Attribute	Value Range	Default	Description
CSGExpirationDate	Date in the following format: Year-month-day hour:minutes:seconds (i.e. 2012-03-14 01:00:54)	N/A	Expiry date in which the subscriber belongs to this Closed User Group.

### CLI Example

```
Subscriptions[]> Subscription[SubscriptionID= Ltesub]>
SubscriberProfile[HlrServiceProfileID = 1]> Add
GSGSubscriptionData[CSGId=1; CSGExpirationDate=2012-03-14 01:00:54]
```

## HLR Operations

The following section provides a description of the operations related to subscriber provisioning that can be performed on the HLR system.

### AddSIM()

The AddSIM() operation provides an easy way to provision the data of one SIM card at a time and define a PrimaryIMSI and possible alternate IMSIs for that SIM card. This operation is equivalent to provisioning an entry in the Sim entity (SimId with SIM data) and in the SimImsiMap entity (Primary

and alternate IMSIs for that SimId) using the Add operation. For more details on the Sim entity and its parameters and supported values, refer to section 4.1.1 “Subscriber Identity Module (SIM) Provisioning” of this document.

**Note:** You can assign a SubscriptionID to this Sim data by specifying the SubscriptionID or keep the Sim data unassigned to any SubscriptionID by omitting to provision the SubscriptionID parameter (SubscriptionID= ' NULL ').

**Note:** the IMSI of a SIM card (SimImsiMap) with a NULL value for the SubscriptionID cannot be used in the MsIsdnImsiProfileAssociation because the SubscriptionID must be the same for the HlrServiceProfileID, MSISDN and IMSI (SIM).

### CLI Command Syntax

```
Hlr[ ]>AddSIM()SimId={Sim Id #}; PrimaryIMSI={PrimaryIMSI #};  
AlgorithmName={Algo name}; SimType={Sim Type}; Ki32HexChar={Ki key #};  
PUK={PUK}
```

## SwapSIM()

The SwapSIM() operation can be used to switch the SIM (with one or many IMSIs) of a subscriber to another SIM (with one or many IMSIs) that is unassigned (not linked to a SubscriptionID), while keeping the same MSISDN(s) and all the data of the subscriber provisioned as is in its profile (HLR Service Profile, MSISDN and association).

The SwapSIM() operation can only be performed under the following conditions:

- The old and new SIM cards must exist in both the Sim and SimImsiMap entities.
- The new SIM must be unassigned, which means it must not be linked to any subscriber (SubscriptionID: 'null').
- The new IMSI(s) of the new SIM cards must not be provisioned in the MsIsdnImsiProfileAssociation table because the operation changes the IMSI, but do not overwrite an existing IMSI (association). In other words, the new SIM cards must not be already assigned.
- The number of IMSIs for the new SIM card (provisioned in the SimImsiMap entity) must be greater or equal to the number of IMSIs provisioned in the MsIsdnImsiProfileAssociation entity for the old SIM card.

When executing the SwapSIM() operation, the following parameters can be specified:

Mandatory parameters:

- OldSimId: SimId already assigned to the SubscriptionID
- NewSimId: new unused SimId (SimId already provisioned in the Sim entity, but unassigned to any SubscriptionID)

Optional parameters:

- SubscriptionID: SubscriptionID of the subscriber for which you wish to swap SIM cards
- AutoMap: bool (0 or 1) that indicates whether the Tekelec ngHLR must change all the old IMSIs defined in the MsIsdnImsiProfileAssociation entity with the new IMSIs by using a MCC/MNC best matching mechanism.
- If this parameter is set to '0', the Network Operator must map manually all the IMSIs, by editing the MsIsdnImsiProfileAssociation and making sure that the IMSIs of the new SIM card should have the same MCC/MNC as the ones of the old SIM card.

- If this parameter is set to '1' (default value), all alternate IMSIs used in the MsIsdnImisiProfileAssociation entity of the Old SIM ID must match (MCC/MNC match: first 5/6 digits of the IMSI) with all the alternate IMSIs of the New SIM ID.
- 
**Important:** In case of failure: If there are still some alternate IMSIs not matched, the SIM Swap operation will fail and the Network Operator must execute again the SwapSIM() operation, but this time with the AutoMap option set to '0' and map manually all the IMSIs.
- DeleteOldSIM: bool (0 or 1) that indicates whether the Tekelec ngHLR must delete the old SIM data entry from the Sim entity.
- If this parameter is set to '0' (default value), after the completion of the SIM swap, the SubscriptionID of the old SIM card is changed to "NULL". This means that the data of the old Sim card remains provisioned in the Sim entity, but becomes unassigned to any subscriber. If you wish to delete it, you can delete the corresponding entry from the Sim entity.
- If this parameter is set to '1', the Tekelec ngHLR automatically deletes the data of the old SIM card provisioned in the Sim entity after the completion of the SIM swap.
- Deferred: bool (0 or 1) that indicates whether the Tekelec ngHLR must delay the completion of the SIM swap operation until the first Update Location of one of the new SIM card's IMSIs is received.
- If this parameter is set to '0' (default value), then the Tekelec ngHLR immediately executes completely the SIM swap operation.
- If this parameter is set to '1', then the Tekelec ngHLR waits before completing the SIM-swap operation until the first Update Location of one of the new SIM card's IMSIs is received. In the mean time (before receiving the first UL), the SIM-swap operation will be in "pending" mode and the list of "pending" SIM-swap operations can be displayed from the WebCI, by displaying the SimSwapDeferred entity. Refer to the SDM System Configuration – User Guide.

### CLI Command Syntax

```
Hlr[]> SwapSIM() SubscriptionID={Id name}; OldSimId={Old Sim Id #};
NewSimId={New Sim Id #}; AutoMap={0,1}; DeleteOldSIM={0,1}; Deferred={0,1}
```

### CLI Example

```
Hlr[]> SwapSIM() SubscriptionID = 1; OldSimId = 234445666000; NewSimId =
234445666001; AutoMap = 1; DeleteOldSIM = 1; Deferred = 0
```

This example will change the SIM 234445666000 (Old SIM ID) of the subscriber to the New SIM 234445666001 and update all the IMSI of the association table (MsIsdnImisiProfileAssociation).

### CancelDeferredSwap()

The CancelDeferredSwap() operation can be used to cancel a SIM-swap operation that has been executed with the parameter Deferred set to '1'.

**Note:** This operation can only be executed if the SIM-swap operation is still in a "pending" mode, which means that it still hasn't been completely executed and the first UL from the new SIM card's IMSI still hasn't been received.

In order to view the list of "pending" SIM swap operations (Deferred SIM swap operations that have not yet been completed), display the SimSwapDeferred entity.

### CLI Command Syntax

```
Hlr[]> CancelDeferredSwap() OldSimId={Old Sim Id #}; NewSimId={New Sim Id #}
```

## AssignSIM()

The AssignSIM() operation can be used to assign a SubscriptionID to an already provisioned Sim card that is unused by any subscriber and therefore unassigned to any subscriber (SubscriptionID).

### CLI Command Syntax

```
Hlr[]> AssignSIM() SubscriptionID={Id name}; SimId={Sim Id #}
```

## UnassignSIM()

The UnassignSIM() operation can be used to unassign a SubscriptionID to an already provisioned Sim card that is already assigned to a subscriber (SubscriptionID). Once this operation is executed, the Sim card becomes unused and all its associated IMSIs and subscriber profiles become unusable.

**Note:** All the data provisioned for this SubscriptionID and Sim card remain provisioned in the Tekelec ngHLR's database.

**Note:** the IMSI of a SIM card (SimImsiMap) with a NULL value for the SubscriptionID cannot be used in the MsIsdnImsiProfileAssociation because the SubscriptionID must be the same for the HlrServiceProfileID, MSISDN and IMSI (SIM).

### CLI Command Syntax

```
Hlr[]> UnassignSIM() SimId={Sim Id #}
```

## DeleteHLRSubscriber()

The DeleteHLRSubscriber() operation allows the Network Operator to cleanup the entries provisioned in all the HLR entities that are linked to a subscriber (SubscriptionID). This operation deletes all the MSISDN-IMSI associations, the HlrServiceProfile and MSISDN(s) for the subscriptionID.

- Mandatory parameter:
- IMSI or SubscriptionID: For this operation, the user can provide only SubscriptionID or IMSI. The operation fails if both parameters are provided. If the Imsi is provided, the subscriptionID is obtained by finding the SimId of the IMSI and the SubscriptionID of the SimId.
- Optional parameters:
- DeleteSIM: bool (0 or 1). If this parameter is set to '1', all the SIM card data for the subscriptionID will also be deleted, if it is set to '0' or not provided (default 0), all the SIM of the subscriptionID will be unassigned (set NULL for subscriptionID).
- DeleteSubscriptionID: bool (0 or 1). If this parameter is set to '1', the Tekelec ngHLR will perform a cleanup of the data provisioned for the subscriber (SubscriptionID) and at the end tries to delete the subscriptionID. If the SubscriptionID is used by other applications (HSS, SLF, SIP, AAA, ENUM), the Tekelec ngHLR won't delete it, but the operation will remain successful. Moreover, if one of the MSISDN for the subscriptionID is used by MNP and the DeleteHLRSubscriber is performed,

the MSISDN and the SubscriptionID will not be deleted and the operation will still pass (no error returned). Also, if one/many of the MSISDN-IMSI associations deleted have an IMSI registered, a Cancel Location is sent.

