

Subscriber Data Management

Release 9.0

Subscriber Provisioning Reference Manual

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Chapter 1

Introduction

Topics:

- *About this document.....14*
- *Scope and audience.....14*
- *Document organization.....14*
- *Documentation Admonishments.....15*
- *Related publications.....16*
- *Customer Care Center.....16*
- *Emergency Response.....18*
- *Locate Product Documentation on the Customer Support Site.....19*

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, ENUM, and WiMAX 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.
- *Subscription Profile Repository (SPR)* provides an overview of the subscriber provisioning methods available to create a Policy profile in the Tekelec Subscriber Data Server (SDS) when it functions as a centralized SPR for PCRF nodes. It also includes the required SPR entities.
- *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.

Table 1: Admonishments

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

- **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:

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

TAC Regional Support Office Hours (except Brazil):

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

- **Argentina**

Phone:

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

- **Brazil**

Phone:

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

TAC Regional Support Office Hours:

8:00 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:

+91 124 436 8552 or +91 124 436 8553

TAC Regional Support Office Hours:

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

- **Singapore**

Phone:

+65 6796 2288

TAC Regional Support Office Hours:

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

Emergency Response

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

A critical situation is defined as a problem with 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.

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

Topics:

- *Subscriber provisioning using XML templates.....21*
- *XML Description.....32*
- *XML-REST Interface.....44*
- *User Security Management.....62*
- *Notification Security Management.....72*

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 2: 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 3: 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.

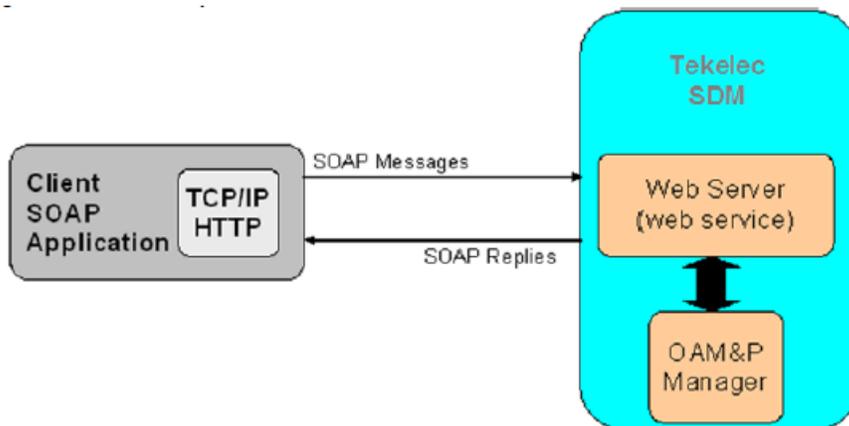
For examples on the use of XML Templates to provision subscribers, refer to the "Examples of XML Templates for Subscriber provisioning" section of the SDM Subscriber Provisioning - User Guide .

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.

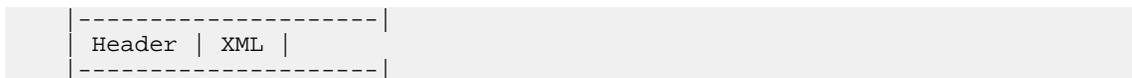
When sending messages, the destination IP address must be specified along with the content of the SOAP message.

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:



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"><attr>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" </res>
</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" </res>, two fields are returned:

Table 4: Error code fields

Field name	Value	Description
error	Integer	Error code that indicates the validation and processing status of the XML request.

Field name	Value	Description
		<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> <p>1: The request has been validated but not processed.</p> <p>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.</p>
affected	Integer	<p>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.</p> <p>This field takes the value "0" if nothing has been done in the database.</p> <p>When this field is returned with a "0" value, this means that nothing has been done in the system's database.</p>

Note: In the case where the XML's reply contains a response as follows: `<res error="0" affected="0"></res>`, 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.

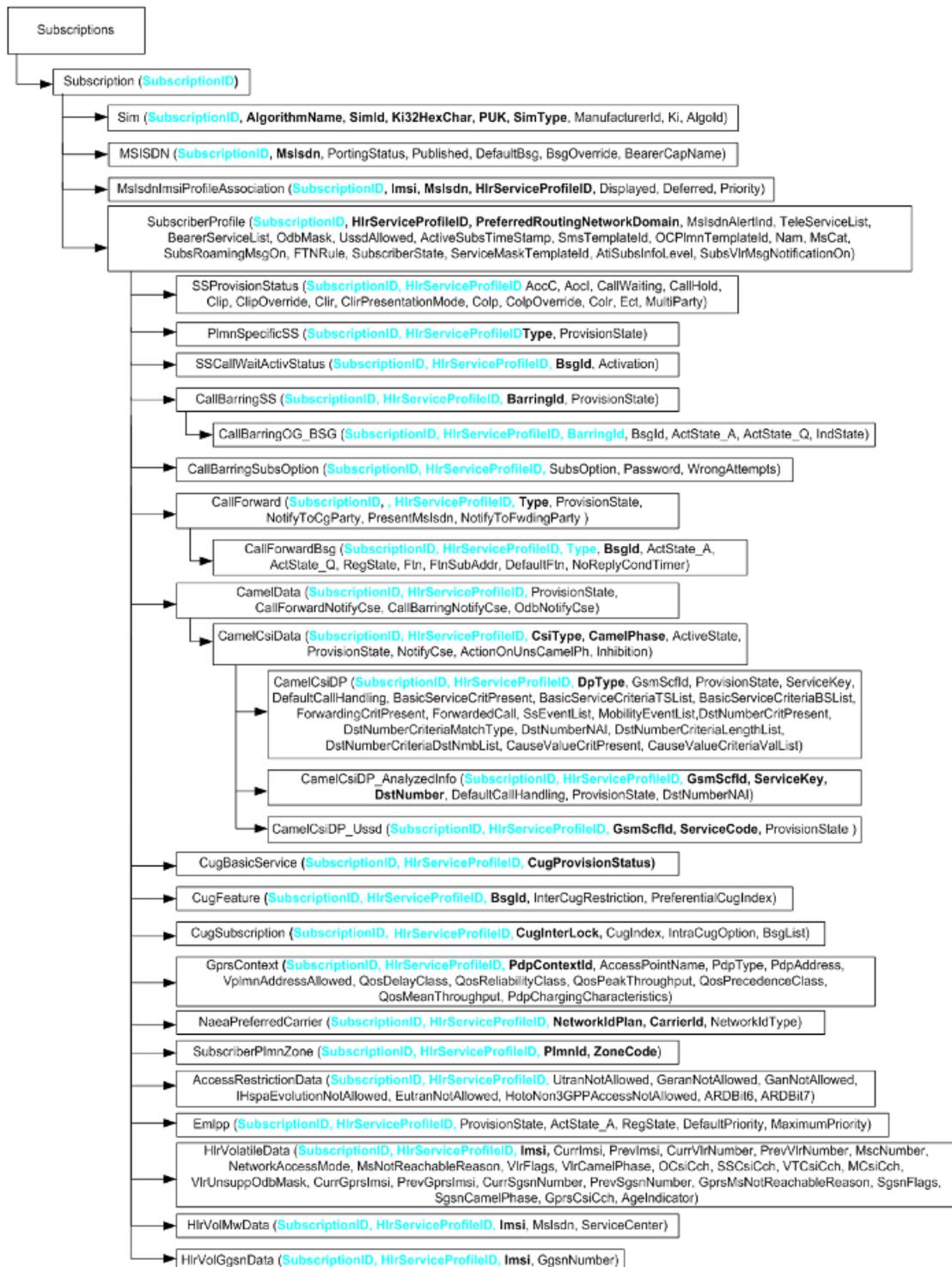


Figure 1: GSM subscriber profile entities and attributes for HLR application

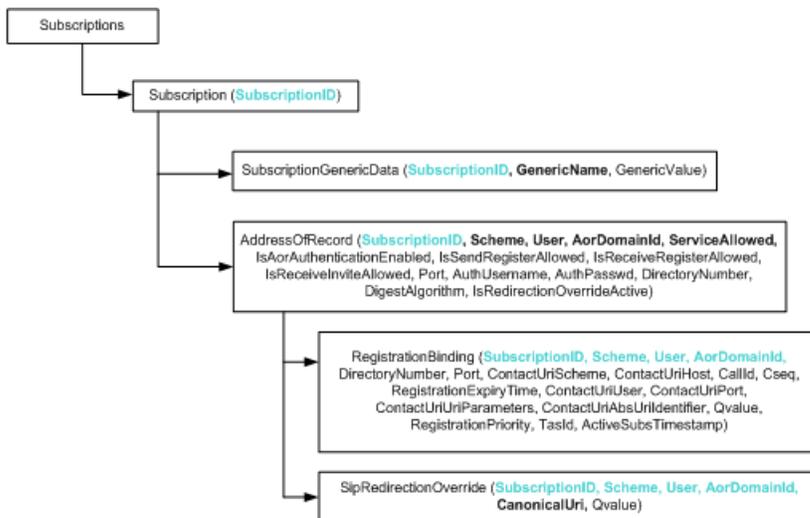


Figure 2: SIP subscriber profile entities and attributes for FMC application

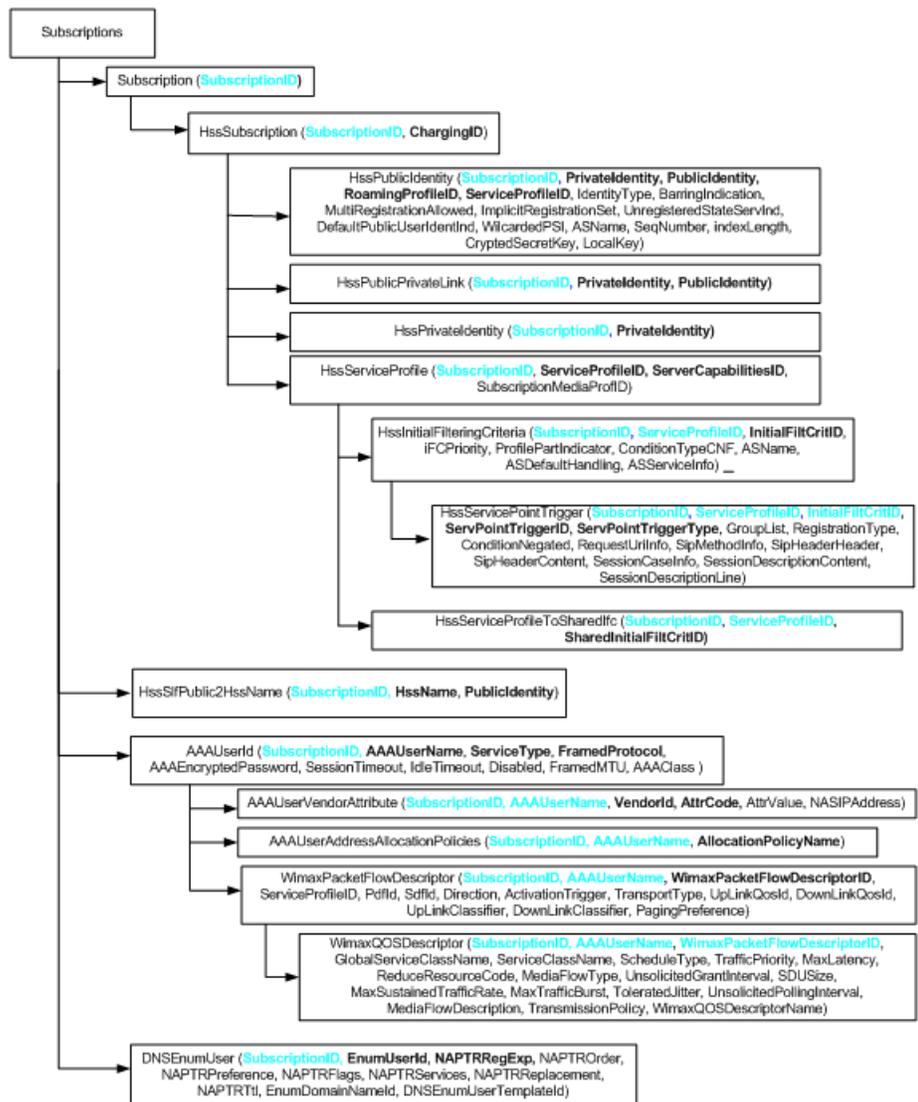


Figure 3: HSS subscriber profile entities and attributes for HSS and AAA applications

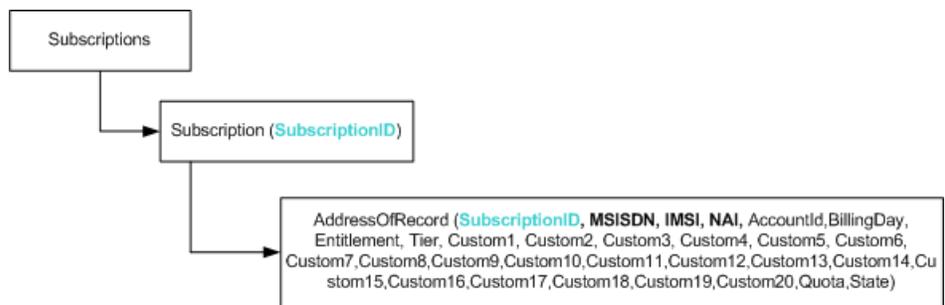


Figure 4: Policy profile entities and attributes for SPR application

XML-REST Interface

The SPR provides an Application Programming Interface (API) for programmatic management of subscriber data. This interface supports querying, creation, modification, and deletion of subscriber and pool data.

The API is an XML over HTTP(S) interface that is designed based upon RESTful concepts. This section defines the operations that can be performed using the XML-REST interface. For additional information on the REST architectural style, see the following references:

- http://en.wikipedia.org/wiki/Representational_State_Transfer
- <http://www.ics.uci.edu/~fielding/pubs/dissertation/top.htm>
- <https://jsr311.dev.java.net/>

XML-REST conventions

The XML-REST interface uses the following RESTful concepts:

- HTTP(S) header
- HTTP(S) status codes
- Error message representation in the response content for all 4xx and 5xx codes.

HTTP(S) header

The following HTTP(S) requirements must be followed:

- **Request-header**

Set Accept header property to the correct MIME version using the following format: `application/camiant-msr-v{version number}+xml`, where version number is 1 or 2.0. If specified, it must match with `application/camiant-msr-v2.0+xml`.

The Accept header must match the version supported by the client. This is true even for requests that do not expect entity response data so that any error content is accepted.

All operations prior to SDM Release 8.0 support both versions. Operations as of SDM Release 8.0 (Quota and Pool data) support only version 2.0.

The SPR response to an incorrect MIME version is a Bad Request, for example, with error code="Invalid Accept: `application/camiant-msr-v1+xml`."

- **Requests with body content**

Set request-header Content-Type property to `application/camiant-msr-v2.0+xml`.

- **HTTP version**

- HTTP/1.1
- HTTPS SSL v3/TLS v1

HTTP(S) status codes and error messages

The XML-REST interface uses the following HTTP(S) status codes:

- 200 — OK: Indicates the successful completion of request processing.
- 201 — Created: Used for newly created entities. The response header property “Location” will contain the URI of the newly created entity.
- 204 — No Content: The request completed successfully and no response content body is sent back to the client.
- 400 — Bad Request: This indicates that there is a problem with how the request is formatted or that the data in the request caused a validation error.
- 404 — Not Found: Indicates that the client tried to operate on a resource that did not exist.
- 4xx — Other status codes in the 4xx range that are also client request issues. For example, the client may be calling an operation that is not implemented/available or that is asking for a mime type that is not supported.
- 500 — Internal Server Error: This error and other errors in the 5xx range indicate server problems. If one of these errors occurs, please contact Tekelec customer support.

Error handling

Any operation in the XML-REST interface that results in an HTTP error response in the 4xx or 5xx range will include response content that includes an `errorMessage` entity. This entity defines both an error code and additional error text to explain the error.

```
<?xml version="1.0" encoding="UTF-8"?>
<error code="MSR4002">Subscriber field not found. Key type name = MSISDN Key value
= +33123654862 Field name = AccountId </error>
```

For example, when a subscriber exists and has no quota or state defined, and a delete or fetch request is sent to the XML-REST interface, two error responses are returned. They are HTTP 404 Not Found and MSR4053 Subscriber and field exist but the value provided is incorrect.

For information about these SPR Event Log Messages, refer to section *SPR Error Notifications* in the *SDM Management, Monitoring, Maintaining, Troubleshooting - Reference Manual*.

XML-REST schema

The XML-REST interface uses the following XML Schema for both request and response content. The schema defines the following entities and applies to subscriber or pool provisioning:

- Subscriber (or Pool) — This is a container element that is used to contain other elements with subscriber (or pool) data, such as the Field and Data elements.
- Field — This element contains a single field value. If a field has multiple values, the values are separated by a semicolon (;).
- Data — This element contains opaque data.
- ErrorMessage — This element contains information about errors that occur during the processing of a request.

Note: If you are writing software to manipulate this data, you **MUST** use a non-validating parser when processing the XML data. This parser allows new elements to be added in the future to support new features or functionalities.

The XML schema definition (XSD) for these entities is presented as follows:

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?> <xs:schema version="1.0"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
```

```

<xs:element name="data" type="data" />
<xs:element name="error" type="errorMessage" />
<xs:element name="field" type="field" />
<xs:element name="subscriber" type="subscriber" />
<xs:complexType name="data">
  <xs:simpleContent>
    <xs:extension base="xs:string">
      <xs:attribute name="name" type="xs:string" use="required" />
    </xs:extension>
  </xs:simpleContent>
</xs:complexType>
<xs:complexType name="errorMessage">
  <xs:simpleContent>
    <xs:extension base="xs:string">
      <xs:attribute name="code" type="xs:string" use="required" />
    </xs:extension>
  </xs:simpleContent>
</xs:complexType>
<xs:complexType name="field">
  <xs:simpleContent>
    <xs:extension base="xs:string">
      <xs:attribute name="name" type="xs:string" use="required" />
    </xs:extension>
  </xs:simpleContent>
</xs:complexType>
<xs:complexType name="subscriber">
  <xs:sequence>
    <xs:element ref="field" maxOccurs="unbounded" minOccurs="0" />
    <xs:element ref="data" maxOccurs="unbounded" minOccurs="0" />
  </xs:sequence>
</xs:complexType>
</xs:schema>

```

When opaque data is managed within the SPR, each type of opaque data will have an independent XML schema. SPR has opaque data for Subscriber and Pool:

- Subscriber:
 - quota
 - dynamic quota
 - state
- Pool:
 - pool quota
 - pool dynamic quota
 - pool state

XML-REST operations overview

This section provides an overview of the operations that can be performed using the XML-REST interface. The operations are organized by the type of information to be manipulated.

- Profile operations
- Field operations
- Opaque data operations

Profile operations manipulate subscriber and pool data. These entities contain information that is organized into field-value pairs. Fields can have multiple values. Profile operations include:

- **Fetch** - retrieves all subscriber field data
- **Add** - creates new subscriber profile
- **Update** - replaces existing subscriber
- **Delete** - deletes all profile data (field-value pairs) and opaque data

Field operations manipulate field-value pairs within a profile. Two or three fields can be modified with one command. Field operations include:

- **Fetch Field** - retrieves all values for specified field
- **Fetch Field Value** - retrieves single value for specified field
- **Set Field Value** - sets field to specified value
- **Add Field Value** - adds value to specified field
- **Delete Field** - deletes all values for specified field
- **Delete Field Value** - deletes single value for specified field

Opaque data operations manipulate opaque data associated with a subscriber or a pool, for example, State and DynamicQuota, or PoolState and PoolDynamicQuota. Opaque data is not the same as field-value pairs and is not considered part of the entity data. Opaque data is managed separately and is typically stored in a well-defined format (such as XML). Opaque data operations include:

- **Fetch Opaque Data** - retrieves opaque data of specified type
- **Set Opaque Data** - updates opaque data of specified type
- **Delete Opaque Data** - deletes opaque data of specified type

Table 5: XML-REST operation syntax shows the operation types applicable for subscriber or pool provisioning with the associated XML-REST command and its meaning. The table also shows per operation type the subscriber operation syntax followed by a subscriber example. The same operation syntax applies to the pool entity by replacing sub/ with pool/.

Table 5: XML-REST operation syntax

Type	Operation	CMD	Meaning	Operation Syntax and Examples
Profile operations	Fetch	GET	Display	sub/{KeyName}/{KeyValue}
	Add	POST	Add	
	Update	PUT	Modify	
	Delete	DELETE	Delete	
Field operations	Fetch Field	GET	Display	sub/{KeyName}/{KeyValue}/field/{FieldName}/{FieldValue}
	Fetch Field Value	GET	Display	sub/MSISDN/+33123654862/field/BillingDay/1 sub/{KeyName}/{KeyValue}/field/{FieldName}/{FieldValue1}/{FieldValue2}
	Set Field*	PUT	Modify	sub/MSISDN/+33123654862/field/Entitlement/DayPass;HighSpeedData
	Add Field Value	POST	Add	sub/{KeyName}/{KeyValue}/multipleFields/{FieldName1}/{FieldValue1}/{FieldName2}/{FieldValue2}/{FieldName3}/{FieldValue3}
	Delete Field	DELETE	Delete	

Type	Operation	CMD	Meaning	Operation Syntax and Examples
	Delete Field Value	DELETE	Delete	sub/MSISDN/123456789/multipleFields/Entitlement/YearPass/Tier/1/BillingDay/15
Opaque data operations	Fetch Opaque Data	GET	Display	sub/{KeyName}/{KeyValue}/data/{opaqueDataType} sub/MSISDN/+33123654862/data/State
	Set Opaque Data	PUT	Modify	
	Delete Opaque Data	DELETE	Delete	
* Up to three fields can be modified simultaneously with one PUT command.				

XML-REST operations

The detailed descriptions of the XML-REST operations use Subscriber provisioning as an example. The same provisioning method applies to Pool provisioning and special operations. For a complete syntax of the XML-REST commands, refer to *XML-REST commands syntax*.

The operation descriptions use the following conventions:

- **Base URI:**

The base URI ({baseURI}) that is the prefix for the documented URIs uses the following syntax:
https://{DNS Name or IP address}:8787/rs.

The curly brackets denote replacement variables and are not part of the actual operation syntax. Any replacement variable data that contains any special characters must be encoded.

The value in the curly brackets can be determined by how the SPR is installed in the network. For example, if the SPR is installed with the DNS name `spr.tekelec.com` on a system with IP address `1.2.3.4`, the base URI could be either `https://spr.tekelec.com:8787/rs` or `https://1.2.3.4:8787/rs`.

- **HTTP(S) response codes:**

The enumerated list of response status codes contained in the operation descriptions contain the most common codes that an operation may return under normal operating conditions. Other codes may be returned per the HTTP(S) status code standards or XML-REST conventions.

- **Fields in URLs:**

For field operations (Fetch Field, Fetch Field Value, Set Field Value, Add Field Value, Delete Field Value), references to a field in the URL can be any field, including key fields. For example, `DELETE {baseURI}/msr/sub/IMSI/1234/field/IMSI` is a valid request.

Fetch Profile operation

Description

This operation retrieves all field data for the subscriber that is identified by the key name and key value.

HTTP(S) operation

```
GET {baseURI}/msr/sub/{keyName}/{keyValue}
```

HTTP(S) request content

None

HTTP(S) response content

A <subscriber> element that contains a <field> element for every field-value pair defined for the identified subscriber.

Response status codes

- **200** — successfully located the subscriber
- **404** — could not find the subscriber by key

Example

```
GET {baseURI}/msr/sub/MSISDN/+33123654862
<?xml version="1.0" encoding="UTF-8"?>
<subscriber>
  <field name="AccountID">10404723525</field>
  <field name="MSISDN">+33123654862</field>
  <field name="IMSI">184569547984229</field>
  <field name="BillingDay">1</field>
  <field name="Tier"></field>
  <field name="Entitlement">DayPass</field>
</subscriber>
```

Add Profile operation

Description

This operation creates a new subscriber profile using the field-value pairs that are specified in the request content.

HTTP(S) operation

```
POST {baseURI}/msr/sub
```

HTTP(S) request content

A <subscriber> element that contains a <field> element for every field-value pair defined for the new subscriber.

HTTP(S) response content

None

Response status codes

- **201** — successfully created ("Location" property in response header will contain URI for this newly created subscriber)
- **400** — if a key is detected to be already in the system for another subscriber or if the representation field list does not contain at least one unique key or if the field name does not exist. MSR4002 should be sent in the case where an unknown subscriber field is specified.

Example

POST {baseURI}/msr/sub

```
<?xml version="1.0" encoding="UTF-8"?>
<subscriber>
  <field name="AccountID">10404723525</field>
  <field name="MSISDN">+33123654862</field>
  <field name="IMSI">184569547984229</field>
  <field name="BillingDay">1</field>
  <field name="Tier"></field>
  <field name="Entitlement">DayPass</field>
</subscriber>
```

Set Profile operation**Description**

This operation replaces an existing subscriber, identified by key name and value, with data from the request content. With the exception of the key name and key value on the URI, all existing data for this subscriber is completely removed and replaced by the request content. Therefore, it is not necessary to include the key name and key value from the URI in the request content (although it is not an error if it is included).

HTTP(S) operation

PUT {baseURI}/msr/sub/{keyName}/{keyValue}

HTTP(S) request content

A <subscriber> element that contains a <field> element for every field-value pair defined for the new subscriber.

HTTP(S) response content

None

Response status codes

- **204** — if the subscriber data was replaced successfully - no content body is sent in the response

- **400** — if a key is detected to be already in the system for another subscriber or if the representation field list does not contain at least one unique key or if the field name does not exist. MSR4002 should be sent in the case where an unknown subscriber field is specified.
- **404** — could not find the subscriber by key

Example

```
PUT {baseURI}/msr/sub/MSISDN/+33123654862
<?xml version="1.0" encoding="UTF-8"?>
<subscriber>
  <field name="AccountID">10404723525</field>
  <field name="IMSI">184569547984229</field>
  <field name="BillingDay">22</field>
  <field name="Tier"></field>
  <field name="Entitlement">DayPassPlus</field>
</subscriber>
```

Delete Profile operation

Description

This operation deletes all profile data (field-value pairs) and opaque data for the subscriber that is identified by the key name and key value.

HTTP(S) operation

```
DELETE {baseURI}/msr/sub/{keyName}/{keyValue}
```

HTTP(S) request content

None

HTTP(S) response content

None

Response status codes

- **204** — successfully deleted - no content body is sent in the response
- **404** — if subscriber does not exist - no content body is sent in the response

Example

```
DELETE {baseURI}/msr/sub/MSISDN/+33123654862
```

Fetch Field operation

Description

This operation retrieves the values for the specified field for the subscriber identified by the specified key name and key value. Note that depending upon the field entered, there may be multiple field-value pairs returned by this operation.

HTTP(S) operation

```
GET {baseURI}/msr/sub/{keyName}/{keyValue}/field/ {fieldName}
```

HTTP(S) request content

None

HTTP(S) response content

A <subscriber> element that contains a <field> element for every field-value pair defined for the identified subscriber.

Response status codes

- **200** — if requested field exists for subscriber
- **404** — if subscriber does not exist or subscriber exists but field does not exist, no content body is sent in the response

Example

```
GET {baseURI}/msr/sub/MSISDN/+33123654862/field /AccountId
<?xml version="1.0" encoding="UTF-8"?>
<subscriber>
  <field name="AccountId">10404723525</field>
</subscriber>
```

Fetch Field Value operation**Description**

This operation retrieves a single value for the specified field for the subscriber identified by the specified key name and key value. Note that since this value is specified as part of the operation this is more of a means to verify whether a specific value is already defined for a field.

HTTP(S) operation

```
GET {baseURI}/msr/sub/{keyName}/{keyValue}/field/ {fieldName}/{fieldValue}
```

HTTP(S) request content

None

HTTP(S) response content

A <subscriber> element that contains a <field> element for the field and a value specified, if it exists, for the specified subscriber.

Response status codes

- **200** — if requested field exists for subscriber

- **404** — If subscriber, field name, or field and value combination does not exist MSR4001 is returned if the subscriber is not found. MSR4002 is returned if the field is not found. MSR4053 is returned if the value does not match.

Example 1

```
GET {baseURI}/msr/sub/MSISDN/+33123654862/field/ AccountId/10404723525
<?xml version="1.0" encoding="UTF-8"?>
<subscriber>
  <field name="AccountId">10404723525</field>
</subscriber>
```

Example 2

```
GET {baseURI}/msr/sub/MSISDN/+33123654862/field/BillingDay/1
<?xml version="1.0" encoding="UTF-8"?>
<subscriber>
  <field name="BillingDay">1</field>
</subscriber>
```

Example 3

```
GET {baseURI}/msr/sub/MSISDN/+33123654862/field/
Entitlement/DayPass;HighSpeedData
```

Note: The semicolon between the entitlement values may need to be encoded as %3B for certain clients.