#### CLI Command Syntax

```
Hlr[]> DeleteHLRSubscriber() SubscriptionID={Subscription Id #}; DeleteSIM={0  
or 1}; DeleteSubscriptionID={0 or 1}
```

### ModifyDisplayedMSISDN()

The ModifyDisplayedMSISDN() operation allows the Network Operator to change the displayed flag from one MSISDN to another MSISDN (same IMSI). If the IMSI is registered and the ModifyDisplayedMSISDN is executed, an ISD message with the NewMsIsdn will be sent.

All the parameters are mandatory for this operation.

#### CLI Command Syntax

```
Hlr[]> ModifyDisplayedMSISDN() Imsi={Imsi #}; OldMsIsdn={Old MSISDN #};  
NewMsIsdn={New MSISDN #}
```

### MakeMsisdnNotReachable()

This operation can be performed by the Network Operator to change the 'Reachable' flag to '0' (not reachable) for all the MSISDN-IMSI associations of the MsIsdn provided.

Mandatory parameter: MsIsdn

#### CLI Command Syntax

```
Hlr[]> MakeMsisdnNotReachable() MsIsdn = {MSISDN #}
```

### MakeMsisdnReachable()

This operation can be performed by the Network Operator to change the 'Reachable' flag to '1' (reachable) for all the MSISDN-IMSI associations of the MsIsdn provided and of the IMSIs that are part of the SimId provided or found by the Tekelec ngHLR (if IMSI is provided instead of SimId).

Mandatory parameter: MsIsdn and (SimId or Imsi)

#### CLI Command Syntax

```
Hlr[]> MakeMsisdnReachable() MsIsdn = {MSISDN #}; SimId = {Sim Id #}
```

# Chapter 5

## MNP-SRF (Mobile Number Portability)

---

### Topics:

- [MNP IMSI for Redirect.....193](#)
- [MNP Ported Out.....194](#)

This chapter provides details on the entity to provision in order to create MNP-SRF subscribers.

## MNP IMSI for Redirect

### Name

MnpImsiForRedirect

### Description

This allows the operator to provision the IMSI that must be returned in the SRI-ack when the Tekelec ngHLR redirects the interrogating node to the recipient's network.

### CLI Navigation

```
Hlr[ ]>MobileNumberPortability[ ]> MnpImsiForRedirect[ ]
```

### CLI Inherited Attributes

None.

### CLI Command Syntax

```
Hlr[ ]:MobileNumberPortability[ ]> add MnpImsiForRedirect[ImsiId= int;  
ImsiForRedirect= integer]
```

WebCI CLI navigation

**HLR > Mobile Number Portability window > ImsiForRedirect table**

### Operations Permitted

Add, display, modify, delete.

**Note:** Not all users (User Groups) are allowed to perform these operations.

### Attributes and Values

**Table 101: MnpImsiForRedirect mandatory attribute**

Attribute	Value Range	Default	Description
ImsiId	integer	N/A	Identifier of the IMSI to be returned in the SRI-ack when the Tekelec ngHLR redirects the interrogating node to the recipient's network(network to which the "ported" number has been migrated to).

Table 102: MnpImsiForRedirect optional attribute

Attribute	Value Range	Default	Description
ImsiForRedirect	integer	N/A	<p>Generic IMSI number that needs to be returned in the SRI-ack when the Tekelec ngHLR redirects the interrogating node to the recipient's network(network to which the "ported" number has been migrated to).</p> <p><b>Note:</b> In this context, this IMSI number is not the full IMSI that identifies a subscriber, but it is more generic since it is only used for routing purposes. The MCC and MNC values in this IMSI point to the Subscription Network of the "ported-out" subscriber.</p>

**CLI Example**

```
:Hlr[]:MobileNumberPortability[]>add MnpImsiForRedirect[ImsiId=1;
ImsiForRedirect=310910421000100]
```

## MNP Ported Out

**Name**

MnpPortedOut

**Description**

This allows the operator to provision the list of ported-out numbers associated with a SubscriptionID. These numbers may or may not be part of the "Own Number Range" of the Tekelec ngHLR.

**CLI Navigation**

```
Hlr[]>MobileNumberPortability[]> add MnpPortedOut[MsIsdn = integer]
```

**WebCI CLI Navigation**

HLR folder > Mobile Number Portability window

**CLI Inherited Attributes**

None.

**CLI Command Syntax**

```
Hlr[]:MobileNumberPortability[]> add MnpPortedOut[MsIsdn= integer;
RoutingNumber= integer; RoutingMethodForSri=0,1,2; ImsiId= integer]
```

**Operations Permitted**

Add, display, modify, delete.

**Attributes and Values**

**Table 103: MnpPortedOut mandatory attribute**

Attribute	Value Range	Default	Description
MsIsdn	Phone number (E.164 format)	N/A	Phone number (MSISDN).

**Table 104: MnpPortedOut optional attributes**

Attribute	Value Range	Default	Description
RuleId	Integer	'0'	RuleId used to build the full Routing Number.
ActiveSubTimestamp	TIMESTAMP	CURRENT_TIMESTAMP	Timestamp used for database synchronization.

**CLI Example**

```
:Hlr[]:MobileNumberPortability[]> add MnpPortedOut[MsIsdn=12342333;
RoutingNumber= 555515634210105]
```

# Chapter 6

## Session Initiation Protocol (SIP)

---

### Topics:

- [SIP Subscriber Provisioning.....197](#)

## SIP Subscriber Provisioning

### Address of Record (AOR)

#### Name

AddressOfRecord

#### Description

To provision the AddressOfRecord parameters associated to a specific Subscription.

#### CLI Navigation

```
Subscriptions[ ]> Subscription[SubscriptionID] > AddressOfRecord
```

#### CLI Inherited Attributes

SubscriptionID

#### CLI Command Syntax

```
Subscriptions[ ]:Subscription[SubscriptionID = string]> display
AddressOfRecord[Scheme = 1,2; User = alphanumeric; AorDomainId=integer;
ServiceAllowed= integer; Port =integer; DirectoryNumber =alphanumeric;
AuthUsername = string; AuthPasswd =string; IsAorAuthenticationEnabled =0,1;
DigestAlgorithm =string ; IsSendRegisterAllowed=0,1
;IsReceiveRegisterAllowed=0,1 ;IsReceiveInviteAllowed=0,1 ;
IsRedirectionOverrideActive= 0,1]
```

#### Operations Permitted

Add, modify, display, delete.

#### Attributes and Values

Table 105: AddressOfRecord mandatory attributes

Attribute	Value Range	Default	Description
Scheme	1 (Sip) or 2 (Sips)	N/A	Top level of the URI naming structure.*
User	Alphanumeric with exceptions: ":" and ","  <b>Note:</b> To include a backslash in the user name, you need to	N/A	Part of the hierarchical part of the URI naming structure.*

Attribute	Value Range	Default	Description
	double the quotes. (ex: if you want the user name to be: user\\name, you need to enter the following: user\\\\name.)		
AorDomainId	integer	N/A	ID number configured in the AorDomain table (see the “SIP Configuration” section of the SDM System Configuration-Reference Manual) for the AOR Domain Name that you wish to provision for this AOR.
ServiceAllowed	1 ServiceEnabled 2 OperatorDisabled 3 SystemDisabled	N/A	User service status.  ServiceEnabled=user service allowed.  OperatorDisabled=service disabled by the operator.  SystemDisabled=service disabled by the system.

Table 106: AddressOfRecord optional attributes

Attribute	Value Range	Default	Description
Port	0 to 65 535	N/A	Part of the hierarchical part of the URI naming structure.*
DirectoryNumber	Up to 15 alphanumeric characters Digits supported:0-9 Characters supported: ‘*, #, a, b, c’	‘ ‘	The Tekelec ngHLR supports alphanumeric VoIP Directory Numbers (DN), as per the E164I GSM format.  The E.164 Telephone number that exists in the SIP Domain and which is provisioned by the operator to whom the incoming calls will be redirected.
AuthUsername	String (64)	N/A	Username used for MD5 authentication.
AuthPasswd	Unprovisioned or Provisioned	N/A	Indicates if the Passwd field used for MD5 authentication

Attribute	Value Range	Default	Description
			is provisioned or un-provisioned.
IsAorAuthentication Enabled	Bool 0 or 1	0	Specifies if the AOR Authentication is enabled or not.  0=AOR Authentication disabled.  1=AOR Authentication enabled.
DigestAlgorithm	MD5 or MD5Session	MD5	Algorithms used for authentication
IsSendRegister Allowed	Bool 0 or 1	0	Indicates if Tekelec ngHLR is allowed to send SIP REGISTER.
IsReceiveRegister Allowed	Bool 0 or 1	0	Indicates if Tekelec ngHLR is allowed to process an incoming SIP REGISTER.
IsReceiveInvite Allowed	Bool 0 or 1	0	Indicates if Tekelec ngHLR is allowed to process an incoming SIP INVITE.
IsRedirection OverrideActive	Bool 0 or 1	0	This flag allows to turn On/Off the SIP Redirection Override functionality for this subscriber.  0(Off): The SIP Redirection Override feature is turned off.  1(On): The SIP Redirection Override feature is turned On.