```
<?xml version="1.0" encoding="UTF-8"?>
<subscriber>
  <field name="Entitlement">DayPass</field>
  <field name="Entitlement">HighSpeedData</field>
</subscriber>
```

For a request where the presence of multiple values is requested, a match is considered to have been made if the requested values form a subset of the values stored in the profile. That is, if all of the values requested exist in the profile, return success, regardless of how many other values may exist in the profile. If any or all of the values are not present as part of the profile, 404 with MSR4053 is returned.

Set Field Value operation

Description

This operation sets a field to the specified value for the subscriber identified by the specified key name and key value. This operation replaces ("sets") the value of the field, which means that any existing values for the field are deleted first.

For multi-value fields, all previous values are erased and the new specified set is inserted. Adding values to a current set is accomplished by using the Add Field Value operation.

All fields (including multi-value fields) of a subscriber or pool profile that can be modified in a single-field request can also be modified in a multiple-fields request.

All fields and all values must be valid to complete the update. Using a multiple-fields request returns only one Sh notification per update request.

HTTP(S) operation

```
PUT {baseURI}/msr/sub/{keyName}/{keyValue}/field/{fieldName}/ {fieldValue}
```

```
PUT
```

```
{baseURI}/msr/sub/{keyName}/{keyValue}/field/{fieldName}/{fieldValue1};{fieldValue2}
```

```
PUT {baseURI}/msr/sub/{keyName}/{keyValue}/ multipleFields/{fieldName1}/  
{fieldValue1}/{fieldName2}/{fieldValue2}/{fieldName3}/ {fieldValue3}
```

HTTP(S) request content

None

HTTP(S) response content

None

Response status codes

- **201** — if the name value pair was successfully created
- **404** — if the subscriber or field does not exist. MSR4002 is sent in the case where an unknown subscriber field is specified.

Example 1

```
PUT {baseURI}/msr/sub/MSISDN/+33123654862/field/AccountId/10404723525
```

Example 2

```
PUT {baseURI}/msr/sub/MSISDN/+33123654862/field/  
Entitlement/DayPass;HighSpeedData
```

Example 3

```
PUT {baseURI}/msr/sub/MSISDN/123456789/multipleFields/  
Entitlement/YearPass/Tier/1/BillingDay/15
```

Add Field Value operation**Description**

This operation adds a value to the specified field for the subscriber identified by the specified key name and key value. This operation does not affect any pre-existing values for the field.

HTTP(S) operation

```
POST {baseURI}/msr/sub/{keyName}/{keyValue}/field/ {fieldName}/{fieldValue}
```

HTTP(S) request content

None

HTTP(S) response content

None

Response status codes

- **200** — successfully added field values
- **400** — if field values already exists in the system for this subscriber
- **404** — if the subscriber or field type does not exist.
 - MSR4001 is returned if the subscriber is not found.
 - MSR4002 should be returned if the field is not found.

Example 1

```
POST {baseURI}/msr/sub/MSISDN/+33123654862/field/ Entitlement/DayPass
```

Example 2

```
POST {baseURI}/msr/sub/MSISDN/+33123654862/field/  
Entitlement/DayPass;HighSpeedData
```

Note: The use of the semicolon between the entitlement values may need to be encoded as %3B for certain clients.

Delete Field operation**Description**

This operation deletes all the values for the specified field for the subscriber identified by the specified key name and key value.

HTTP(S) operation

```
DELETE {baseURI}/msr/sub/{keyName}/{keyValue}/field /{fieldName}
```

HTTP(S) request content

None

HTTP(S) response content

None

Response status codes

- **204** — successfully deleted - no content body is sent in the response
- **404** — if subscriber does not exist or if subscriber existed but field data did not exist - no content body is sent in the response

Example

```
DELETE {baseURI}/msr/sub/MSISDN/+33123654862/AccountId
```

Delete Field Value operation**Description**

This operation deletes a single value for the specified field for the subscriber identified by the specified key name and key value.

For multi-value fields, each individual value is removed from the profile but only if ALL of them are present. For example, if a profile contains values "A;B;C" and a request to delete "A;B" is made, this succeeds and the profile is left with "C" as the value. If, however, the profile contains "A;B;C" and a request is made to delete "C;D" the request fails and returns 404 MSR4053. Nothing is deleted from the profile in this case.

HTTP(S) operation

```
DELETE {baseURI}/msr/sub/{keyName}/{keyValue}/field/{fieldName}/{fieldValue}
```

HTTP(S) request content

None

HTTP(S) response content

None

Response status codes

- **204** — successfully deleted - no content body is sent in the response
- **404** — if subscriber does not exist or if subscriber existed but field data did not exist - no content body is sent in the response

Example 1

```
DELETE {baseURI}/msr/sub/MSISDN/+33123654862/field/ AccountId/10404723525
```

Example 2

```
DELETE {baseURI}/msr/sub/MSISDN/+33123654862/field/  
Entitlement/DayPass;HighSpeedData
```

Fetch Opaque Data operation**Description**

This operation retrieves the opaque data of the specified type for the subscriber identified by the specified key name and key value.

HTTP(S) operation

```
GET {baseURI}/msr/sub/{keyName}/{keyValue}/data/ {opaqueDataType}
```

HTTP(S) request content

None

HTTP(S) response content

A <subscriber> element that contains a <data> element, which contains the specified opaque data (if it exists) for the identified subscriber.

Response status codes

- **200** — if requested opaque data exists for subscriber
- **404** — if subscriber does not exist or subscriber existed but opaque data does not exist

Example 1

```
GET {baseURI}/msr/sub/MSISDN/+33123654862/data/Quota
<?xml version="1.0" encoding="UTF-8"?>
<subscriber>
  <data name="quota">
    <![CDATA[
<?xml version="1.0" encoding="UTF-8"?>
<usage>
<version>1</version>
<quota name="q1">
<cid>9223372036854775807</cid>
<time>1</time>
<totalVolume>0</totalVolume>
<inputVolume>0</inputVolume>
<outputVolume>0</outputVolume>
<serviceSpecific>12</serviceSpecific>
<nextResetTime>2010-05-12T16:00:00-05:00</nextResetTime>
</quota>
</usage>
]]>
  </data>
</subscriber>
```

Note: Omitted usage counters (for example, totalVolume means their values are zero).

Example 2

```
GET {baseURI}/msr/sub/MSISDN/+33123654862/data/State
<?xml version="1.0" encoding="UTF-8"?>
<subscriber>
  <data name="state">
    <![CDATA[
<?xml version="1.0" encoding="UTF-8"?>
<state>
  <version>1</version>
  <property>
    <name>mcc</name>
    <value>315</value>
  </property>
  <property>
```

```

    <name>expire</name>
    <value>2010-02-09T11:20:32</value>
  </property>
  <property>
    <name>approved</name>
    <value>yes</value>
  </property>
</state>
]]>
</data>
</subscriber>

```

Set Opaque Data operation

Description

This operation sets the opaque data, of the specified type, for the subscriber identified by the specified key name and key value.

HTTP(S) operation

PUT {baseURI}/msr/sub/{keyName}/{keyValue}/data/ {opaqueDataType}

HTTP(S) request content

A <subscriber> element that contains a <data> element, which contains the specified opaque data (if it exists) for the identified subscriber.

HTTP(S) response content

None

Response status codes

- **201** — if the opaque data was successfully created
- **204** — if the opaque data was successfully replaced.
- **400** — if there is a problem with provided request content. If the request is malformed, MSR4000 is returned.
- **404** — if the subscriber or opaque data type do not exist.

Example - Quota

PUT {baseURI}/msr/sub/MSISDN/+33123654862/data/Quota

```

<?xml version="1.0" encoding="UTF-8"?>
<subscriber>
  <data name="quota">
    <![CDATA[
      <?xml version="1.0" encoding="UTF-8"?>
      <usage>
      <version>1</version>
      <billingCycleData>16:86400000:31</billingCycleData>
      <quota name="q1">
      <cid>9223372036854775807</cid>
      <time>10</time>
      <totalVolume>20000</totalVolume>
    ]]>
  </data>
</subscriber>

```

```

<inputVolume>5000</inputVolume>
<outputVolume>15000</outputVolume>
<serviceSpecific>12</serviceSpecific>
<nextResetTime>2010-05-12T16:00:00-05:00</nextResetTime>
</quota>
</usage>
]]>
  </data>
</subscriber>

```

Example - State

PUT {baseURI}/msr/sub/MSISDN/+33123654862/data/State

```

<?xml version="1.0" encoding="UTF-8"?>
<subscriber>
  <data name="state">
    <![CDATA[
      <?xml version="1.0" encoding="UTF-8"?>
      <state>
        <version>1</version>
        <property>
          <name>mcc</name>
          <value>315</value>
        </property>
        <property>
          <name>expire</name>
          <value>2010-02-09T11:20:32</value>
        </property>
        <property>
          <name>approved</name>
          <value>yes</value>
        </property>
      </state>
    ]]>
  </data>
</subscriber>

```

Delete Opaque Data operation

Description

This operation deletes the opaque data of the specified type for the subscriber identified by the specified key name and key value.

HTTP(S) operation

DELETE {baseURI}/msr/sub/{keyName}/{keyValue}/data /{opaqueDataType}

HTTP(S) request content

None

HTTP(S) response content

None

Response status codes

- **204** — if opaque data was successfully deleted - no content body is sent in the response
- **404** — if the subscriber did not exist or if the subscriber existed but opaque data did not exist

Example - Quota

```
DELETE {baseURI}/msr/sub/MSISDN/+33123654862/data/Quota
```

Example - State

```
DELETE {baseURI}/msr/sub/MSISDN/+33123654862/data/State
```

XML-REST commands syntax

This section contains the XML-REST commands syntax.

Table 6: XML-REST commands syntax

Object	Data Type	Key	URI
Subscriber	Opaque (profile)	MSISDN, NAI, IMSI, or AccountID	{baseURI}/msr/sub/{KeyName}/{KeyValue}
	Field (profile)*		{baseURI}/msr/sub/{KeyName}/{KeyValue}/ field/{FieldName}/{FieldValue}
			{baseURI}/msr/sub/{KeyName}/{KeyValue}/ field/{FieldName}/{FieldValue1};{FieldValue2}
			*{baseURI}/msr/sub/{KeyName}/{KeyValue}/ multipleField/{FieldName1}/{FieldValue1}/ {FieldName2}/{FieldValue2}/ {FieldName3}/{FieldValue3}/
	Opaque (Quota)		{baseURI}/msr/sub/{KeyName}/{KeyValue}/ data/Quota
	Opaque (DynamicQuota)		{baseURI}/msr/sub/{KeyName}/{KeyValue}/ data/DynamicQuota
	Opaque (State)		{baseURI}/msr/sub/{KeyName}/{KeyValue}/ data/State
	Row (Quota)	{baseURI}/msr/sub/{KeyName}/{KeyValue}/ data/Quota/{KeyValue}	
	Field (Quota)	{baseURI}/msr/sub/{KeyName}/{KeyValue}/ data/Quota/{KeyValue}/ field/{FieldName}/{FieldValue}	
Pool	Opaque (profile)	PoolID	{baseURI}/msr/pool/{KeyValue}

Object	Data Type	Key	URI
	Field (profile)*		{baseURI}/msr/pool/{KeyValue}/ field/{FieldName}/{FieldValue} {baseURI}/msr/pool/{KeyName}/{KeyValue}/ field/{FieldName}/{FieldValue1};{FieldValue2} *{baseURI}/msr/pool/{KeyName}/{KeyValue}/ multipleField/{FieldName1}/{FieldValue1}/ {FieldName2}/{FieldValue2}/ {FieldName3}/{FieldValue3}/
	Opaque (PoolQuota)		{baseURI}/msr/pool/{KeyValue}/data/PoolQuota
	Opaque (PoolDynamicQuota)		{baseURI}/msr/pool/{KeyValue}/data/ PoolDynamicQuota
	Opaque (PoolState)		{baseURI}/msr/pool/{KeyValue}/data/PoolState
Special Operations	Request Type		
	Get Pool by Sub	MSISDN, NAI, IMSI, or AccountId	{BaseURI}/msr/sub/{KeyName}/{KeyValue}/pool
	Add Sub to Pool	Key= PoolID; Subkey: MSISDN, NAI, IMSI, or AccountId	{BaseURI}/msr/pool/{KeyValue}/ member/{SubKeyField}/{SubKeyValue}
	Delete Sub from Pool	Key= PoolID; Subkey= MSISDN, NAI, IMSI, or AccountId	{BaseURI}/msr/pool/{KeyValue}/ member/{SubKeyField}/{SubKeyValue}
	Get Pool Member	PoolID	{BaseURI}/msr/pool/{KeyValue}/member
*PUT only: All fields (incl. multi-value fields) that can be modified in a single-field request can also be modified in a multiple-field request (up to three fields).			

Supported characters for SPR provisioning interfaces

Refer to [Table 7: Supported characters for SPR provisioning interfaces](#) for URI and XML reserved characters that require encoding. Characters where no encoding is specified can be used directly.

Table 7: Supported characters for SPR provisioning interfaces

Printed character	Decimal code	Hexa-decimal code	URI reserved character requiring encoding	XML reserved character requiring encoding
SPACE	32	20		
#	35	23	%23	
\$	36	24	%24	
%	37	25	%25	
&	38	26	%26	& or &
(40	28	%28	
)	41	29	%29	
+	43	2B	%2B	
-	45	2D		
.	46	2E		
/	47	2F	%2F	
0 to 9	48 to 57	30 to 39		
:	58	3A	%3A	
A to Z	65 to 90	41 to 5A		
\	92	5C		
_	95	5F		
a to z	97 to 122	61 to 7A		

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 5: 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 8: 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"> • operation • surveillance • admin • batch • simprov 	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"> • 0=The user information is not stored in the OS, but only in the database. • 1= The user information is stored in the OS in addition to being stored in the database.

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 9: 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"> • user • operation • surveillance • admin • batch • simprov 	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"> 0=The user information is not stored in the OS, but only in the database. 1= The user information is stored in the OS in addition to being stored in the database.
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 10: 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"> • Database • ExternalService • HlrConfigHlrSimProv • HlrSubsProv • HssConfig • HssSubsProv • Oamp • Policy • Schema • SipConfig • SipSubsProv • Ss7ConfigSubscriberProv • System 	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"> • 1 Read (Display) • 2 Write (Add/Modify/Delete) • 3 ReadWrite • 4 Execute (Access to entity own operations) • 5 ReadExecute • 7 Read WriteExecute 	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 11: 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"> • CacheAttribute • Constraint • ConstraintAttribute • DataType • Entity • LdapAttribute • LdapAttributeCriteriaRelation • LdapAttributeMapping • LdapAttributeMappingCriteria • LdapNamingContexts • LdapObjectClass • LdapObjectClassCriteria

Service	Entities
	<ul style="list-style-type: none"> • LdapObjectClassCriteriaRelation • LdapRdn • Namespace • Operation • Parameter • PhysicalAccessPath • RDbDataType • Reference • ReferenceParameter • ResourceManager • Schema • Schemaversion • SchemaVersionFile • Token • TokenMaxPerCategory
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 fine tuned by the operators when needed (when a new group is added or an existing group needs to be altered).

Table 12: 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 13: 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"> • System • OAMP • Database • External service • Schema • HLR Subscriber prov • SIM provisioning • HLR configuration • SS7 configuration • SIP subscriber prov • SUP configuration • HSS Subscriber prov • HSS configuration • Subscriber prov • Policy 	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

The screenshot shows the 'Notification Manager' interface. It contains two main tables:

ApplicationIdentity

ApplicationName	Description	Action			
BlueCli		Modify	Delete	Display/Modify NotifSubscribe	Display/Modify AppProperty
WebCI		Modify	Delete	Display/Modify NotifSubscribe	Display/Modify AppProperty
SOAP		Modify	Delete	Display/Modify NotifSubscribe	Display/Modify AppProperty
CmdFileLoader		Modify	Delete	Display/Modify NotifSubscribe	Display/Modify AppProperty
SNMP		Modify	Delete	Display/Modify NotifSubscribe	Display/Modify AppProperty
LdapDataServer		Modify	Delete	Display/Modify NotifSubscribe	Display/Modify AppProperty

Below the table is a button: **Add ApplicationIdentity**

UserAppMap

Username	AppName	LogOption	Action	
user	BlueCli	NoLog	Modify	Delete
user	WebCI	NoLog	Modify	Delete
user	SOAP	NoLog	Modify	Delete
user	CmdFileLoader	NoLog	Modify	Delete
user	LdapDataServer	NoLog	Modify	Delete
operation	BlueCli	NoLog	Modify	Delete
operation	WebCI	NoLog	Modify	Delete
operation	LdapDataServer	NoLog	Modify	Delete
suwml	BlueCli	NoLog	Modify	Delete

Figure 6: 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 ApplProperty 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 14: 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"> • BlueCli • WebCI • CmdFileLoader • SNMP • LdapDataServer • PolicyManager 	N/A	Identifier that uniquely identifies an application.
Optional Attribute	Value Range	Default	Description
Description	Up to 20 characters except the following: "/ \ [] ; ; = , + * ^ <>" The pre-defined applications are: <ul style="list-style-type: none"> • BlueCli • WebCI • CmdFileLoader • SNMP • LdapDataServer • PolicyManager 	N/A	Identifier that uniquely identifies an application.

CLI Example

```
1 : Oamp[]> NotificationManager[]> display ApplicationIdentity[AppName = 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

AppName

CLI Command Syntax

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

Operations Permitted

Add, display, modify, delete

Attributes and Values

Table 15: NotificationSubscribe attributes

Mandatory Attribute	Value Range	Default	Description
Namespace	There are only two Namespaces in the Global Schema: <ul style="list-style-type: none"> 'bn' 'global' (this is only for the Subscription entity) 	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.
AppName	Up to 20 characters except the following:	N/A	Name of the application that is registered to

Mandatory Attribute	Value Range	Default	Description
	/ \ [] ; = , + * ^ 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		receive notifications on changes of the configured namespace/entity/attribute. 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.
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 16: ApplicationProperty attributes**

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

Mandatory Attribute	Value Range	Default	Description
			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 17: 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"> user 	N/A	Identifier that uniquely identifies a user.

Mandatory Attributes	Value Range	Default	Description
	<ul style="list-style-type: none"> • operation • surveillance • admin • batch • simplprov 		
ApplName	Up to 20 characters except the following: "/ \ [] ; = , + * ^ <>" The pre-defined applications are: <ul style="list-style-type: none"> • Cli • WebCI • CmdFileLoader • SNMP • LdapDataServer • PolicyManager 	N/A	Identifier that uniquely identifies an application.
Optional Attributes	Value Range	Default	Description
LogOption	<ul style="list-style-type: none"> • 0 NoLog • 1 LogAll • 2 LogRead • 3 LogMod 	0	This parameter indicates which of the following logging options the SDM system should follow for each user-application combination: <p>0 NoLog: No logs are saved by the system.</p> <p>1 LogAll: The system saves logs for all the actions taken by this user on this application. WARNING: This could impact the performance of the system during high traffic.</p> <p>2 LogRead: The system saves logs only for the reading actions taken by this user on this application.</p> <p>3 LogMod: 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.....82](#)

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 18: 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]
```

Home Location Register (HLR)

Topics:

- *Subscriber Identity Module (SIM) Provisioning.....84*
- *HLR Subscriber Provisioning.....89*
- *CAMEL Services Provisioning.....112*
- *Closed User Group (CUG) Basic Service.....149*
- *GPRS Services.....154*
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- *PLMN provisioning.....176*
- *Enhanced Multi-Level Priority & Precedence (EMLPP).....181*
- *LCS Privacy Profile.....183*
- *HLR Volatile Data Provisioning.....186*
- *Subscription Generic Data.....205*
- *LTE-HSS profile provisioning.....207*
- *HLR Operations.....211*

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 19: 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. Note: 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 20: 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	Integer (2)	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. Important: 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 21: 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>Provisioning Tips:</p> <ul style="list-style-type: none"> • The PrimaryIMSI must be added first in the SimImsiMap entity, prior to being able to add other alternate IMSIs. • The PrimaryIMSI must be removed last when deleting an entry from the SimImsiMap.

Table 22: SimImsiMap optional attributes

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

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 23: 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	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.

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

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; ActiveSubsTimeStamp= 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]
```

Table 24: 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.

Attribute	Value Range	Default	Description
			Important: 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 25: 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	<p>Teleservices (TS) available to subscriber.</p> <p>TS11=Speech (Telephony)</p> <p>TS12=Speech (Emergency Call)</p> <p>TS21=Short Message Service (Short message MT/PP)</p> <p>TS22=Short Message Service (Short message MO/PP)</p> <p>TS61=Facsimile Services (Alternate Speech and Facsimile Group 3)</p> <p>TS62=Facsimile Services (Automatic Facsimile Group 3)</p> <p>TS63= Facsimile Services (Facsimile Group 4)</p> <p>TS91=Voice Group Services (Voice Group Call Service)</p> <p>TS92=Voice Group Services (Voice Broadcast Service)</p> <p>TSD1=operator defined PLMN specific TS-1</p> <p>TSD2=operator defined PLMN specific TS-2</p> <p>TSD3=operator defined PLMN specific TS-3</p> <p>TSD4=operator defined PLMN specific TS-4</p> <p>TSD5=operator defined PLMN specific TS-5</p> <p>TSD6=operator defined PLMN specific TS-6</p>

Attribute	Value Range	Default	Description
			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
Bearer-ServiceList	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 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

Attribute	Value Range	Default	Description
			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 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

Attribute	Value Range	Default	Description
			BSE0-BSFF=Undefined
OdbMask	See description	Null	<p>Operator Determined Barring Mask. Enable call barring for scenarios listed below:</p> <p> ALLOGCalls ALLOGInternatCalls ALLOGInternatCallsExceptHplmn ALLOGInterzonalCalls ALLOGInterzonalCallsExceptHplmn ALLOGInternatExceptHplmnAndBarringInterzonalCalls ALLOGWhenRoamingOutsideHPLMNcountry AllICCalls AllICCallsWhen RoamingOutsideHplmn AllICCallsWhen RoamingOutsideZone OffHplmn RoamingOutsideHplmn RoamingOutsideHplmnCountry PremiumRateInfo PremiumRateEntertainment PremiumRateInfoAndEntertainment SuppServicesManagement RegistrationAnyFtn RegistrationInternatFtn RegistrationInternatFtnExceptHplmn RegistrationAnyInterzonalFtn RegistrationInterzonalFtnExceptHplmn CallTransfer CallTransferAnyChargedToServed CallTransferAnyInternatCharged ToServed CallTransferAnyInterzonalCharged ToServed CallTransferBothChargedToServed CallTransferExistingTransferForServed PacketServices PacketServicesFromHplmnWhileInVplmn </p>

Attribute	Value Range	Default	Description
			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
UssdAllowed	0 or 1	0	USSD messaging allowed for this subscriber. 0 = USSD not allowed 1 = USSD allowed
SubsRoamingMsgOn	0 or 1	0	This attribute allows to turn On/Off welcome roaming messages for the subscriber. 0=Off 1=On
OCPlmnTemplateId	integer	Null	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. (In the WebCI, the OCPlmnTemplateName parameter allows to assign an OCPLMN Template to a subscriber)
SmsTemplateId (CLI)	integer (CLI) varchar (WebCI)	0 (CLI) Not Defined (WebCI)	Id or name of the MT-SMS Routing Template (configured in the ngHLR) for the Tekelec ngHLR

Attribute	Value Range	Default	Description
SmsTemplateName (WebCI)			<p>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>Pre-requisites:</p> <ul style="list-style-type: none"> • 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). • 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.
Subscriber State	0,1	1	<p>This allows to enable or disable the subscriber status.</p> <p>0: disable</p> <p>1: enable</p> <p>Note: Setting this parameter to 0 (disable) doesn't delete the entry provisioned for this subscriber in the database.</p>

Attribute	Value Range	Default	Description
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) 7 (Language TBD2) 8 (Language TBD3) 9 (Reserved9)	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 9=Reserved (see ITU-T Recommendation Q.104) (national use) 10=ordinary calling subscriber

Attribute	Value Range	Default	Description
	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)		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 generated by the Tekelec ngHLR and is only for informational purposes.

Attribute	Value Range	Default	Description
SubsVlrMsgNotificationOn	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>0(Off): 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>1(On): 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>
DefaultPdnContextId	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.
SpPdnChargingCharacteristics	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.
APNOIReplacement	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>Note: 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>

Attribute	Value Range	Default	Description
			This AVP contains the Mobile Equipment Identifier of the user's terminal. For further details 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.

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]
```

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 26: 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 27: 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

Attribute	Value Range	Default	Description
			<p>Note: 1: Service can only be invoked if Activation State is Active and Operative.</p> <p>Note: 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 28: 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 Note: Provisioning TIP: BAOC, BOIC or BOICEXHC cannot be activated together.

Table 29: CallBarringSS optional attributes

Attribute	Value Range	Default	Description
Provision-State	0 or 1	0	Supplementary Service Provision State 0 = disabled 1 = enabled Note: 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 30: 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 CallBarringSubsOption
[SubsOption = 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 31: 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 CFNRC = Call Forwarding on Mobile Subscriber Not Reachable

Table 32: CallForward optional attributes

Attribute	Value Range	Default	Description
ProvisionState	0 or 1	0	Supplementary Service Provision State. 0 = not provisioned 1 = provisioned Note: 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 33: CallForwardBsg mandatory attributes

Attribute	Value Range	Default	Description
BsgId	1 (Speech), 6 (FacsimileServices), 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)*,

Attribute	Value Range	Default	Description
			<p>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 Forward – Basic Service Group.</p>

Table 34: CallForwardBsg optional attributes

Attribute	Value Range	Default	Description		
Act State_A	0 or 1	0	Activation state:		
			Active & Operative	Set A bit to: 1	Set Q bit to: 0
			Active & Quiescent	1	1
			Not Active	0	0 or 1
			<p>Note: 1: Service can only be invoked if Activation State is Active and Operative (A=1, Q = 0).</p> <p>Note: 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	<p>Supplementary Service Registration State</p> <p>0 = not registered</p> <p>1 = registered</p> <p>Note: Setting this parameter to 0 (not registered) doesn't delete the entry provisioned in the database.</p>		
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>Note: 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>0=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>1= 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]> SScallWaitActivStatus
```

CLI Inherited Attributes

SubscriptionID, HlrServiceProfileID.