\*Internet standard STD 66 (also RFC 3986) defines the generic syntax to be used in all URI schemes. Every URI is defined as consisting of four parts, as follows: <scheme name> : <hierarchical part> [ ? <query> ] [ # <fragment> ]

**Note:**

**CLI Example**

```
Subscriptions[ ]:Subscription[SubscriptionID = Sub1]> add AddressOfRecord[Scheme = 1;
AorDomainId=1; User= useragentQA1; ServiceAllowed=1]
```

## RegistrationBinding

### Name

RegistrationBinding

### Description

To view the system driven RegistrationBinding's parameters for a specific subscriber. The system generates RegistrationBindings upon normal registration of SIP users (as per the 3GPP standards) and also upon 3<sup>rd</sup> party registrations from TAS nodes (The SIP Registrar allows third party registrations from TAS nodes with the 'SRI Router' feature).

### CLI Navigation

```
Subscriptions[ ]> Subscription[SubscriptionID]> AddressOfRecord[Scheme,
User, AorDomainId]> RegistrationBinding
```

### CLI Inherited Attributes

SubscriptionID, Scheme, User, AorDomainId.

Referenced attributes: Port, DirectoryNumber (see AddressOfRecord entity)

### CLI Command Syntax

```
Subscriptions[ ]:Subscription[SubscriptionID =
string]:AddressOfRecord[Scheme=sip,sips; AorDomainId=integer; User =
integer]>display RegistrationBinding[Port= integer ; DirectoryNumber=
integer; ContactUriScheme =0,1,2,3,4,5,6; ContactUriUser = string;
ContactUriHost =x.x.x.x, FQDN ; ContactUriPort =integer;
ContactUriUriParameters =OtherUriParameters; ContactUriAbsUriIdentifier
=AbsoluteUri ; CallId =string; Cseq =integer ; RegistrationExpiryTime =Date
and Time ; Qvalue =float; RegistrationPriority =integer ; TasId=integer;
ActiveSubsTimestamp =Date and Time]
```

### Operations Permitted

Display

**Note:** If in the AddressOfRecord, the attribute ServiceAllowed = OperatorDisabled, then the RegistrationBinding is deleted.

Table 107: RegistrationBinding attributes

Attribute Name	Value Range	Default	Description
ContactUriScheme	(0) (1) sip (2) sips (3) tel	0	Value of the Scheme of the Contact header in a Sip Register message.  Not used for 3 <sup>rd</sup> party registration.

Attribute Name	Value Range	Default	Description
	(4) mailto (5) im (6) pres		
ContactUriUser	String (64) with exceptions: ":" and ";"	""	Value of the User Info part of the Contact field in a Sip Register message. Not used for 3 <sup>rd</sup> party registration.
ContactUriHost	String (128) IP ex: x.x.x.x or FQDN (Fully Qualified Domain Name)	""	Value of the Host Name part of the Contact header in a Sip Register message. Not used for 3 <sup>rd</sup> party registration.
ContactUriPort	0 to 65 535 String(5)	""	Value of the Port part of the Contact field in a Sip Register message. Not used for 3 <sup>rd</sup> party registration.
ContactUriUriParameters	transport user method ttl maddr lr other	""	Value of the uri-parameters of the Contact field in a Sip Register message. Not used for 3 <sup>rd</sup> party registration.
ContactUriAbsUriIdentifier	[Hierarchical-part] or [opaque-part] or a URI	""	Value of the Contact field in a Sip Register message. It is the absolute URI, which is a URI section equal to the hierarchical part or the opaque part.
CallId	String (255)	""	Value of the Call-id field in a Sip Register message. Uniquely identifies all registrations of a particular user agent client. Not used for 3 <sup>rd</sup> party registration.

Attribute Name	Value Range	Default	Description
Cseq	0 - 65 535 (unsigned 16 bit integer)	""	Value of the Cseq field in a Sip Register message. This field contains a sequence number and the request method. Not used for 3 <sup>rd</sup> party registration.
Registration ExpiryTime	Date and Time <year><month><day> <hour><minutes><seconds> 3.1.3.7 CLI example 2011-03-14 19:41:07	0000-00-00 00:00:00	Date/Time this record must expire. When the RegistrarConfig's IsExpiryTimestampSet parameter is set to '1', the RegistrationExpiryTime indicates the time the registration gets expired. If the RegistrarConfig's IsExpiryTimestampSet parameter is set to '0', this parameter is set to 0000-00-00 00:00:00.
Qvalue	Float [0...1]	""	Value used for preferential registration. Preference order increases with Qvalue. Not used for 3 <sup>rd</sup> party registration.
Registration Priority	Integer	1000	Qvalue times a thousand. Not used for 3 <sup>rd</sup> party registration.
TasId	TinyInt	0	TAS identifier. Derived from the URI's host part of the 'FROM' header using the SipTasGt table. Set to "0" when a regular Register message is received (i.e. not a 3 <sup>rd</sup> party registration).
ActiveSubs Timestamp	Date and Time <year><month><day> <hour><minutes><seconds> 3.1.3.8 CLI example	CURRENT_TIMESTAMP	The timestamp the record was created or last updated.

Attribute Name	Value Range	Default	Description
	2011-03-14 19:41:07		

### CLI Example

```
Subscriptions[]:Subscription[SubscriptionID = Sub1
]:AddressOfRecord[Scheme=sip; User = useragentQA1; AorDomainId=1]>display
RegistrationBinding[]
```

## SIP Redirection Override

### Name

SipRedirectionOverride

### Description

This entity allows the operator to provision “permanent redirection” contact URIs for a specific Address Of Record (AoR) when the SIP Redirection Override feature is enabled. Up to 10 “permanent redirection” contact URIs can be provisioned for one single Address Of Record.

### CLI Navigation

```
Subscriptions[ ]> Subscription[SubscriptionID]> AddressOfRecord[Scheme,
User, AorDomainId]> SipRedirectionOverride
```

### Navigation CLI Inherited Attributes

SubscriptionID, Scheme, User, AorDomainId.

### CLI Command Syntax

```
Subscriptions[ ]:Subscription[SubscriptionID = string]:AddressOfRecord[User
= integer; Scheme=sip,sips; AorDomainId=integer ]>add
SipRedirectionOverride[CanonicalUri= string; Qvalue=decimal]
```

### Operations Permitted

Add, display, modify, delete.

### Attributes and Values

Table 108: SipRedirectionOverride mandatory attribute

Attribute	Value Range	Default	Description
CanonicalUri	Canonical URI. Schemes supported: Sip or sips or	""	“Permanent redirection” contact URI for an Address Of Record.

Attribute	Value Range	Default	Description
	Tel or im or Pres or mailto		

Table 109: SipRedirectionOverride optional attribute

Attribute	Value Range	Default	Description
Qvalue	Decimal value between 0 and 1.  (Up to 3 decimals are supported)	N/A	This parameter indicates the priority order in which the AORs must be reached. Setting this parameter to the same value for different AORs means that they will SimRing (be reached simultaneously). Setting this parameter allows to also perform sequential ringing (in the case where the values are different for the AORs).

**CLI Example**

```
Subscriptions[:Subscription[SubscriptionID = Sub1 ]:AddressOfRecord[User = useragentQA1;  
Scheme=sip; AorDomainId=1]> display SipRedirectionOverride[]
```

**SIP Number Portability Address of Record User Range Prefix**

**Name**

SipNpAorUserRangePrefix

**Description**

If range is configured to use MNP routing rule: query the HLR MNP routing logic with a RuleId and the SIP User part of the URI received in To header (with MSN or CC-MSN format). This will generate a URI that contains the Full Routing Number (in the user part of the URI). Return 302 with this URI in the Contact header.

**Note:** If the Full Routing Number calculation fails: a 403 response will be sent.

The SIP NP Support for AOR ranges feature allows the SIP Redirect Server to redirect SIP INVITE requests for Address of Record (AOR) ranges. This table defines groups or ranges of users and the provisioning information to redirect SIP INVITE requests that are sent to any of these users.

An enhancement to this feature is the ability of the Tekelec ngHLR MNP feature to include a full routing number in the Contact URI header of the 302 response. In addition to a fixed routing number (RN), the return results can have these formats: CC RN MSN. The feature enhancement reduces the number of SIP 404 (user not found) responses returned. To configure the SIP UA configuration parameters used at system startup.

**WebCLI Navigation**

Sip[ ]> SipServer[ ]

**Inherited Attributes**

None.

**CLI Command Syntax**

Sip[ ]:SipServer[ ]>

**Operations Permitted**

**Note:** Not all users (User Groups) are allowed to perform these operations. Please see [Table 8: Predefined access permissions to services per user group](#) to know which ones have access to this entity and which operations they have permission to do.

**Attributes and Values**

**Table 110: SIP Number Portability Address of Record User Range Prefix Optional Attributes**

Attribute Name	Value Range	Default	Description
UserRangePrefix	[0..15] characters	""	Prefix used to define a range of users. Only one empty range can be configured.  When empty (""), no range defined: <ul style="list-style-type: none"> <li>• Skips the lookup of HLR MNP Routing logic for full routing number.</li> <li>• Can be used to return a 302-response with a default contact if no other prefix matches are found.</li> </ul> When provisioned, the <b>isMNPRoutingRule</b> Used attribute setting determines which other field must be provisioned.
isMNPRoutingRule Used	0,1	0	Turns On/Off the use of MNP routing rules.  0 = returns URI provisioned in Contact field (requires <i>Contact</i> attribute value to be other than 0)  1 = returns URI with full routing number (requires <b>RuleId</b> attribute value to be other than 0)
RuleId	Int	0	Defines the MNP routing rule to use. The rule uses the SIP URI username

Attribute Name	Value Range	Default	Description
			as MSISDN. Use this field only if attribute <b>isMNPRoutingRuleUsed</b> is set to 1.  0 = no rule ID to be specified. Int= RuleId
Contact	[0..200] characters	""	Content of the Contact header to be returned in the 302 redirection when the attribute <b>"isMNPRoutingRuleUsed"</b> is set to 0.

# Chapter 7

## Home Subscriber Server (HSS)

---

**Topics:**

- [Subscription Management - HSS Application.208](#)
- [SLF Redirect Host Mapping.....225](#)

This chapter provides HSS and SLF entity details.

## Subscription Management - HSS Application

### HSS Subscription

#### Name

HssSubscription

#### Description

To generate profiles for IMS subscribers by creating HSS Subscriptions and assigning them with a SubscriptionID and a ChargingID.

#### CLI Navigation

```
Subscriptions[ ]> Subscription[SubscriptionID] > HssSubscription
```

#### CLI Inherited Attributes

SubscriptionID

#### CLI Command Syntax

```
Subscriptions[ ]>Subscription[SubscriptionID = <string>]> add  
HssSubscription[ChargingID = string]
```

#### Operations Permitted

Modify, delete, add.

**Table 111: HssSubscription mandatory attribute**

Attribute	Value Range	Default	Description
ChargingID	String (100)	N/A	Identifies the charging functions for an IMS user.

**Table 112: HssSubscription optional attribute**

Attribute	Value Range	Default	Description
SubscriptionID	String (100)	N/A	Identifier of a subscriber.

#### CLI Example

```
Subscriptions[ ]>Subscription[SubscriptionID = sub-1]> add  
HssSubscription[ChargingID= charg-1]
```

## HSS Private Identity

### Name

HssPrivateIdentity

### Description

To assign Private Identities to IMS subscribers.

### CLI Navigation

```
Subscriptions[ ]> Subscription[SubscriptionID] > HssSubscription [ ]>
HssPrivateIdentity
```

### CLI Inherited Attributes

SubscriptionID

### CLI Command Syntax

```
Subscriptions[ ]>Subscription[SubscriptionID = <string>]> HssSubscription[ ]
> add HssPrivateIdentity[PrivateIdentity = NAI]
```

### Operations Permitted

Add, delete, display.

**Table 113: HssPrivateIdentity mandatory attributes**

Attribute	Value Range	Default	Description
PrivateIdentity	NAI format: username@realm	N/A	Parameter not known publicly nor by the user and used by the network to determine the access allowance of the given user to the IMS network. It is a permanent subscriber data stored in the HSS.
AlgoName	up to 32 digits and/or letters.	N/A	Name of the authentication algorithm used by the Hss Auc to authenticate the user with this Private Identity.

**Table 114: HssPrivateIdentity optional attributes**

Attribute	Value Range	Default	Description
CryptedSecretKey	Up to 16 characters		Encrypted secret key (password) used for this Private Identity for authentication.

Attribute	Value Range	Default	Description
NASSLineIdentifier	string	N/A	Parameter sent in the MAA for authentication when the algorithm scheme used is "NASS-Bundled" (TISPAN). This information element contains fixed broadband access line identifier associated to the user.
MaxBadCounterPasswd	integer	0 (unlimited)	The limit of the Bad Counter Password. When receiving a SAR "AUTHENTICATION_FAILURE" that makes the counter reach the limit, the HSS locks the private ID.
ContactAddress	SIP URI  <b>Important:</b> When provisioning this parameter, all the data must be entered on a single line.	N/A	SIP URI contact address and path for terminating calls. When the StaticRegistration attribute is set to 1 (Statically Registered), this field must be provisioned.  It contains the SIP contact address of the terminal (P-CSCF address) and when present in the SAA or PPR, this AVP indicates that the Public Identity ID/Private Identity ID set was administratively registered.
AccessRestriction	String (100 char)  <b>Important:</b> When provisioning this parameter, all the data must be entered on a single line.	N/A	It contains a list of allowed IP addresses/ranges and when present in the MAA, this AVP provides restrictions on the access network and IP address used by the UE.
AcceptNoVector	0 (Off) Or 1 (On)	0 (Off)	This flag indicates if the HSS must send an authentication success or failure when the required authentication algorithm is not supported by the HSS.

Attribute	Value Range	Default	Description
			<p>0 (Off) = indicates that the HSS must send back an authentication failure</p> <p>1 (On) = indicates that the HSS must send back an authentication success.</p>
StaticRegistration	0 (Off) or 1 (On)	0 (Off)	<p>Statically Registered flag that indicates to the S-CSCF (through Cx SAA and PPR messages) if the UE is statically registered or not.</p> <p>0= Statically Registered flag is Off</p> <p>1= Statically Registered flag is On</p>
Early-IMS-Security	0 (Off) or 1 (On)	0 (Off)	<p>The Early-IMS-Security flag indicates whether the IMPI is provisioned as Early IMS Security or not.</p> <p>If the private identity is defined with AlgoName=Early-IMS-Security, this flag must be set to ON.</p>

#### CLI Example

```
Subscriptions[]>Subscription[SubscriptionID = sub-1]>HssSubscription[] >
add HssPrivateIdentity[PrivateIdentity = joe@example.com]
```

## HSS Private Public Link

#### Name

HssPrivatePublicLink

#### Description

To link Public Identities to a Private Identity.

#### CLI Navigation

```
Subscriptions[ ]> Subscription[SubscriptionID] > HssSubscription[]>
HssPrivatePublicLink
```

### CLI Inherited Attributes

SubscriptionID

### CLI Command Syntax

```
Subscriptions[]>Subscription[SubscriptionID = <string>]> HssSubscription[]
> add HssPrivatePublicLink[PrivateIdentity = NAI; PublicIdentity = string]
```

### Operations Permitted

Add, delete.

### Attributes and Values

Table 115: HssPrivatePublicLink mandatory attributes

Attribute	Value Range	Default	Description
PrivateIdentity	NAI format: username@realm	N/A	Parameter not known publicly nor by the user and used by the network to determine the access allowance of the given user to the IMS network. It is a permanent subscriber data stored in the HSS.
PublicIdentity	SIP URI (see RFC 3261) or Tel URL (see RFC 2806)	N/A	Parameter used by the other subscribers on the network to address the subscriber holding public identity in a format that is known publicly. It is a permanent subscriber data stored in the HSS.

### CLI Example

```
Subscriptions[]>Subscription[SubscriptionID = sub-1]>HssSubscription[] >
add HssPrivatePublicLink[PrivateIdentity = joe@example.com; PublicIdentity
= sip:alice1010100@tekelec.com]
```

## HSS Public Identity

### Name

HssPublicIdentity

### Description

To add a Public Identity to a subscriber as well as provision all the information related to this Public Identity.

### CLI Navigation

```
Subscriptions[ ]> Subscription[SubscriptionID] > HssSubscription [ ]>
HssPublicIdentity
```

### CLI Inherited Attributes

SubscriptionID

### CLI Command Syntax

```
Subscriptions[ ]>Subscription[SubscriptionID = <string>]> HssSubscription[ ]
> display HssPublicIdentity [PublicIdentity = SIP URI, tel URL;
RoamingProfileID = string; ServiceProfileID = string; ASName= SIP URI;
IdentityType = 0,1,2; BarringIndication = 0,1;ImplicitRegistrationSet =
0,1; HssMsIsdn = integer; AliasGroup = integer; AliasIdentityGroupID =
string; DisplayName = string]
```

### Operations Permitted

Modify, delete, add.

**Table 116: HssPublicIdentity mandatory attributes**

Attribute	Value Range	Default	Description
Public Identity	SIP URI (see RFC 3261) or Tel URL (see RFC 2806)	N/A	Parameter used by the other subscribers on the network to address the subscriber holding public identity in a format that is known publicly. It is a permanent subscriber data stored in the HSS.
Roaming ProfileID	String (100)	N/A	Identification of the roaming profile.
Service ProfileID	String (100)	N/A	Identification of service profile.

**Table 117: HssPublicIdentity optional attributes**

Attribute	Value Range	Default	Description
ASName	SIP URI	N/A	Name (SIP URI) of the application server to contact. (ex: sip:AS-98-1@homedomain.com)
Identity Type	0 or 1 or 2	N/A	Type of identity. 0 = PUBLIC_USER_IDENTITY 1 = DISTINCT_PSI 2 = WILDCARDED_PSI

Attribute	Value Range	Default	Description
Barring Indication	0 or 1	0	<p>Flag associated to each public identity to indicate that the identity is barred from any IMS communication (except registrations and re-registrations).</p> <p>0 = the identity is not barred from any IMS communication</p> <p>1 = the identity is barred from any IMS communication.</p>
Implicit RegistrationSet	0 - n	0	<p>The IMS HSS supports at least one set of implicitly registered Public User Identities for IMS users.</p> <p>Implicit registration is the mechanism by which a user is allowed to register simultaneously more than one of his/her Public User Identities. The HSS knows the identities that are to be implicitly registered when it receives the indication of the registration of an individual identity. A set of Public User Identities, which are registered and de-registered simultaneously when any of the Public User Identities belonging to that set is registered or de-registered.</p> <p>There is no limitation to the number of Public User Identities belonging to that set.</p> <p>0 = no implicit registration.</p> <p>n = implicit registration of Public User Identities belonging to the n set.</p>
HssMsIsdn	up to 15 digits	N/A	<p>MSISDN for which data is required. MS international PSTN/ISDN number=Country Code (CC) + National (significant) mobile number (National Destination Code (NDC) + Subscriber Number (SN)). National format not supported.</p>
AliasGroup	integer	N/A	<p>Alias group this Public Identity belongs to. This parameter is used in Sh messages for Sh-Notifications. It allows to group several Public Identities together.</p> <p>It is used when IDENTITY_SET received in UDR message is set to ALIAS_IDENTITIES. The HSS will provide all non barred PublicIdentities that are in the same alias group within the UDA.</p> <p>Multiple Public Identities can belong to one Alias group.</p>
DisplayName	string	N/A	<p>Name that is associated with this Public Identity.</p>

Attribute	Value Range	Default	Description
AliasIdentity GroupID	string	N/A	Identifier of the alias group to which the Public Identity belongs.  This is used in Cx messages and is returned when the subscriber profile is sent in the SAA/PPR.