CLI Command Syntax

```
Subscriptions[]> Subscription[SubscriptionID= <string>]>
SubscriberProfile[HlrServiceProfileID = <string>]>add
SScallWaitActivStatus[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 35: SScallWaitActivStatus 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 36: SS_CallWaitActivStatus optional attributes

Attribute	Value Range	Default	Description
Activation	0 or 1	0	Call Waiting activation 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 37: CamelData optional attributes

Attribute	Value Range	Default	Description
ProvisionState	0,1	0	This flag can be provisioned to indicate the state of Camel Data Note: 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	This flag can be provisioned to indicate to the Tekelec ngHLR whether or not the Camel Server needs to be notified if a Call Forward event takes place.

Attribute	Value Range	Default	Description
CallBarringNotifyCse	0,1	0	This flag can be provisioned to indicate to the Tekelec ngHLR whether or not the Camel Server needs to be notified if a Call Barring event takes place.
OdbNotifyCse	0,1	0	This flag can be provisioned to indicate to the Tekelec ngHLR whether or not the Camel Server needs to be notified if a Odb event takes place.

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 38: CAMELCsiData mandatory attributes

Attribute	Value Range	Default	Description
CsiType	1 O-CSI 2 T-CSI 3 VT-CSI 4 GPRS-CSI 5 OSMS-CSI 6 D-CSI 7 M-CSI 8 U-CSI 9 TIF-CSI 10 SS-CSI	N/A	This parameter allows you to specify the CSI type to be used. Important: When provisioning an entry with CsiType=O-CSI or CsiType=T-CSI, the CamelPhase parameter becomes mandatory (see description below).

Table 39: 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. Note: 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. Note: 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.

Attribute	Value Range	Default	Description
ActiveState	0,1	0	<p>This flag can be provisioned to indicate the Active state of a specific Camel Csi Data.</p> <p>Note: 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.</p>
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.
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)	<p>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:</p> <p>0 (Always Send): This means that the Tekelec ngHLR proceeds with the SRI call flow as if the subscriber has T-CSI "Provisioned".</p> <p>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</p>

Attribute	Value Range	Default	Description
			<p>of the SDM System Configuration – Reference Manual.).</p> <p>2(Don't send when Not Reachable/CF): This means that the Tekelec ngHLR verifies if all of the following conditions are met:</p> <ul style="list-style-type: none"> -the subscriber is not reachable -Call Forward (CFNRc, CFU) is detected for this subscriber. <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> <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"> -the subscriber is not reachable -Call Forward (CFNRc, CFU) is detected for this subscriber. -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). <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 40: 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 41: 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. Note: 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. 0 = not present 1 = present

Attribute	Value Range	Default	Description
CauseValueCriteriaValList	1-127	NULL	<p>This parameter supports the following:</p> <ul style="list-style-type: none"> • items separated by ',' , no spaces • list of max 5 cause values • each value is an integer within the 1-127 range.

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 42: 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 43: 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. Note: 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

Attribute	Value Range	Default	Description
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. Note: 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. This parameter supports the following: <ul style="list-style-type: none"> • 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
BasicService Criteria BSList	BS00, BS10 to BS19 BS1A to BS1F BS20 to BS29 BS2A to BS2F BS30 to BS36 BS38, BS40, BS48, BS50,	NULL	List of Bearer Services trigger criteria; Maximum of 5 criteria values. Note: the 5 criteria values can be selected from either the TS Criteria List or from the BS Criteria List or from both. Refer to Bearer Services (BS) under <i>Subscriber Profile (Bearer Services, Teleservices, Call Barring,</i>

Attribute	Value Range	Default	Description
	BS58, BS60, BS68, BSD0 to BSD9 BSDA to BSDF		PreferredRoutingNetworkDomain for details on Bearer Services. This parameter supports the following: <ul style="list-style-type: none"> • 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
ForwardingCrit Present	0 or 1	0	The Forwarding Criteria information is present in the subscriber profile. 0 = not present 1 = present
ForwardedCall	0 or 1	1	0 = Normal call forwarding 1 = Not forwarded
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:

Attribute	Value Range	Default	Description
			<ul style="list-style-type: none"> list of integers, separated by ',', no spaces max 3 lengths
DstNumberCriteria DstNmbList	up to 15 digits, up to 10 comma separated values	Null	<p>List of destination criteria numbers; maximum of 10 destination numbers</p> <p>This parameter supports the following:</p> <ul style="list-style-type: none"> string consisting of numbers, separated by ',' max Numbers = 10 length of each number = 1- 15 digits

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;
BasicServiceCriteriaTSList=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 44: 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 45: 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. Note: 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

Attribute	Value Range	Default	Description
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. Note: 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"> • 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
BasicServiceCriteria BSList	BS00, BS10 to BS19 BS1A to BS1F BS20 to BS29 BS2A to BS2F BS30 to BS36 BS38, BS40, BS48, BS50, BS58, BS60,	NULL	List of Bearer Services trigger criteria; Maximum of 5 criteria values. Note: 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:

Attribute	Value Range	Default	Description
	BS68, BSD0 to BSD9 BSDA to BSDF		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 46: 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 47: 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. Note: 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

Attribute	Value Range	Default	Description
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"> • items separated by ',', no spaces • list of max 5 cause values • each value is an integer within the 1-127 range.

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 48: 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 49: 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. Note: 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

Attribute	Value Range	Default	Description
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"> • items separated by ',', no spaces • list of max 5 cause values • each value is an integer within the 1-127 range.

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 50: 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>GsmScfld</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 51: Terminating Attempt Authorized DP for Camel VT-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 particular Camel CsiDp Data. Note: 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

Attribute	Value Range	Default	Description
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. Note: the 5 criteria values can be selected from either the TS Criteria List or from the BS Criteria List or from both. This parameter supports the following: <ul style="list-style-type: none"> • items in the lists separated by ', ', no spaces • can not have duplications in the list For example TS00 is "All TS" and will duplicate any other TS • max (TS + BS) = 5
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. Note: the 5 criteria values can be selected from either the TS Criteria List or from the BS Criteria List or from both. This parameter supports the following: <ul style="list-style-type: none"> • items in the lists separated by ', ', no spaces • can not 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
= 3]>add CamelCsiDP[DpType=12; GsmScfId =3; ServiceKey=147; ProvisionState=1;
DefaultCallHandling =1; BasicServiceCritPresent=1;
BasicServiceCriteriaTSLList=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 52: 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 53: Terminating Attempt Busy DP for CAMEL VT CSIs optional attributes

Attribute	Value Range	Default	Description
ProvisionState	0,1	0	<p>This flag can be provisioned to indicate the Provision state of a specific Camel CsiDp Data.</p> <p>Note: 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>
DefaultCallHandling	0 or 1	0	<p>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.</p> <p>0 = Continue call 1 = Release call</p>
CauseValueCritPresent	0 or 1	0	<p>This indicates the presence of Cause Value criteria information.</p> <p>0 = not present 1 = present</p>
CauseValueCriteria ValList	1-127	NULL	<p>This parameter supports the following:</p> <ul style="list-style-type: none"> • items separated by ',' , no spaces • list of max 5 cause values • each value is an integer within the 1-127 range.

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 54: 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 55: Terminating No Answer DP for CAMEL VT-CSIs optional attributes

Attribute	Value Range	Default	Description
ProvisionState	0,1	0	<p>This flag can be provisioned to indicate the Provision state of a specific Camel CsiDp Data.</p> <p>Note: 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>
DefaultCallHandling	0 or 1	0	<p>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.</p> <p>0 = Continue call 1 = Release call</p>
CauseValueCritPresent	0 or 1	0	<p>This indicates the presence of Cause Value criteria information.</p> <p>0 = not present 1 = present</p>
CauseValueCriteriaValList	1-127	NULL	<p>This parameter supports the following:</p> <ul style="list-style-type: none"> • items separated by ',' , no spaces • list of max 5 cause values • each value is an integer within the 1-127 range.

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 56: 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

Attribute	Value Range	Default	Description
			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 57: 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. Note: 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

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 58: 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 59: 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. Note: 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 60: 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).
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 61: 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. Note: Setting this parameter to 0 (not provisioned) doesn't delete the entry provisioned in the database, it simply

Attribute	Value Range	Default	Description
			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 62: 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.

Attribute	Value Range	Default	Description
SsEventList	CD ECT MPTY	N/A	This parameter allows to provision a list of values for Supplementary Service Event: <ol style="list-style-type: none"> items separated by ',', no spaces list of max 3 event values MPTY - Multi Party call <p>ECT - Explicit Call Transfer</p> <p>CD - Call Deflection</p>

Table 63: 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>Note: 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 64: CamelCsiDP_AnalyzedInfo mandatory attributes**

Attribute	Value Range	Default	Description
CamelCsiDP_Analyzed Info	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 65: 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. Note: 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
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 66: 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 67: 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. Note: 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 68: 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.

Optional Attributes			
Attribute	Value Range	Default	Description
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 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)

Optional Attributes			
Attribute	Value Range	Default	Description
			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 69: CugFeature attributes**

Mandatory Attributes			
Attribute	Value Range	Default	Description
BsgId	1 (Speech), 6 (Facsimile Services),	N/A	BsgId identifies the service capabilities for a subscriber, as

Mandatory Attributes			
Attribute	Value Range	Default	Description
	7 (AllDataCircuit Asynchronous), 8 (AllDataCircuit Synchronous), 12 (VoiceGroup Services)		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 70: CugFeature attributes

Optional Attributes			
Attribute	Value Range	Default	Description
InterCug-Restriction	0 (CugOnly) 1 (CugAnd OutgoingAccess) 2 (CugAnd IncomingAccess) 3 (CugAnd IncomingAccess AndOutgoing Access)	0	Service restrictions between Closed User Groups, applied to a specific subscriber. 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 71: 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 72: CugSubscription attributes

Optional Attributes			
Attribute	Value Range	Default	Description
CugIndex	0 to 32767	0	Parameter used by the calling user to select a

Optional Attributes			
Attribute	Value Range	Default	Description
			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, VoiceGroup Services	Null	List of Basic Call Group service identifications, corresponding to CugBearerServList and CugTeleServList.

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 73: 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	<p>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).</p> <p>Note: Do not use the following characters in the AccessPointName: _, ;, :, &, >, <, ', \, , @, !, {, [, ~, #, %, ^, (,), +, ", '.</p>

Table 74: 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 (including the character ".")	N/A	PDP Address holds the address of the MS for a certain service, i.e., an IP or X.121 address. If dynamic addressing is allowed, PDP Address is empty in the HLR.
VplmnAddress-Allowed	0 or 1	0	<p>VPLMN Address Allowed specifies whether the MS is allowed to use a dynamic address allocated in any VPLMN.</p> <p>0 = not allowed 1 = allowed</p>
QosDelayClass	1 (DelayClass1), 2 (DelayClass2), 3 (DelayClass3),	4	The delay incurred in end-to-end transmission of Service Data Units through the GPRS networks.

Attribute	Value Range	Default	Description
	4 (BestEffort-DelayClass4)		
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) 9 (UpTo256Koctet PerS)	1	Maximum rate at which data is expected to be transferred across the network. Transfer rate = octets per second Note: 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 value of the QosPeakThroughput is generated by the ngHLR using rules specified in the <i>3GPP TS 24.008 V8.13.0 (2011-03)</i> 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),	31	The average rate which data is expected to be transferred across the GPRS network during the remaining lifetime of an activated PDP context.

Attribute	Value Range	Default	Description
	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)		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.
QosAllocation Retention Priority	1 (HighPriority), 2 (NormalPriority), 3 (LowPriority)	2	Specifies the relative importance compared to other UMTS bearers for allocation and retention of the UMTS 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),	0	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

Attribute	Value Range	Default	Description
	4 (Background)		<p>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>
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.
QosDeliveryOrder	0 (Unknown), 1 (Yes), 2 (No)	0	indicates whether the UMTS bearer shall provide in-sequence SDU delivery or not.

Attribute	Value Range	Default	Description
			Delivery order should be set to 'no' for PDP Type = 'IPv4' or 'IPv6'
QosMaxBitRateDown	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.
QosSDUErrorRatio	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.
QosTransferDelay	Unsigned integer (10 to 4 000)	N/A	Indicates the maximum delay for 95 th percentile of the distribution of delay 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.

Attribute	Value Range	Default	Description
QoSTrafficHandlingPriority	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.
QoSGuaranteedBitRateUp	Unsigned integer (0 to 8400)	N/A	Describes the bitrate the UMTS bearer service shall guarantee to the user or application during the upload.
QoSGuaranteedBitRateDown	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.
QoSSignallingIndication	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=varchar; PortingStatus=0,1,2; Shared=0,1; ForceToSip=0,1];
SriTemplateId=integer; SmsTemplateId=0]
```

Operations Permitted

Add, modify, display.

Attributes and Values.

Table 75: 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 76: 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 multiple Alternate 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 multiple Alternate MsIsdn is unpublished.</p> <p>1= the multiple Alternate MsIsdn is published.*</p> <p>This attribute is mandatory only if:</p> <ul style="list-style-type: none"> - 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. - 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.
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"> -When the SRI message doesn't include the Network Signaling Information. - When the SRI message includes the Network Signaling Information and - The "BsgOverride" flag is set to On (1=True) or the BSG

Attribute	Value Range	Default	Description
			<p>derivation is not possible.</p> <p>If the "DefaultBsg" attribute is not provisioned, the value used for the default BSG corresponds to SPEECH.</p>
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>Note: 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</p>

Attribute	Value Range	Default	Description
			MSISDN that will be changed to “not shared”.
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 77: 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>Provisioning Tips:</p> <ul style="list-style-type: none"> -The displayed MSISDN must be added first in MsIsdnImsiProfileAssociation entity. -The displayed MSISDN must be removed last when deleting an entry from the MsIsdnImsiProfileAssociation entity.

Table 78: MsIsdnImsiProfileAssociation optional attributes

Attribute	Value Range	Default	Description
Deferred	0 or 1	0	<p>This parameter indicates whether the execution of the SIM-swap operation is deferred or not until the first Update 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 multiple Alternate 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 multiple Alternate MSISDN is not displayed.(The Primary MsIsdn is transmitted instead)</p> <p>1= the multiple Alternate MSISDN is displayed.</p> <p>This attribute is mandatory only if:</p> <ul style="list-style-type: none"> - 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. - the Alternate Imsi is the same as the Primary Imsi of this subscriber and the entered value must not be displayed
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>

Attribute	Value Range	Default	Description
			<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> <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>Provisioning TIPS:</p> <ul style="list-style-type: none"> • 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. • 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

Attribute	Value Range	Default	Description
			<p>its MSISDN-IMSI associations, all the MSISDN based messages will fail for this specific MSISDN.</p> <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 MSISDN priority 2. The MSISDN priority 1 must be reachable in order for the Dual-SIM priority calling logic to take effect.</p>

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 MSISDNs An 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 79: 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 80: 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 81: 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.

Mandatory Attributes			
Attribute	Value Range	Default	Description
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 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 82: 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

Attribute	Value Range	Default	Description
			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
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)

Attribute	Value Range	Default	Description
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 83: 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
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 84: PlmnSpecificSS mandatory attributes**

Attribute	Value Range	Default	Description
Type	241 (SS-F1) 242 (SS-F2) 243 (SS-F3) 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)	N/A	PLMN Specific Supplementary Service.
ProvisionState	0 or 1	0	The PLMN Specific Supplementary Service Provision State 0 = disabled 1 = enabled Note: 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 85: PlmnSpecificSSBsg mandatory attributes

Attribute	Value Range	Default	Description
BsgId	1 (Speech), 6 (Facsimile Services), 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)

Table 86: PlmnSpecificSSBsg optional attributes

Attribute	Value Range	Default	Description
ActState_A	0 or 1	0	Activation state:
ActState_Q	0 or 1	0	Active & Operative
			Active & Quiescent
			Not Active
			<p>Note: 1: Service can only be invoked if Activation State is Active and Operative (A=1, Q = 0).</p> <p>Note: 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 87: Emlpp mandatory attributes

Attribute	Value Range	Default	Description
ProvisionState	0 or 1	0	The EMLPP service Provision State 0 = disabled 1 = enabled Note: Setting this parameter to 0 (disabled) doesn't delete the entry provisioned in the database, it simply means that

Attribute	Value Range	Default	Description
			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 88: Emlpp optional attributes

Attribute	Value Range	Default	Description
ActState_A	0 or 1	0	<p>Identifies the active state of the service.</p> <p>Note: Service can only be invoked if Activation State is Active and Operative (A=1).</p> <p>1=active and operative service</p> <p>0=inactive service</p> <p>Note: 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	<p>Supplementary Service Registration State</p> <p>0 = not registered</p> <p>1 = registered</p>

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 89: LCSPrivacyExceptionList - mandatory attributes

Mandatory Attributes			
Attribute	Value Range	Default	Description
SSCode	TINYINT UNSIGNED Values Supported: 177 (Universal) 180 (PLMN operator class) Note: 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). Note: 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). False (0) = Logical state of "provisioned, not active." True (1) = logical state of "provisioned, active, and operative."