#### CLI Example

```
Subscriptions[]>Subscription[SubscriptionID = sub-1]>HssSubscription[]>
display HssPublicIdentity [PublicIdentity = sip:alice1010100@tekelec.com]
```

## HSS Service Profile

#### Name

HssServiceProfile

#### Description

To assign services to IMS subscribers and generate their profile.

#### CLI Navigation

```
Subscriptions[ ]> Subscription[SubscriptionID] > HssSubscription [ ]>
HssServiceProfile
```

#### CLI Inherited Attributes

SubscriptionID

#### CLI Command Syntax

```
Subscriptions[]>Subscription[SubscriptionID = <string>]> HssSubscription[]>
display HssServiceProfile [ServiceProfileID = string, ServerCapabilitiesID
= string, SubscriptionMediaProfID = uint]
```

#### Operations Permitted

display, modify, delete, add.

**Note:** Not all users (User Groups) are allowed to perform these operations.

**Table 118: HssServiceProfile mandatory attributes**

Attribute	Value Range	Default	Description
ServiceProfileID	String (100)	N/A	Identification of service profile.
ServerCapabilitiesID	String (100)	N/A	Identification of server capabilities.

Table 119: HssServiceProfile optional attributes

Attribute	Value Range	Default	Description
SubscriptionMediaProfID	Unsigned integer (32)	0	Subscription Media Profile Identity. Identifies a set of session description parameters that the IMS subscriber or PSI user is authorized to request.

**CLI Example**

```
Subscriptions[]>Subscription[SubscriptionID = sub-1]> HssSubscription[]>
display HssServiceProfile[ServiceProfileID = servProf-1-1-1]
```

**HSS Initial Filtering Criteria**

**Name**

HssInitialFilteringCriteria

**Description**

To store a set of Initial Filter Criteria for each user, for each application or service that the user request may invoke.

**CLI Navigation**

```
Subscriptions[ ]> Subscription[SubscriptionID] > HssSubscription [ ]>
HssServiceProfile [ServiceProfileID]> HssInitialFilteringCriteria
```

**CLI Inherited Attributes**

ServiceProfileID, SubscriptionID

**CLI Command Syntax**

```
Subscriptions[]>Subscription[SubscriptionID = <string>]> HssSubscription[]>
HssServiceProfile[ServiceProfileID = <string>]>display
HssInitialFilteringCriteria [InitialFiltCritID =string; iFCPriority =
integer; ProfilePartIndicator = Registered, Unregistered; ConditionTypeCNF
= 0,1; ASName = SIP URL; ASDefaultHandling = 0,1; ASServiceInfo = string]
```

**Operations Permitted**

Display, modify, delete, add.

Table 120: HssInitialFilteringCriteria mandatory attribute

Attribute	Value Range	Default	Description
InitialFiltCritID	String (100)		Identification of the Initial Filtering criteria stored an IMS user.

Table 121: HssInitialFilteringCriteria optional attributes

Attribute	Value Range	Default	Description
iFCPriority	integer	0	indicates the priority of the Filter Criteria. The higher the Priority Number the lower the priority of the Filter Criteria is; i.e., a Filter Criteria with a higher value of Priority Number shall be assessed after the Filter Criteria with a smaller Priority Number have been assessed. The same priority shall not be assigned to more than one initial Filter Criterion.
ProfilePartIndicator	0 or 1	Registered	attribute indicating if the iFC is a part of the registered or unregistered user profile. 0 = REGISTERED 1= UNREGISTERED
ConditionTypeCNF	0 or 1	1	Defines how the set of SPTs are expressed, i.e. either an ORed set of ANDED sets of SPT statements or an ANDED set of ORed sets of statements. Individual SPTstatements can also be negated. These combinations are termed, respectively, Disjunctive Normal Form (DNF) and Conjunctive Normal Form (CNF) for the SPT. 0 = if the Trigger Point is expressed in Disjunctive Normal Form (DNF) 1 = when the Trigger Point associated with the FilterCriteria is a boolean

Attribute	Value Range	Default	Description
			expression in Conjunctive Normal Form (CNF)
ASName	SIP URI	N/A	Name (SIP URI) of the application server to contact. (ex: sip:AS-98-1@homedomain.com)
ASDefaultHandling	0 or 1	N/A	Determines whether the dialog should be released if the Application Server could not be reached or not.  0= SESSION_CONT 1= SESSION_TERM
ASServiceInfo	String (100)	null	Conveys the information that is allowed to be downloaded to S-CSCF and that is to be transferred transparently to an Application Server when the trigger points of a filter criterion are satisfied.

#### CLI Example

```
Subscriptions[]>Subscription[SubscriptionID = sub-1]> HssSubscription[]>
HssServiceProfile[ServiceProfileID = servProf-1-1-1]>display
HssInitialFilteringCriteria[InitialFiltCritID = ifc-1-1-1-1]
```

## HSS IFC to DSAI

### Name

HssIFCToDSAI

### Description

This entity allows the Network Operator to provision Dynamic Service Activation Information (DSAI) for a specific HSS Initial Filter Criteria (iFC).

The binding of a DSAI to an iFC is not exclusive, i.e. one instance of initial filter criteria may be bound to zero or more DSAIs, however all the iFCs bound to a given DSAI should trigger to the same AS (i.e. they should share the same ServerName), which is the only one allowed to update it.

### CLI Navigation

```
Subscriptions[ ]> Subscription[SubscriptionID] > HssSubscription [ ]>
HssServiceProfile [ServiceProfileID]>
HssInitialFilteringCriteria[InitialFiltCritID]> HssIFCToDSAI
```

### CLI Inherited Attributes

ServiceProfileID, SubscriptionID, InitalFiltCritID

### CLI Command Syntax

```
Subscriptions[ ]>Subscription[SubscriptionID = <string>]> HssSubscription[ ]>
HssServiceProfile[ServiceProfileID = <string>]>
HssInitialFilteringCriteria[InitialFiltCritID = <string>]>display
HssIFCToDSAI [DSAITag = string; DSAIValue = 0,1]
```

### Operations Permitted

display, modify, delete, add.

**Note:** Not all users (User Groups) are allowed to perform these operations.

**Table 122: HssIFCToDSAI mandatory attribute**

Attribute	Value Range	Default	Description
DSAITag	string	N/A	Uniquely identifies, along with the Public User/Service Identity, an instance of Dynamic Service Activation Info.  The same DSAI tag may be used for all the user profiles when indicating the same type of information, but not all the user profiles may contain the same set of tags.

**Table 123: HssIFCToDSAI optional attributes**

Attribute	Value Range	Default	Description
DSAIValue	0 (ACTIVE) 1 (INACTIVE)	0	Activation state of a Service.

### CLI Example

```
Subscriptions[ ]>Subscription[SubscriptionID = sub-1]> HssSubscription[ ]>
HssServiceProfile[ServiceProfileID = servProf-1-1-1]>
HssInitialFilteringCriteria[InitialFiltCritID = 1]>add HssIFCToDSAI [DSAITag
= 1111]
```

## HSS Service Point Trigger

### Name

HssServicePointTrigger

### Description

To provision the trigger points that should be checked in order to find out if the indicated Application Server should be contacted or not

### CLI Navigation

```
Subscriptions[ ]> Subscription[SubscriptionID] > HssSubscription [ ]>
HssServiceProfile [ServiceProfileID]> HssInitialFilteringCriteria
[InitialFiltCritID]> HssServicePointTrigger
```

### CLI Inherited Attributes

ServiceProfileID, InitialFiltCritID, SubscriptionID

### CLI Command Syntax

```
Subscriptions[ ]>Subscription[SubscriptionID = <string>]> HssSubscription[ ]>
HssServiceProfile[ServiceProfileID = <string>]>
HssInitialFilteringCriteria[InitialFiltCritID = ifc-1-1-1-1]>display
HssServicePointTrigger[ServPointTriggerID = string; ServPointTriggerType =
0,1,2,3,4; GroupList = string; RegistrationType = 0,1,2; ConditionNegated
= 0,1; RequestUriInfo = string; SipMethodInfo = string; SipHeaderHeader =
string; SipHeaderContent = string; SessionCaseInfo = 0,1,2,3;
SessionDescriptionContent = string, SessionDescriptionLine = string]
```

### Operations Permitted

display, modify, delete, add.