Table 90: LCSPrivacyExceptionList - optional attributes

Optional Attributes			
Attribute	Value Range	Default	Description
InternalClient	SET - Possible Values: <ul style="list-style-type: none"> • broadcastService • OandMHPLMN • OandMVPLMN • anonymousLocation • targetMSsubscribedService Extra Validation: This field may be non-NULL only when SS-Code is equal to PLMN Operator Class	Null	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. Note: For Universal Calss the InternalClient must be NULL. Note: For PLMN Operator class, the InternalClient must be set.
NotificationToMsUser	TINYINT UNSIGNED	NULL	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. It indicates if the MS user is to be notified of the MT-LR and if user authorization is required. A null value (0) indicates that positioning of the subscriber is allowed with no notification to the MS User. Note: This field is not used in the present implementation as the call/session related and call/session unrelated classes are not supported.

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 91: HlrBinaryVolData mandatory attributes**

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

Table 92: 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.
PrevLmsi	up to 8 digits	N/A	Local Mobile Station Identity of this subscriber given by the previous VLR.

Attribute	Value Range	Default	Description
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 BS39-BS3F=Undefined

Attribute	Value Range	Default	Description
			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) 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
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

Attribute	Value Range	Default	Description
			1 = Mobile Station purged
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

Attribute	Value Range	Default	Description
			0= not supercharged 1= supercharged
CurrSgsnNumber	up to 15 digits	N/A	Number of SGSN where GPRS Mobile Station is currently located
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

Attribute	Value Range	Default	Description
			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
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

Attribute	Value Range	Default	Description
			BS2F=General Data PDS Services BS31-BS36=Unspecified BS37=Undefined 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
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.

Attribute	Value Range	Default	Description
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 1 = MS purged
GprsMsNot Reachable	0 or 1	N/A	Mobile Station reachable indicator for GPRS: 0 = Mobile Station not reachable 1 = Mobile Station reachable
GprsMsNot-Reachable-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
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 93: HlrVolatileData mandatory attributes

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

Table 94: 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
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:

Attribute	Value Range	Default	Description
MsNotReachableReason	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 ALLOGInternatCallsExceptHplmn ALLOGInterzonalCalls ALLOGInterzonalCallsExceptHplmn ALLOGInternatExceptHplmnAndBarringInterzonalCalls ALLOGWhenRoamingOutsideHPLMNcountry AllICCalls AllICCallsWhenRoamingOutsideHplmn AllICCallsWhenRoamingOutsideZoneOfHplmn RoamingOutsideHplmn RoamingOutsideHplmnCountry PremiumRateInfo PremiumRateEntertainment PremiumRateInfoAndEntertainment SuppServicesManagement

Attribute	Value Range	Default	Description
			RegistrationAnyFtn RegistrationInternat Ftn RegistrationInternat FtnExceptHplmn RegistrationAny InterzonalFtn RegistrationInterzonal FtnExceptHplmn CallTransfer CallTransferAnyCharged ToServed CallTransferAnyInternat ChargedToServed CallTransferAnyInterzonal ChargedToServed CallTransferBothCharged ToServed CallTransferExistingTransfer ForServed PacketServices PacketServicesFrom HplmnWhileInVplmn PacketServicesWithin Vplmn 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

Attribute	Value Range	Default	Description
			OperatorSpecificType = Defined by Operator
InducedBaocVlr	'Speech' 'ShortMessageService' 'FacsimileServices' 'AllDataCircuit Asynchronous' 'AllDataCircuit Asynchronous' 'VoiceGroupServices'	null	All induced BAOC Bsgs sent to the VLR.
InducedBaocVlr ServScr	'Speech' 'ShortMessageService' 'FacsimileServices' 'AllDataCircuit Asynchronous' 'AllDataCircuit Asynchronous' 'VoiceGroupServices'	null	Service Screening Induced BAOC Bsgs sent to the VLR.
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

Attribute	Value Range	Default	Description
			3 = Not registered
SgsnFlags	'SgsnCugCapable', 'CheckSsIndicator', 'MscAreaRestricted', 'RoamingRestricted', 'MsPurged', 'MsNotReachableReason Set', 'MsNotReachable', 'MsMemoryCapacity Exceeded', 'SubscriberReachable', 'CurrVlrSuperCharger Support', 'PrevVlrSuperCharger Support', 'LongFtnSupported', 'ISDFailed'	N/A	SGSN Flags.
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).

Attribute	Value Range	Default	Description
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) MME: the user is registered in a 4G network (the LTE MME) MME_SGSN_Combined: the user is registered in a 4G network (LTE MME/SGSN combined) HLR_Proxy_Registration : the user is registered in a 3G network on the remote legacy HLR.
UrrpMme	MME MME_NONE SGSN SGSN_NONE		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	MME MME_NONE SGSN SGSN_NONE		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.

Attribute	Value Range	Default	Description
HomogeneousSupp IMSVoiceOverPS Sessions	MME_Not_Supported MME_Supported SGSN_Not_Supported' SGSN_Supported		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	MME_Not_Supported MME_Supported SGSN_Not_Supported' SGSN_Supported		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 95: 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 96: HlrVolMwData mandatory attribute**

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

Table 97: 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 98: 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 99: 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 100: ServiceProfilePDNContext mandatory attributes

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

Table 101: 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 102: HlrSpPdnMipAgentInfo mandatory attribute**

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

Table 103: 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.

Optional Attributes			
Attribute	Value Range	Default	Description
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 104: 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 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.

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 (MsIsdnImsiProfileAssociation).

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, WiMAX), 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.....217](#)
- [MNP Ported Out.....218](#)

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 105: 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 106: 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>Note: 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 107: MnpPortedOut mandatory attribute**

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

Table 108: MnpPortedOut optional attributes

Attribute	Value Range	Default	Description
RuleId	Integer	'0'	RuleId used to build the full Routing Number.
ActiveSubsTimestamp	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.....221](#)

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 109: 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 ";" Note: To include a backslash in the user	N/A	Part of the hierarchical part of the URI naming structure.*

Attribute	Value Range	Default	Description
	name, you need to 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 110: 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.

Attribute	Value Range	Default	Description
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 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 3rd 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 111: RegistrationBinding attributes

Attribute Name	Value Range	Default	Description
ContactUriScheme	(0) (1) sip (2) sips (3) tel (4) mailto (5) im (6) pres	0	Value of the Scheme of the Contact header in a Sip Register message. Not used for 3 rd party registration.
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 rd 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 rd 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 rd party registration.
ContactUriUri Parameters	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 rd party registration.
ContactUriAbsUri Identifier	[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

Attribute Name	Value Range	Default	Description
			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 rd party registration.
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 rd 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 rd party registration.
Registration Priority	Integer	1000	Qvalue times a thousand. Not used for 3 rd party registration.
TasId	TinyInt	0	TAS identifier.

Attribute Name	Value Range	Default	Description
			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 rd party registration).
ActiveSubs Timestamp	Date and Time <year>-<month>-<day> <hour>:<minutes>:<seconds> 3.1.3.8 CLI example 2011-03-14 19:41:07	CURRENT_TIMESTAMP	The timestamp the record was created or last updated.

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 112: SipRedirectionOverride mandatory attribute**

Attribute	Value Range	Default	Description
CanonicalUri	Canonical URI. Schemes supported: Sip or sips or Tel or im or Pres or mailto	""	"Permanent redirection" contact URI for an Address Of Record.

Table 113: 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 12: 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 114: SIP Number Portability Address of Record User Range Prefix Optional Attributes

Attribute Name	Value Range	Default	Description
UserRangePrefix	[0..15] characters	""	<p>Prefix used to define a range of users. Only one empty range can be configured.</p> <p>When empty (""), no range defined:</p> <ul style="list-style-type: none"> • Skips the lookup of HLR MNP Routing logic for full routing number. • Can be used to return a 302-response with a default contact if no other prefix matches are found. <p>When provisioned, the isMNPRoutingRule Used attribute</p>

Attribute Name	Value Range	Default	Description
			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 RuleId attribute value to be other than 0)
RuleId	Int	0	Defines the MNP routing rule to use. The rule uses the SIP URI username as MSISDN. Use this field only if attribute isMNPRoutingRuleUsed 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 "isMNPRoutingRuleUsed" is set to 0.

Chapter 7

Home Subscriber Server (HSS)

Topics:

- [Subscription Management - HSS Application.232](#)
- [SLF Redirect Host Mapping.....249](#)

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 115: HssSubscription mandatory attribute

Attribute	Value Range	Default	Description
ChargingID	String (100)	N/A	Identifies the charging functions for an IMS user.

Table 116: 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 117: 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 118: HssPrivateIdentity optional attributes

Attribute	Value Range	Default	Description
CryptedSecretKey	Up to 16 characters		Encrypted secret key (password) used for this

Attribute	Value Range	Default	Description
			Private Identity for authentication.
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 Important: 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) Important: 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
			0 (Off) = indicates that the HSS must send back an authentication failure 1 (On) = indicates that the HSS must send back an authentication success.
StaticRegistration	0 (Off) or 1 (On)	0 (Off)	Statically Registered flag that indicates to the S-CSCF (through Cx SAA and PPR messages) if the UE is statically registered or not. 0= Statically Registered flag is Off 1= Statically Registered flag is On
Early-IMS-Security	0 (Off) or 1 (On)	0 (Off)	The Early-IMS-Security flag indicates whether the IMPI is provisioned as Early IMS Security or not. If the private identity is defined with AlgoName=Early-IMS-Security, this flag must be set to ON.

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 119: 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 120: 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 121: 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>

Attribute	Value Range	Default	Description
DisplayName	string	N/A	Name that is associated with this Public Identity.
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 122: HssServiceProfile mandatory attributes

Attribute	Value Range	Default	Description
ServiceProfileID	String (100)	N/A	Identification of service profile.

Attribute	Value Range	Default	Description
ServerCapabilitiesID	String (100)	N/A	Identification of server capabilities.

Table 123: 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 124: HssInitialFilteringCriteria mandatory attribute

Attribute	Value Range	Default	Description
InitialFiltCritID	String (100)		Identification of the Initial Filtering criteria stored an IMS user.

Table 125: 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

Attribute	Value Range	Default	Description
			FilterCriteria is a boolean 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 126: 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 127: 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 128: 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

Attribute	Value Range	Default	Description
			3 = SESSION_CASE 4 = SESSION_DESCRIPTION

Table 129: 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</p>

Attribute	Value Range	Default	Description
			<p>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 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	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.
SessionCaseInfo	0,1,2,3	null	indicates if the filter should be used by the S-CSCF handling the Originating, Terminating

Attribute	Value Range	Default	Description
			for a registered end user, Terminating for an unregistered end user, or Originating for an unregistered end user services. 0 = ORIGINATING 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 130: 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 131: 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 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 132: 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

Subscription Profile Repository (SPR)

Topics:

- *Subscription Profile Repository (SPR).....252*
- *Subscriber (alias Policy).....254*
- *Subscriber Quota.....261*
- *DynamicQuota.....266*
- *State.....269*
- *Pool.....272*
- *Pool Quota.....275*
- *Pool State.....280*
- *Other SPR Operations.....282*

This chapter describes the methods available for provisioning the subscriber information of a Policy profile.

Subscription Profile Repository (SPR)

The Tekelec Subscriber Data Server (SDS) can act as a centralized Subscription Profile Repository (SPR) for PCRF nodes. This setup allows the PCRF nodes to communicate with the SDM IMS-HSS front-end application over the Sh interface to provision subscriber and pool data, which is stored in the SPR.

For Tekelec PCRF nodes, the SPR can store these types of subscriber data:

- Subscriber Profile: Pre-provisioned information that describes the capabilities of each subscriber.
 - Quota: Subscriber quota usage.
 - Dynamic Quota: Storage of dynamic quota (roll-over, top-up, pass) limits.
 - State: Subscriber-specific properties that may be manipulated by the PCRF.
- Pool Profile: Pre-provisioned pool information.
 - Pool Quota: Quota usage information related to a pool.
 - Pool Dynamic Quota: Storage of dynamic quota information for a pool.
 - Pool State: Pool-specific properties

The PCRF nodes query subscriber data and query or update Quota, Dynamic Quota, and State data (also Pool Quota, Pool Dynamic Quota, and Pool State data) through the Sh interface and its transparent data mechanism. The SPR stores the Sh transparent data as a blob (binary large object) to maximize performance over the Sh interface.

The following provisioning interfaces support either the manipulation or full provisioning of policy profiles in the SPR:

- CLI
- WebCI
- XML/TCP (also known as Direct XML)
- XML/SOAP
- XML-REST (also known as MSR API)
- LDAP

The network operator provisioning system can use the XML provisioning interfaces to modify Quota, Dynamic Quota, and State data, and respectively, PoolQuota, PoolDynamicQuota, and PoolState data. Only the Quota data can also be provisioned as structured data (each field type) through the WebCI and CLI interfaces.

Note: The PCRF never writes to the User Profile data.

The WebCI allows the removal of all Quota information for a given subscriber through the **ResetQuota** action button.

Note: WebCI and CLI are used for troubleshooting purposes.

All but the LDAP interface can manipulate (display, modify, delete) subscriber profile data; the XML interfaces can fully provision the same data.

Refer to [Table 133: Interfaces supporting policy data manipulation](#) for additional support details.