**Table 124: HssServicePointTrigger mandatory attributes**

Attribute	Value Range	Default	Description
ServPointTriggerID	String (100)	N/A	Identification of the Service Point Trigger
ServPointTrigger Type	0,1,2,3,4	N/A	Identifies the type of Service Point Trigger. 0 = REQUEST_URI 1 = SIP_METHOD 2 = SIP_HEADER 3 = SESSION_CASE 4 = SESSION_DESCRIPTION

Table 125: HssServicePointTrigger optional attributes

Attribute	Value Range	Default	Description
GroupList	String (255)	0	<p>allows the grouping of SPTs that will configure the sub-expressions inside a CNF or DNF expression. For instance, in the following CNF expression (A+B).(C+D), A+B and C+D would correspond to different groups.</p> <p>In CNF, the attribute Group identifies the ORed sets of SPT instances. If the SPT belongs to different ORed sets, SPT can have more than one Group values assigned. At least one Group must be assigned for each SPT.</p> <p>In DNF, the attribute Group identifies the ANDED sets of SPT instances. If the SPT belongs to different ANDED sets, SPT can have more than one Group values assigned. At least one Group must be assigned for each SPI.</p>
RegistrationType	0 or 1 or 2	N/A	<p>is relevant only to the SIP Method SPT with a value of "REGISTER" and its' support is optional in the HSS and in the S-CSCF. The RegistrationType may contain a list of values that define whether the SPT matches to REGISTER messages that are related to initial registrations, re-registrations, and/or de-registrations. If RegistrationTypes are given, the SIP Method SPT with a value of "REGISTER" shall match if any of the RegistrationTypes match and the S-CSCF supports the RegistrationType attribute. If the SIP Method SPT contains value "REGISTER", and no RegistrationType is given, or</p>

Attribute	Value Range	Default	Description
			<p>if the S-CSCF does not support the RegistrationType attribute, the SIP Method SPT matches to all REGISTER messages. The attribute RegistrationType may be discarded if it is present in an SPT other than SIP Method with value "REGISTER".</p> <p>0 = INITIAL_REGISTRATION 1 = RE_REGISTRATION 2 = DE_REGISTRATION</p>
ConditionNegated	0 or 1	0	<p>Defines whether the individual SPT instance is negated (i.e. NOT logical expression).</p> <p>0 = Not negated 1 = Negated</p>
RequestUriInfo	String (255)	null	defines SPT for the Request-URI
SipMethodInfo	String (50)	N/A	holds the name of any SIP method.
SipHeaderHeader	String (255)	Null	identifies the SIP Header, which is the SPT
SipHeaderContent	String (255)	Null	<p>defines the value of the SIP Header if required. The absence of the Content attribute and if ConditionNegated = TRUE indicates that the SPT is the absence of a determined SIP header.</p>
SessionCaseInfo	0,1,2,3	null	<p>indicates if the filter should be used by the S-CSCF handling the Originating, Terminating for a registered end user, Terminating for an unregistered end user, or Originating for an unregistered end user services.</p> <p>0 = ORIGINATING</p>

Attribute	Value Range	Default	Description
			1 = TERMINATING_ REGISTERED  2 = TERMINATING_ UNREGISTERED  3 = ORIGINATING_ UNREGISTERED
SessionDescription Content	String (255)	null	Defines SPT for the content of any SDP field within the body of a SIP Method.  Defines the content of the line identified by Line.
SessionDescription Line	String (255)	null	identifies the line inside the session description

#### CLI Example

```
Subscriptions[]>Subscription[SubscriptionID = sub-1]> HssSubscription[]>
:HssServiceProfile[ServiceProfileID =
servProf-1-1-1]:HssInitialFilteringCriteria[InitialFiltCritID =
ifc-1-1-1-1]>display HssServicePointTrigger[ServPointTriggerID = stp-1-1-1-1]
```

## HSS Service Profile to Shared LFC

#### Name

HssServiceProfileToSharedIfc

#### Description

This table allows to link a list of Shared IFCs to a Service Profile.

#### CLI Navigation

```
Subscriptions[ ]> Subscription[SubscriptionID] > HssSubscription [ ]>
HssServiceProfile [ServiceProfileID]> HssServiceProfileToSharedIfc
```

#### CLI Inherited Attributes

ServiceProfileID, SubscriptionID

#### CLI Command Syntax

```
Subscriptions[]>Subscription[SubscriptionID = <string>]> HssSubscription[]>
HssServiceProfile[ServiceProfileID = <string>]>display
HssServiceProfileToSharedIfc [SharedInitialFiltCritID = string]
```

**Operations Permitted**

display, delete, add.

**Table 126: HssServiceProfileToSharedIfc attributes**

Mandatory Attribute			
Attribute	Value Range	Default	Description
SharedInitialFiltCritID	String (100)	N/A	Identifier of the Shared Initial Filter Criteria to which you wish to link the Service Profile.

**CLI Example**

```
Subscriptions[]>Subscription[SubscriptionID = sub-1]> HssSubscription[]>
HssServiceProfile[ServiceProfileID = servProf-1-1-1]>display
HssServiceProfileToSharedIfc[SharedInitialFiltCritID = sharedIfc-123]
```

**Specific APN Information**

**Name**

SpecificAPNInfo

**Description**

This table contains the list of active APNs stored by the MME or SGSN, including the identity of the PDN GW assigned to each APN. The information in this table can be only displayed.

**WebCI Navigation**

**Subscription Management > Subscriber Provisioning > SubscriptionID > Subscription Sub > HLR > display/modify > ServiceProfile > ServiceProfileID > SpecificAPNInfo**

**CLI Navigation**

```
23 :Subscriptions[]:Subscription[SubscriptionID =
SUB_0]:SubscriberProfile[HlrServiceProfileID =
1]:ServiceProfilePDNContext[PdnContextId = 1]>
```

**Operations Permitted**

Display

**Table 127: SpecificAPNInfo attributes**

Attribute	Value Range	Default	Description
PdnContecId	Integer	0	The context identifier that is sent in the user data profile to the MME or

Attribute	Value Range	Default	Description
			SGSN during an update location procedure.
SpecificAccessPointName	String	Null	Identifies an IP packet data network (PDN), that a mobile data user wants to communicate with
VisitedNetworkId	String	Null	Indicates the PLMN where the PGW was allocated, in case of dynamic PGW assignment.
MipHaAddress1	String	Null	First mobile node's home agent IP address
MipHaAddress2	String	Null	Second mobile node's home agent IP address
MipHaDestHost	String	Null	Host Name of the home agent
MipHaDestRealm	String	Null	Realm where the home agent is located
Mip6HomeLinkPrefix	String	Null	Mobile IPv6 home network prefix information in a network byte order.

## SLF Redirect Host Mapping

### Name

HssSlfPublic2HssName

### Description

This Table is used to return in the Redirect\_Host AVP the name of the HSS in which the subscriber profile of the public identity is managed.

### CLI Navigation

```
Subscriptions[ ] > Subscription[SubscriptionID]> HssSlfPublic2HssName
```

### CLI Inherited Attributes

SubscriptionID

### CLI Command Syntax

```
Hss[ ]> Subscription[SubscriptionID=<string>]> display HssSlfPublic2HssName  
[PublicIdentity= URI;HssName= Diameter URI Type]
```

**Operations Permitted**

Display

**Attributes and Values**

**Table 128: HssSlfPublic2HssName mandatory attributes**

Attribute	Value Range	Default	Description
PublicIdentity	SIP URI (see RFC 3261) or Tel URL (see RFC 2806)	N/A	Parameter used by the other subscribers on the network to address the subscriber holding public identity in a format that is known publicly. It is a permanent subscriber data stored in the HSS.
HssName	Diameter URI type*		The corresponding HSS name in which the profile is hosted.

\*

**Note:** DiameterURI type which must follow the URI syntax rules (refer to RFC 3588, sect.4.3):

“aaa://” FQDN [port][transport][protocol]

- FQDN = Fully qualified domain name
- Port = “:”1\*DIGIT
- Transport = “;transport=” transport-protocol
- Transport-protocol = (“tcp”/”sctp”/”udp”)
- Protocol = “;protocol=” aaa-protocol
- aaa-protocol = ( "diameter" / "radius" / "tacacs+" )

(ex:“aaa://” hostname.com:18131;transport=udp;protocol=radius)

**Note:** It is very important here to remember that a semicolon is used as a separator in CLI. Therefore, if you wish to write a long format of DiameterURI type, such as:

PrimEventChargFunction: aaa://host.example1.com;transport=tcp,

you have to enter it as follows in the CLI command: PrimEventChargFunction: aaa://host.example1.com\;transport=tcp. You have to precede the semicolon with “ \ ”.

**CLI Example**

```
Hss[]> Subscription[SubscriptionID=sub-1]> display HssSlfPublic2HssName
[PublicIdentity = sip:mcl@tekelec.com; HssName=
aaa://hss2.test.com\;transport=tcp]
```

# Chapter 8

## Enum (Telephone Number Mapping)

---

### Topics:

- [DNS Enum User.....228](#)

This chapter provides details on the entity to provision an Enum User.

## DNS Enum User

### Name

DNSEnumUser

### Description

This entity allows the operator to define an Enum User with a telephone number, domain name and the information that needs to be returned in the DNS Answer. Each Enum User is stored under a specific SubscriptionID. This allows an Enum User to be grouped with a HSS and AAA User. One single subscriber with the SubscriptionID 'X' can have one or all of the following subscriber profiles: HLR, SIP, HSS, AAA and Enum.