Table 133: Interfaces supporting policy data manipulation

Provisioning Interface	Elements of the Subscriber and Pool profiles				Other elements outside of the policy profiles (Tekelec ngHLR, etc.)
	Subscriber/Pool profile	Quota	PoolQuota Dynamic Quota/ Pool Dynamic Quota	State/ Pool State	
*XML/TCP, XML/SOAP	Read/write (per field)	Read/write (per field)	Read/write (as a blob)	Read/write (as a blob)	Read/write (per field)
XML-REST	Read/write (per field)	Read/write (per field)	Read/write (as a blob)	Read/write (as a blob)	n/a
WebCI	Read/write (per field)	Read/write (per field)	Read-only (as a blob)	Read-only (as a blob)	Read/write (per field)
CLI	Read/write (per field)	Read/write (per field)	Read-only (as a blob)	Read-only (as a blob)	Read/write (per field)
LDAP	Read-only (per field)	Read-only (as a blob)	Read-only (as a blob)	Read-only (as a blob)	Read-only (per field)

*XML/TCP and XML/SOAP are also referred to as XML. Both, XML and XML-REST are referred to as XML interfaces in the provisioning documentation.

Note: When using the XML (TCP/SOAP) or XML-REST interfaces, the Public Identity is generated by the SPR based on the primary key configured at installation of the system (MSISDN, IMSI, or NAI), and the SubscriptionID is automatically defined by the SPR with the same value as the Public Identity value.

XML (TCP/SOAP) interface considerations

When provisioning Policy profiles and their Subscriber and Pool profile data using the XML interface, you must create XML requests to define the Policy data or manipulate (update, select, delete, etc.) the quota/poolquota, dynamic quota/pooldynamicquota, or state/poolstate data. These XML requests can then be sent either through SOAP or directly over a TCP socket (in batch mode using the CommandFileLoader or Command Template loader. See also [User Interfaces](#).

For more information on:

- How to provision using SOAP or TCP, refer to chapter *User Interfaces* in the *SDM Subscriber Provisioning User Guide*.
- XML requests examples to provision policy data, refer to chapter *Examples of XML templates for subscriber provisioning* in the *SDM Subscriber Provisioning User Guide*.

XML-REST interface considerations

Prior to being able to provision policy profiles and their Subscriber or Pool profile data using the XML-REST interface, the RAS Server must be configured properly in the system.

Note: Tekelec configured the RAS server at installation of the system. Contact the Tekelec [Customer Care Center](#) for installation issues.

For information on RAS Server configuration parameters, refer to *Service Option* of the *SDM Monitoring, Maintaining, Troubleshooting – Reference Manual*. For instructions on how to view or troubleshoot the RAS server configuration data from the WebCI, refer to *Configuring the RAS Server (XML-REST interface)* in the *SDM Monitoring, Maintaining, Troubleshooting – User Guide*.

When manually provisioning the SPR using the XML-REST interface, you must create XML requests to define the Policy data as described in the respective SPR entities.

Subscriber (alias Policy)

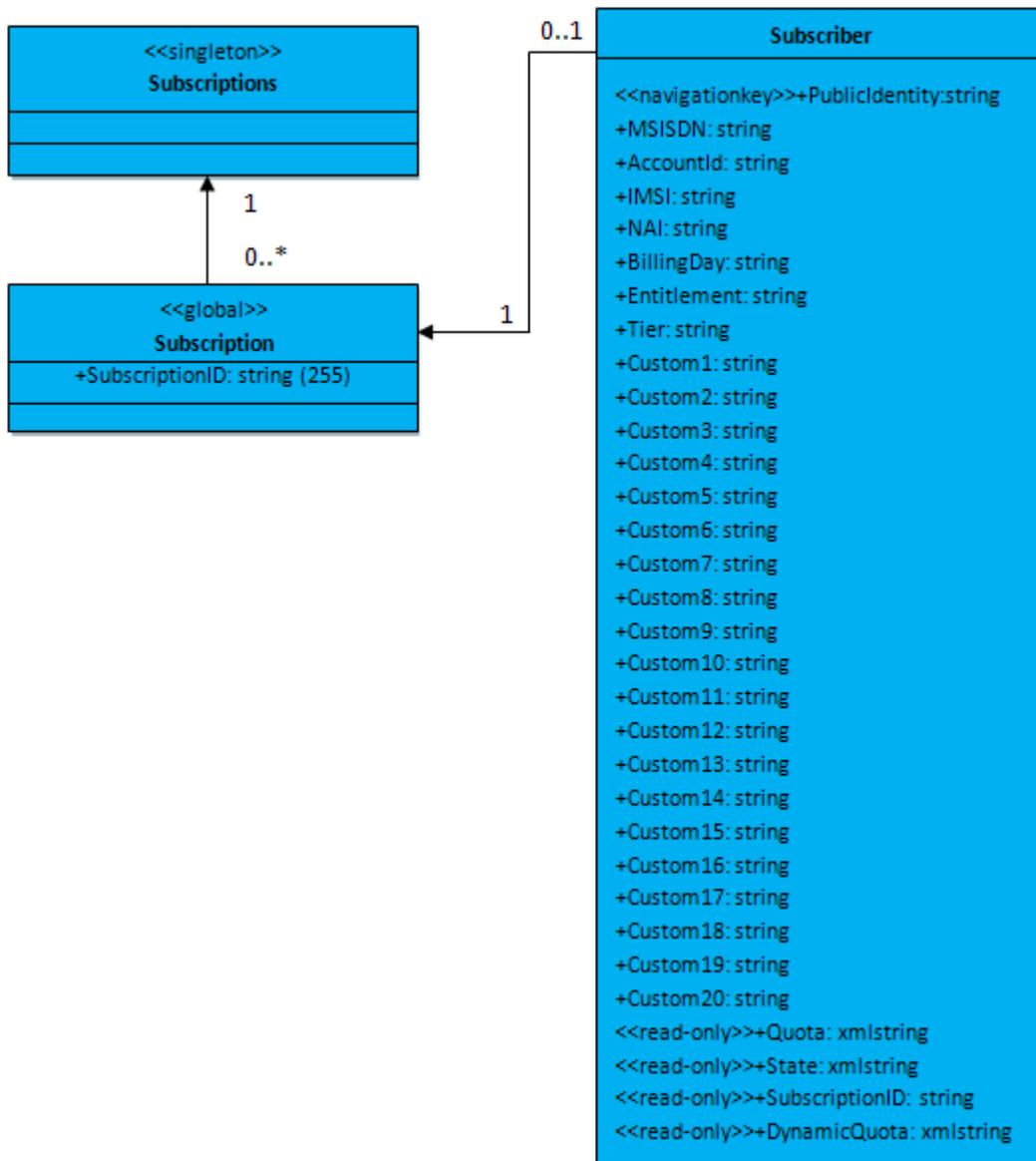
Name

Subscriber (alias Policy)

Description

This entity allows the Network Operator to provision policy profiles and their user (subscriber) profile data stored in the IMS-HSS Subscription Profile Repository (SPR).

Schema



WebCI Navigation

Tekelec SDM ► Subscription Management ► Subscriber Provisioning. Search by one of the policy subscription mandatory primary keys {Policy-AccountId, Policy-MSISDN, Policy-IMSI, Policy-NAI, or Policy PublicIdentity}

CLI Navigation

```
Subscriptions[ ] > Subscription[SubscriptionID] > Policy[PublicIdentity= string]
```

Mandatory navigation attribute(s): PublicIdentity

Inherited navigation attributes: SubscriptionID

Command Syntax

CLI:

```
Subscriptions[]> Subscription[SubscriptionID=<string>]> display Policy[MSISDN=int;
  AccountId=string; IMSI=string; NAI=string; BillingDay=int; Entitlement=string;
  Tier=string; Custom1=string; Custom2=string; Custom3=string; Custom4=string;
  Custom5=string; Custom6=string; Custom7=string; Custom8=string; Custom9=string;
  Custom10=string; Custom11=string; Custom12=string; Custom13=string; Custom14=string;
  Custom15=string; Custom16=string; Custom17=string; Custom18=string; Custom19=string;
  Custom20=string; Quota=xmlstring; DynamicQuota=xmlstring; State=xmlstring;
  PublicIdentity=URI]
```

XML-REST:

```
{baseURI}/msr/sub/{KeyName}/{KeyValue}
```

Operations Permitted

Table 134: Subscriber Profile permitted operations per interface

Interface	Operations	Modifiable Element
CLI/WebCI	add, modify, delete, display	Fields
XML, XML-SOAP	Select, Insert, Update, Delete	Fields and blob
XML-Rest	GET, PUT, POST, DELETE	Fields and blob

For examples of XML requests to provision the Subscriber entity, refer to the “XML File Examples for Policy profile provisioning” section of the *SDM Subscriber Provisioning-User Guide*.

For instructions on how to troubleshoot or manipulate this entity from the WebCI, refer to the “Viewing/Editing Policy Profiles” section of the *SDM Monitoring, Maintaining, Troubleshooting-User Guide*.

Attributes and values

Table 135: Subscriber (alias Policy) mandatory attributes

Attribute	Value Range	Default	Description
MSISDN*	up to 15 digits	null	The subscriber’s MSISDN. MS international PSTN/ISDN number=Country Code (CC) + National (significant) mobile number (National Destination Code (NDC) + Subscriber Number (SN)). National format not supported.
IMSI*	string	null	The subscriber’s IMSI.
NAI*	String (max: 255 bytes)	null	The subscriber’s NAI.

*Only one of the primary keys is mandatory for the provisioning of this entity.

Table 136: Subscriber (alias Policy) optional attributes

Attribute	Value Range	Default	Description
AccountId	String (max: 255 bytes)	null	Identifier of the account for the policy subscription.
BillingDay	0-31	null	The day of the month on which the subscriber's associated quota should be reset. If the value is 0, or if no value is provisioned, then the default global value configured on the PCRF is used.
Entitlement	String (max: 250 bytes)	---	<p>Each entitlement is the name of a boolean flag that indicates whether the subscriber has a certain capability. If the name is present, the flag is assumed to be true and if absent it is false. The presence (or absence) of these flags can be checked in the PCRF's policy engine and used as the basis for decision making in order to perform subscriber-specific behavior.</p> <p>Note: The value of the Entitlement field can be modified, without having to fetch the entire field, and write the new value. Operations are available on the XML and XML-REST interfaces:</p> <p>XML-REST: AddFieldValue() and DeleteFieldValue()</p> <p>XML: AddToSet() and RemoveFromSet().</p> <p>See also Understanding entitlements and custom fields.</p>
Tier	String (max: 255 bytes)	null	Identifier of the subscriber's tier.
Custom1 Custom2 Custom3 . . . Custom20	string	null	<p>Can be used to store any customer-specific values for a subscriber.</p> <p>See also Understanding entitlements and custom fields.</p> <p>Note: The number of customer-specific attributes is flexible and that the current list (Custom1...Custom20) is provided as a guideline. Customization of this information is possible but should be coordinated with Tekelec through a professional service contract.</p>

Attribute	Value Range	Default	Description
Quota	xmlstring	null	<p>The Quota data is loaded into the SPR by the PCRF and is handled as IMS HSS transparent data (blob). See the Attributes and values to this blob.</p> <p>Note: Quota can also be edited per field through WebCI/CLI by using the Quota entity.</p> <p>Example of Quota data in XML format:</p> <pre data-bbox="857 562 1318 1522"> <?xml version="1.0" encoding="UTF-8"?> <usage> <version>8</version> <quota name="AggregateLimit"> <cid>9223372036854775807</cid> <time>3422</time> <totalVolume>1000</totalVolume> <inputVolume>980</inputVolume> <outputVolume>20</outputVolume> <serviceSpecific>12</serviceSpecific> <nextResetTime>2010-05-22T00:00:00-05:00</nextResetTime> </quota> <quota name="VoipLimit"> <cid>9223372036854775808</cid> <time>2355</time> <nextResetTime>2010-06-11T19:00:00-05:00</nextResetTime> </quota> </usage> </pre>
State	xmlstring	null	<p>The State data blob is an optional entity and is handled as IMS HSS transparent data (blob). See the Attributes and values to this blob.</p>

Attribute	Value Range	Default	Description
			<p>Example of State date in XML format:</p> <pre><?xml version="1.0" encoding="UTF-8"?> <state> <version>8</version> <property> <name>mcc</name> <value>315</value> </property> <property> <name>expire</name> <value>2010-02-09T11:20:32</value> </property> <property> <name>approved</name> <value>yes</value> </property> </state></pre>
DynamicQuota	xmlstring	null	Read-only. Stores Pass, Roll-over, and Top-up limits.
PublicIdentity	SIP URI (see RFC 3261) or Tel URL (see RFC 2806)	null	Read-only. Auto generated by the system based on the primary key. 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.
SubscriptionID	string	N/A	<p>Identifier of the Subscription. When this attribute is not specified (i.e. in the case where the system creates a policy profile with the auto-enrollment feature), the system auto-generates a SubscriptionID as follows:</p> <p>By extracting information from the User Identity AVP received in the PUR as follows:</p> <ul style="list-style-type: none"> If the User Identity follows a SIP URI based on an IMSI format: <i>sip:IMSI@mcc.mnc@mobilenetwork.org</i>, the Subscription ID will be extracted from the SIP URI. If the User Identity follows a TEL URL based on a MSISDN format: tel:+5149359700, the Subscription ID will be extracted from the TEL URL format.

Attribute	Value Range	Default	Description
			<ul style="list-style-type: none"> If the User Identity follows a NAI based on username format: <i>sip:UserName@example.com</i>, the Subscription ID will be extracted from the NAI format.

Examples

CLI: Modify profile

```
Subscriptions[:Subscription[SubscriptionID = sub-1]> modify
Policy[PublicIdentity=tel:+5149359700] BillingDay = 5; Custom1 = 112
```

XML: Select profile fields by MSISDN

```
<req name="select">
  <ent name="Subscriber" ns="policy"/>
  <select>
    <expr><attr name="MSISDN"/></expr>
    <expr><attr name="Entitlement"/></expr>
    <expr><attr name="Tier"/></expr>
    <expr><attr name="BillingDay"/></expr>
  </select>
  <where>
    <expr><attr name="MSISDN"/><op value="="/><value val="+33123654862"/></expr>
  </where>
</req>
```

XML-REST: Add profile

```
POST {baseURI}/msr/sub
<?xml version="1.0" encoding="UTF-8"?>
<subscriber>
<field name="AccountID">10404723525</field>
<field name="MSISDN">+33123654862</field>
<field name="IMSI">184569547984229</field>
<field name="BillingDay">1</field>
<field name="Tier"></field>
<field name="Entitlement">DayPass</field>
</subscriber>
```

Understanding entitlements and custom fields

This section helps clarify the differences between entitlements and custom fields and gives some recommendations about when to use each.