### CLI Navigation

```
Subscriptions[ ]> Subscription[SubscriptionID]>DNSEnumUser
```

### CLI Inherited Attributes

SubscriptionID

### WebCI Navigation

Subscription Management folder > Subscriber Provisioning window > SubscriptionID > ENUM Server

### CLI Command Syntax:

```
Subscriptions[ ]> Subscription[SubscriptionId=<string>]>add
DNSEnumUser[EnumUserId=int; NAPTROrder=varchar; NAPTRPreference=;
NAPTRFlags=int; NAPTRServices=int; NAPTRRegExp=int; NAPTRReplacement=int;
NAPTRTtl=int; EnumDomainNameId=int; DNSEnumUserTemplateId=int]
```

### Operations Permitted

Add, display, modify, delete.

### Attributes and Values

Table 129: DNSEnumUser mandatory attributes

Attribute	Value Range	Default	Description
<i>EnumUserId</i>	Telephone number in E.164 format.  (ex:18001234567 or +18001234567)  Integer (32)	N/A	Telephone number of the user's equipment.

Attribute	Value Range	Default	Description
NAPTRRegExp	Varchar(128)	N/A	The regular expression that corresponds to this phone number.

Table 130: DNSEnumUser optional attributes

Attribute	Value Range	Default	Description
NAPTROrder	Integer	10	The position of this NAPTR record in the DNS Answer. This value is sent in the reply (Not used in IMS Network).
NAPTRPreference	Integer	10	The preference of this NAPTR record among the DNS Record sent in the DNS answer. This value is sent in the reply (Not used in IMS Network).
NAPTRFlags	Varchar(8)	“u”	Set to “u” for IMS Networks. This value is sent in the reply.
NAPTRServices	Varchar(96)	“E2U+sip”	Set to “E2U+sip” for IMS Networks. This value is sent in the reply. (Used for Sip services).
NAPTRReplacement	Varchar(128)	N/A	The value of replacement field must be the root domain-name.
NAPTRttl	Integer	3600	This is the Time To Live of the NAPTR record. This value is sent in the reply.
EnumDomainNameId	integer	N/A	Identification of one of the Domain Names already defined in the system’s DNSDomainNameList entity. Specifying the Id of a Domain Name is associated a Domain Name to an EnumUser. The Enum User’s associated domain name is the supported domain name used by the Enum Server to compare the domain name extracted from the DNS Query.
DNSEnumUserTemplateId	Smallint unsigned	0	Template to be used for provisioning the Enum User. Using templates is optional and if the template mechanism is not used, this field must be set to 0 and all other fields must be provisioned. A template with the corresponding DNSEnumUserTemplateId must be already provisioned in the DNSEnumUserTemplate table (see “DNS ENUM Server Configuration” section of <i>SDM System Configuration – User Guide</i> ) if this field is set to a non-null value.

**CLI Example**

```
Subscriptions[:Subscription[SubscriptionID = sub-1]> add
DNSEnumUser[EnumUserId = 1; NAPTRRegExp = !^.*$!sip:information@examplecom!;
EnumDomainNameId =1]
```

# Chapter 9

## Authentication, Authorization, and Accounting (AAA)

### Topics:

- *Subscription Management – AAA Application.....232*
- *AAA Operations.....237*

This chapter provides the entities to provision AAA subscribers. For instructions on how to provision AAA subscribers, refer to the SDM Subscriber Provisioning- User Guide.

## Subscription Management – AAA Application

### Subscriber Provisioning

The following can be provisioned for a subscriber (SubscriptionID):

- provision AAA User profiles
- associate IP Addresses to each AAA user.
- Define Vendor Specific Attributes
- Assign a AAA static IP address for a AAA user’s called station, realm or calling station.

In order to achieve this, the tables described in this chapter must be provisioned and some of the operations described in the next sub-section can be executed.

See the detailed description of each table and operation that can be provisioned/executed to perform AAA subscriber provisioning.

### AAS User IP Address

#### Name

AAAUserIpAddress

#### Description

This table contains addresses that have been assigned to users. This table is updated by the software during operation.

#### Operations Permitted

display

#### Attributes and Values

Table 131: AAAUserIpAddress attributes

Mandatory Attributes			
Attribute	Value Range	Default	Description
AAAIPAddress	IP Address	N/A	Read Only. IP Address allocated to the user.
NASIPAddress	IP Address	N/A	Read Only. IP Address of the NAS.
CallingStationID	integer	N/A	Read Only. CallingStation identifier that identifies the

Mandatory Attributes			
Attribute	Value Range	Default	Description
			Calling Station to which the IP address is allocated to.

## AAA User ID

### Name

AAAUserId:

### Description

This table allows you to create and edit a AAA user.

### Operations Permitted

add, display, modify and delete.

### Attributes and Values

Table 132: AAAUserId mandatory attributes

Attribute	Value Range	Default	Description
ServiceType	2 (Framed)	2	Type of service the use has
AAAUserName	Char string (128) Or the following format: username@realm	N/A	Name of the AAA user.  The realm part of the AAAUserName is the realm the AAA uses whenever a realm is needed, such as for authentication and AAA static IP address allocation.  <b>Note:</b> In the current release, there is a limitation on the length of the 'AAAUsername' for a AAA user with a AAA Address Allocation Policy of type 'DHCP_IDENT' or 'No_IP_ALLOC'. The following occurs: <ul style="list-style-type: none"> <li>The re-authentication of a AAA user fails, if its 'AAAUsername' is longer than 15 characters.</li> </ul>

Attribute	Value Range	Default	Description
			<ul style="list-style-type: none"> <li>The authentication of a AAA user fails, if the first 15 characters of its 'AAAUsername' are the same as the ones of a AAA user already authenticated.</li> </ul>
FramedProtocol	7(GPRS_PDP_Context)	7	Indicates the framing to be used for framed access.
AuthMethod	Enumerated: 0(PAP_CHAP)	N/A	<p>Defines the authentication method associated to the user defined.</p> <p>0: defines password authentication</p>

Table 133: AAAUserId optional attributes

Attribute	Value Range	Default	Description
AAAEncryptedPassword	Xml string	Not Provisioned	The password for the user's validation. Once the password is configured, the value of this attribute will be displayed as Provisioned.
SessionTimeout	Unint (32)	0	<p>Sets the maximum number of seconds of service to be provided to the user before termination of the session or prompt. By default, it is set to 0, which means that the session lifetime is infinite and never expires.</p> <p><b>Note:</b> The attribute SessionWatchdogPeriod in the <b>AAA Config table</b> must be set to a non-zero value for the SessionTimeout to take effect.</p>
Disabled	0,1	0	Allows the operator to set a user to 'disabled', in which case the user's Access-Requests are rejected by the AAA server.

Attribute	Value Range	Default	Description
			0: User Enabled (Disabling option is Off) 1: User Disabled (Disabling option is On)
FramedMTU	64 to 65 535	1500	Indicates the Maximum Transmission Unit to be configured for the user, when it is not negotiated by some other means (such as PPP).
AAAClass	Char String (128)	'null'	Attribute sent by the AAA server to the client in an Access-Accept. The client then sends it unmodified to the accounting server as part of the Accounting-Request packet if accounting is supported.
NeedsAuthentication	0,1	0	Whether the subscriber needs to be authenticated or not during the registration. 0: The subscriber doesn't need authentication. 1: The subscriber needs authentication.
SpecialUser	0,1	0	Allows the operator to set a user to "special user" for the IP-MSISDN Correlation feature. 0: the user is not considered as a "special user". The Calling-Station-Id (MSISDN) is not sent back in response to an Access-Request. 1: the user is considered as a "special user". The Calling-Station-Id (MSISDN) is sent back in the Access-Accept message.
PreferredAuthMethod	Boolean 0: not preferred 1: preferred	0	Sets the preferred authentication method for a user.  In case of multiple authentication methods for a

Attribute	Value Range	Default	Description
			user, the administrator should set one method to the PreferredAuthMethod.

**CLI Example:**

```
:Hss[]:Subscription[SubscriptionID = subs1]> add AAAUserId[ServiceType =
2; AAAUserName = name89@tekelec.com; AuthMethod = 0; FramedProtocol = 7;
AAAEncryptedPassword = 12345678901234567890123456789012]
```

**AAA User Vendor Attribute****Name**

AAAUserVendorAttribute

**Description**

This table allows to configure vendors' specific attributes in order to equip the AAA server to interpret vendor-specific information sent by a AAA user.

**Operations Permitted**

add, display, modify and delete.

**Attributes and Values****Table 134: AAAUserVendorAttribute mandatory attributes**

Attribute	Value Range	Default	Description
VendorId	Int(32bits) As defined in the "Assigned Numbers" RFC [6].	N/A	Identification of the Vendor.
AttrCode	Int (octet)	N/A	Code of the vendor's specific attribute.

**Table 135: AAAUserVendorAttribute optional attributes**

Attribute	Value Range	Default	Description
VendorName	Char String	N/A	Name of the vendor.
AttrValue	Char String (249)	N/A	Name of the vendor-specific attribute.

## AAA User IP Address Pools

### Name

AAAAddressPoolConfiguration

### Description

This entity allows to define the IP Address Pools authorized for the AAA user configured as a “special user”. This entity only needs to be provisioned for a AAA user configured as a “special user”.

**Note:** Prior to provisioning this entity, a minimum of one AddressPoolName must already exist and have been configured in the AAAAddressPoolConfiguration entity.

### Operations Permitted

add, display, modify and delete.

### Attributes and Values

Table 136: AAAAddressPoolConfiguration mandatory attribute

Attribute	Value Range	Default	Description
AddressPoolName	String	Null	The name of the address pool authorized for the AAA user configured as a “special user”. By default, no IP Pool is specified, which means that all pools can be queried. Multiple IP Address Pools can be provisioned for the same AAA user.

## AAA Operations

### DisconnectUser()

The DisconnectUser operation sends a Disconnect-Request packet in order to terminate a user session on a NAS and discard all associated session context.

**Note:** 1: Disconnecting a AAA user will disable it.

**Note:** 2: In the case where a AAA user has IP addresses allocated to multiple MSISDNs, disconnecting the AAA user will disconnect all of the IP connections.

### CLI Command Syntax

```
:Hss[]:AAAUserId[AAAUserName = aaa-1; AuthMethod=0 ]> DisconnectUser()
```

## EnableUser()

The EnableUser operation enables an existing AAA user that was disabled. This operation can be performed to enable a AAA user after it was disconnected.

### CLI Command Syntax

```
:Hss[]:AAAUserId[AAAUserName = aaa-1; AuthMethod=0]> EnableUser()
```

## DisplayUserStatus()

The DisplayUserStatus operation allows to display a AAA user's dynamic IP Addresses information. The IP Address (es) dynamically allocated to that AAA User are displayed, as well as the NAS IP Address and the CallingStationID. With the IPAddress allocation based on Calling-Station-Id attribute feature, multiple entries are allowed in this table, each with a different Calling Station ID (MSISDN in 3GPP Gi interworking).

**Note:** Executing this operation for a AAA user that has a AAA Allocation Policy of Type 'DHCP\_IDENT' or 'NO\_IP\_ALLOC' assigned to it, will display the value 'Not Allocated' as the AAA IP address since in those cases the AAA doesn't allocate an IP address.

### CLI Command Syntax

```
:Hss[]:AAAUserId[AAAUserName = aaa-1]>DisplayUserStatus()
```

## AssignIPAddress()

The AssignIPAddress operation allows a static IP Address to be associated to a specific Called Station (APN) or Realm. If desired, a Calling Station (MSISDN) can also be added, in order to identify the subscriber. When executing this operation for a subscriber, the Called Station must be specified in the indicated field; the realm, on the other hand, doesn't need to be entered, it is extracted from the AAAUserName. With this information, the AAA server associates an IP Address to the Called Station or Realm from the configured IP Address pools. This IP Address is said to be static and becomes unavailable when the AAA server performs a dynamic allocation of an IP address. For a single subscriber, a different static IP Address can be assigned for each Called Station (APN) or Realm. Moreover, for a subscriber's specific Calling Station (MSISDN), different static IP addresses can be assigned for different Called Stations (APNs).

When executing the AssignIPAddress () operation, the following parameters can be specified:

- **CalledStation:** optional parameter that represents the Called-Station-Id (e.g., APN) to which the static IP address is associated. Whenever an Access-Request with this Called-Station-Id arrives, the corresponding static IP address will be allocated. The value supported for this parameter is 'string'. If no CalledStation is indicated and the AAAUserName contains a Realm (i.e., the AAAUserName is in the format *user@realm*), the static IP address is associated with the user's realm.
- **CallingStation:** optional parameter that represents the Calling-Station-Id (e.g., MSISDN) that identifies the subscriber to which the static IP address is assigned. The value supported for this parameter is 'string'.

### CLI Command Syntax

```
:Hss[]:Subscription[SubscriptionID = string]:AAUserId[AAUserName = string,  
AuthMethod = enum]> AssignIPAddress() CalledStation = string; CallingStation  
= string;
```

### CLI Example

```
:Hss[]:Subscription[SubscriptionID = sub1]:AAUserId[AAUserName =  
aaasub4;AuthMethod=0]> AssignIPAddress() CalledStation = tekelec.com;  
CallingStation = 5149359700;
```

## ReleaseIPAddress()

The ReleaseIPAddress operation allows to release a static IP Address. When executing this operation for a Called Station (and optionally Calling Station) of a subscriber, the AAA server releases the static IP Address that was assigned for that subscriber's Called Station (and Calling Station). This means that this IP Address is now available in the pool for dynamic IP allocation and is no longer reserved uniquely for that subscriber's Called Station (and Calling Station).

When executing the AssignIPAddress () operation, the following parameters can be specified:

- CalledStation: optional parameter that represents the Called-Station-Id (e.g., APN) to which the static IP address is associated. Whenever an Access-Request with this Called-Station-Id arrives, the corresponding static IP address will be allocated. The value supported for this parameter is 'string'. If no CalledStation is indicated and the AAUserName contains a Realm (i.e., the AAUserName is in the format *user@realm*), the static IP address is released from its association with the user's realm.
- CallingStation: optional parameter that represents the Calling-Station-Id (e.g., MSISDN) that identifies the subscriber to which the static IP address is assigned. The value supported for this parameter is 'string'.

### CLI Command Syntax

```
:Hss[]:Subscription[SubscriptionID = string]:AAUserId[AAUserName = string;  
AuthMethod=enum]> ReleaseIPAddress() CalledStation = string; CallingStation  
= string;
```

### CLI Example

```
:Hss[]:Subscription[SubscriptionID = sub1]:AAUserId[AAUserName = aaasub4;  
AuthMethod=0]> ReleaseIPAddress() CalledStation = tekelec.com; CallingStation  
= 5149359700;
```

## DisplayAssignedIPAddress()

The DisplayAssignedIPAddress operation allows to display the static IP Addresses that the AAA server has already assigned to a subscriber.

### CLI Command Syntax

```
:Hss[]:Subscription[SubscriptionID = string]:AAAUId[AAAUName =  
string]>DisplayAssignedIPAddress()
```

## ClearAddresses()

The ClearAddresses operation allows to manually reset (de-allocate) some or all the IP addresses within a specific address pool that have been allocated to subscribers.

### CLI Command Syntax

```
:Hss[]:AAAAddressAllocationPolicy[AddressPoolName = <addresspoolname>]>  
ClearAddresses() OlderThan = <age>
```

<age>: age in seconds. The allocations that have been made before <age> seconds ago will be reset. Setting <age> to 0 will clear all IP addresses.

### CLI Example:

```
Hss[]:AAAAddressAllocationPolicy[AddressPoolName = addresspool1]>  
ClearAddresses() OlderThan = 3600
```

In this example, all the allocations made, using the IP addresses in the addresspool1, before 3600 seconds ago will be reset (de-allocated).

## #

3GPP  
3rd Generation Partnership Project.  
The standards body for wireless communications.

## A

APN  
Access Point Name  
The name identifying a general packet radio service (GPRS) bearer service in a GSM mobile network.  
See also GSM.

AuC  
Authentication Center

## B

BAIC  
Barring of All Incoming Calls

BAOC  
Barring of All Outgoing Calls

BICROAM  
Barring of Incoming Calls when ROAMing outside home PLMN Country

BOIC  
Barring of Outgoing International Calls

BS  
Base Station  
Bearer Services

## C

CC  
Connection Confirmed  
Country Code

C

Composite Clock

CD Call Deflection

CFB Call Forwarding on Mobile  
Subscriber Busy

CFNRC Call Forwarding on Mobile  
Subscriber Not Reachable

CFNRY Call Forwarding on Mobile  
Subscriber No Reply

CFU Call Forwarding Unconditional

CLIR Calling Line Identification  
Restriction

COLP Connected Line Identification  
Presentation

COLR Connected Line Identification  
Restriction

D

DN Directory number  
A DN can refer to any mobile or  
wireline subscriber number, and  
can include MSISDN, MDN, MIN,  
or the wireline Dialed Number.

DNS Domain Name Services  
Domain Name System



**H**

HSS Home Subscriber Server  
A central database for subscriber information.

**I**

IC Integrated Circuit

IMEI International Mobile Equipment Identifier

IMSI International Mobile Subscriber Identity  
A unique internal network ID identifying a mobile subscriber.  
International Mobile Station Identity

ITU International Telecommunications Union  
An organization that operates worldwide to allow governments and the private telecommunications sector to coordinate the deployment and operating of telecommunications networks and services. The ITU is responsible for regulating, coordinating and developing international telecommunications, and for harmonizing national political interests.

**M**

MAP Mated Application Part  
Mobile Application Part  
An application part in SS7 signaling for mobile communications systems.

M

MPTY	Multiparty
MS	Mobile Station The equipment required for communication with a wireless telephone network.
MSC	Mobile Switching Center An intelligent switching system in GSM networks. This system establishes connections between mobile communications subscribers.
MSISDN	Mobile Station International Subscriber Directory Number 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. Mobile Subscriber Integrated Services Digital Network [Number] Mobile Station International Subscriber Directory Number. The unique, network-specific subscriber number of a mobile communications subscriber. MSISDN follows the E.164 numbering plan; that is, normally the MSISDN is the phone number that is used to reach the subscriber.

N

NAPTR	Name Authority Pointer Domain Name System resource record that identifies possible URLs and numbers that can be returned.
-------	--

**N**

NDC Network destination code  
Network Data Collection

**O**

OA Onboard Administrator  
The management processor for an HP c-Class enclosure.

OS Operating System  
Operations Systems

**P**

PLMN Public Land Mobile Network

**S**

SIP Session Initiation Protocol  
A peer-to-peer protocol used for voice and video communications.

SN service node

SOAP Simple Object Access Protocol

SS Subsystem

**T**

TDP Trigger Detection Point

TS Test Strategy  
Traffic Server  
Technical Specification  
Teleservices  
Target Set

**X**

X

XML

eXtensible Markup Language

A version of the Standard  
Generalized Markup Language  
(SGML) that allows Web  
developers to create customized  
tags for additional functionality.