- Entitlement Fields — The entitlement field is a multi-valued field where each value represents a boolean flag that represents a capability associated with a subscriber. As an example, let's consider how we would represent whether a subscriber has the ability to use Voicemail. We might create a field for each subscriber, which has a value of either true or false, indicating whether they have that ability. This is a relatively simple representation. However, let's now consider what this means if there are potentially hundreds (or more) of such features that may be associated with a subscriber. It becomes very difficult to manage the subscriber records if there are hundreds of such fields. Instead of using a field for each feature, if we simply added a value (such as "Voicemail") to the entitlement field for each feature that is enabled for a subscriber then we have captured the same information in a much easier to manage way.

- **Custom Fields** — Custom fields are slightly different from entitlement fields, as they provide a place where you can store non-boolean data about a subscriber. As an example, let's assume that we wanted to store a bandwidth limit for a subscriber. We could do this by simply storing a value such as 1GB or 10GB in a custom field.

There are some situations where it may not be clear whether you should use entitlements or a custom field to store data. Let's consider a situation where a subscriber may choose from 3 payment plans (P1, P2, P3) and we would like to represent the plan that was chosen. One way to do this would be to put the payment plan into a custom field. Another way to do this would be to create entitlements such as "Plan:P1", "Plan:P2" and "Plan:P3" and represent it that way. Which option is better?

In this case, the problem with representing this as entitlements is that it requires some extra maintenance when assigning values. This is because it is possible to associate two entitlements with a single subscriber, such as "Plan:P1" and "Plan:P2". However, this does not make sense, as this would mean that when you are setting the entitlement you need to make sure you remove the old entitlement, as well. If you represented this as a single-valued custom field, then the act of assigning a new value would automatically overwrite the old value so the maintenance is simpler.

The guiding principle for making the decision of how to represent subscriber data is simple - if the data can be represented as an on/off, or true/false, boolean-style piece of information then use entitlements. If it fits more naturally as a field-value pair, then use a Custom field instead.

Subscriber Quota

Name

CLI: PolicyQuota

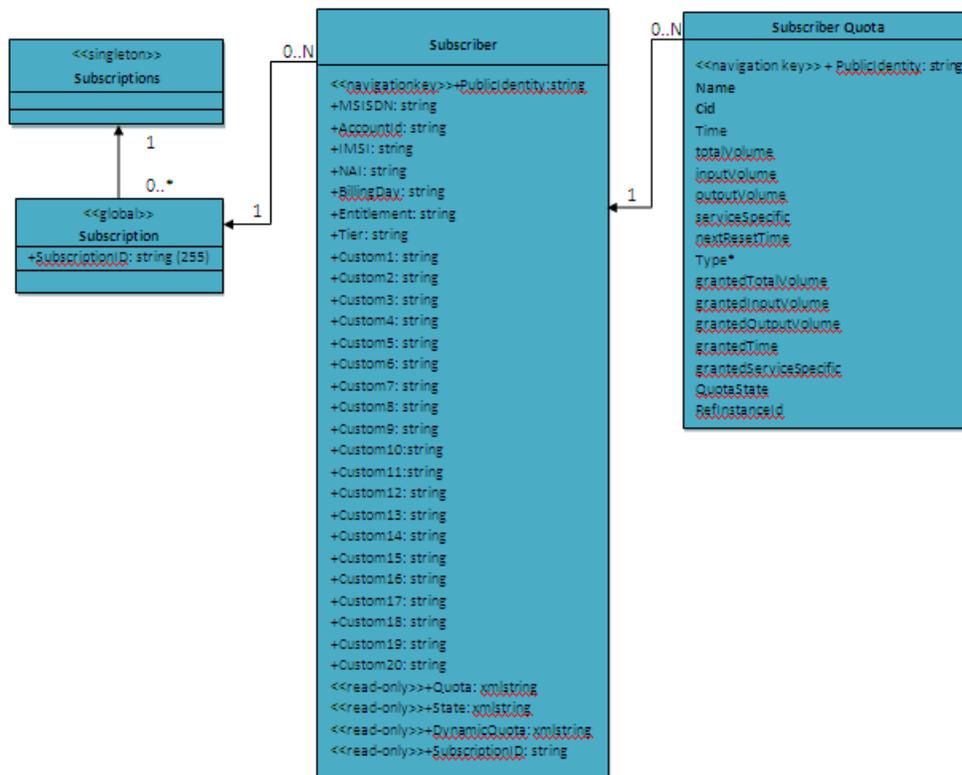
WebCI: QuotaEntity

XML-REST: quota

Description

The Subscriber Quota entity contains quota usage information related to a subscriber.

Schema



Navigation

CLI:

```
Subscriptions[ ] > Subscription[SubscriptionID = ]:Policy[PublicIdentity = string]; PolicyQuota[Name=]
```

WebCI:

Tekelec SDM ► Subscription Management ► Subscriber Provisioning. Search by one of the policy subscription primary keys {Policy-AccountId, Policy-MSISDN, Policy-IMSI, Policy-NAI, or Policy PublicIdentity}

CLI Inherited Attributes

SubscriptionID

Command Syntax

CLI:

```
Subscriptions[ ]> [Subscription[SubscriptionID = ]Policy[PublicIdentity = string]> display PolicyQuota[Cid = string]
```

XML-REST:

```
{baseURI}/msr/sub/{KeyName}/{KeyValue}/data/Quota
```

Operations Permitted

Table 137: Subscriber Quota permitted operations per interface

Interface	Operations	Modifiable Element
CLI/WebCI	add, modify, delete, display	Fields
XML, XML-SOAP	Select, Insert, Update, Delete, ResetQuota	Fields and blob
XML-REST	GET, PUT, POST, DELETE	Fields and blob

Note: If two or more successive update requests are required for Quota fields, use an XML provisioning interface to update the Quota blob in the Subscriber entity.

Attributes and values

Note: XML string value fields can be accessed only through XML interfaces

Table 138: Subscriber Quota mandatory attributes

Attribute	Value Range	Default	Description
Name	String (max: 255 bytes)	Null	Name of a specific Quota, identifying it within a Quota data
Cid	String (max: 255 bytes)	Null	Internal identifier specific to a Quota

Table 139: Subscriber Quota optional attributes

Attribute	Value Range	Default	Description
Time	String (max:255 bytes)	empty	Tracks the time-based resource consumption for a Quota.
totalVolume	String (max:255 bytes)	0	Tracks the bandwidth volume-based resource consumption for a Quota.
inputVolume	String (max:255 bytes)	0	Tracks the upstream bandwidth volume-based resource consumption for a Quota.
outputVolume	String (max:255 bytes)	0	Tracks the downstream bandwidth volume-based resource consumption for a Quota.

Attribute	Value Range	Default	Description
serviceSpecific	String (max:255 bytes)	empty	Tracks service-specific resource consumption for a Quota.
nextResetTime	String (max:255 bytes)	empty	Indicates the time after which the usage counters need to be reset. Its syntax is xs:dateTime, i.e: [-]CCYY-MM-DDThh:mm:ss[Z (+ -)hh:mm] where: <ul style="list-style-type: none"> • - = years before 0001 • CC = century • YY = year • MM = month • DD = day • T = Date/Time separator • hh = hour • mm = minutes • ss = seconds • Z = UTC (Coordinated Universal Time) • + - = time offset from UTC For example: 2012-05-07T00:00:00Z (UTC) or 2012-05-07T00:00:00-05:00 (UTC minus 5 hours = US Eastern Standard Time)
Type	Quota	N/A	This element identifies basic quota usage (=Quota) versus quota usage with specific handling options
GrantedTotalVolume	String (max:255 bytes)	0	This element tracks the granted total bandwidth volume-based resource consumption for a quota.
GrantedInputVolume	String (max:255 bytes)	0	This element tracks the granted upstream bandwidth volume-based resource consumption for a quota.
GrantedOutputVolume	String (max:255 bytes)	0	This element tracks the granted downstream bandwidth volume-based resource consumption for a quota.

Attribute	Value Range	Default	Description
GrantedTime	String (max:255 bytes)	empty	This element tracks the granted time-based resource consumption for a quota.
GrantedService Specific	String (max:255 bytes)	empty	This element tracks the granted service-specific resource consumption for a quota.
QuotaState	String (max:255 bytes)	active, expired, exhausted, valid/ inactive	This element tracks the status of a subscriber quota.
RefInstanceId	String (max:255 bytes)	N/A	Read-only. This element provides the Instance ID of an associated provisioned special handling option.

Example - CLI**Add a Subscriber quota**

```
Subscriptions[]:Subscription[SubscriptionID = tel:90]:Policy[PublicIdentity = tel:90]>
add PolicyQuota[Name = 3G-5Go_Key; Time = 1 ; Cid = 123456 ; Type = Quota]
```

Note: A quota is also created by modifying a quota that does not exist.

Example - XML**Modify a Subscriber quota**

```
<req name="update">
<ent name="QuotaEntity" ns="policy"/>
<set>
  <expr><attr name="Time"/><value val="11:05"/></expr>
  <expr><attr name="totalVolume"/><value val="14000"/></expr>
</set>
<where>
  <expr><attr name="MSISDN"/><op value="="/><value val="380561234567"/></expr>
  <expr><attr name="Name"/><op value="="/><value val="3G-5Go_Key"/></expr>
```

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

Example - XML-REST

Modify InputVolume field of a Subscriber quota

```
{baseURI}/msr/sub/MSISDN/123456/data/Quota/Key%203G-5Go/inputvolume/10000
METHOD: PUT
BODY: None
```

DynamicQuota

Name

DynamicQuota

Description

The DynamicQuota entity stores dynamic quota information.

Navigation

CLI/WebCI:

Not applicable. The CLI/WebCI interfaces display the DynamicQuota data only as an xml string within the Subscriber entity

Command Syntax

CLI: Not applicable.

XML-REST:

```
{baseURI}/msr/sub/{KeyName}/{KeyValue}/data/DynamicQuota
```

Operations Permitted

Table 140: DynamicQuota permitted operations per interface

Interface	Operations	Modifiable Element
CLI/WebCI	None*	None*
XML, XML-SOAP	Select, Insert, Update, Delete	Blob
XML-REST	GET, PUT, POST, DELETE	Blob

Note:

*Not applicable. The CLI/WebCI interfaces display the DynamicQuota data only as an xml string within the Subscriber entity

Attributes and values

Note: XML string value fields can be accessed only through XML interfaces

Table 141: DynamicQuota mandatory attributes

Attribute	Value Range	Default	Description
Name	String (64)		The name of the type of the dynamic quota, that is, the Pass or Top-up name. This name will be used to match top-ups to quota definitions as well as in policy conditions and actions on the PCRF.
InstanceId	String (64)	N/A	Instance of a DynamicQuota object.

Table 142: DynamicQuota optional attributes

Attribute	Type/Size/Value Range	Default	Description
Type	String (32) Pass, Top-Up, Roll-over	empty	Dynamic quota type.
Priority	String (4) 0-9	0	This number allows service providers to specify when one pass or top-up should be used before another pass or top-up.
InitialTime	String (24) 0-9	0	The number of seconds initially granted for the pass or top-up.
InitialTotalVolume	String (24) 0-9	0	The number of bytes of total volume initially granted for the pass or top-up.
InitialInputVolume	String (24) 0-9	0	The number of bytes of total volume initially granted for the pass or top-up.
InitialOutputVolume	String (24) 0-9	0	The number of bytes of total volume initially granted for the pass or top-up.
InitialService Specific	String (24) 0-9	0	The number of bytes of total volume initially granted for the pass or top-up.

Attribute	Type/Size/Value Range	Default	Description
ActivationDateTime	String (24) Date/Timestamp	empty	The date or time after which the pass or top-up may be active. See Note.
ExpirationDateTime	String (24) Date/Timestamp	empty	The date or time after which the pass or top-up is considered to be exhausted. See Note.
PurchaseDateTime	String (24) Date/Timestamp	empty	The date or time when a pass was purchased. See Note.
Duration	String (24) 0-9		The number of seconds after first use in which the pass must be used or expired. If both Duration and ExpirationDateTime are present, the closest expiration time is used.
InterimReportingInterval	String (16) 0-9		The number of seconds after which the GGSN/DPI/Gateway should re-validate quota grants with the PCRF.

Note:

Date/Timestamp format is:

CCYY-MM-DDThh:mm:ss[Z|(+|-)hh:mm]

where:

- - = years before 0001
- CC = century
- YY = year
- MM = month
- DD = day
- T = Date/Time separator
- hh = hour
- mm = minutes
- ss = seconds
- Z = UTC (Coordinated Universal Time)
- +|- = time offset from UTC

The format has a regular expression along the lines of (excluding time zone part):

[0-9][0-9][0-9][0-9]\-[0-9][0-9]\-[0-9][0-9]T[0-9][0-9]:[0-9][0-9]:[0-9][0-9]

Examples

CLI: Not applicable

XML: Add/update dynamic quota

```

<req name="update">
  <ent name="Subscriber" ns="policy"/>
  <set>
    <expr><attr name="DynamicQuota"/><op value="="/><cdata>
      <![CDATA[<?xml version="1.0" encoding="UTF-8"?>
        <usage>
          <version>1</version>
          <dynamicquota name="AggregateLimit">
            <InstanceId>15678</InstanceId>
            <Type>Roll-Over</Type>
            <Priority>4</Priority>
            <InitialTime>135</InitialTime >
            <InitialTotalVolume>2000</InitialTotalVolume>
            <InitialInputVolume>1500</InitialInputVolume>
            <InitialOutputVolume>500</InitialOutputVolume>
            <InitialServiceSpecific>4</InitialServiceSpecific>
            <ActivationDateTime>32</ActivationDateTime>
            <ExpirationDateTime>28</ExpirationDateTime>
            <InterimReportingInterval>100</InterimReportingInterval>
          </dynamicquota>
        </usage>
      ]]></cdata></expr>
    </set>
  <where>
    <expr><attr name="MSISDN"/><op value="="/><value val="380561234567"/></expr>
  </where>
</req>

```

XML-REST

```

URL: /rs/msr/sub/MSISDN/123456/data/DynamicQuota
METHOD: PUT
BODY:
<subscriber><data name="dynamicquota"><![CDATA[
<?xml version="1.0" encoding="UTF-8"?>
<usage>
<version>1</version>
<dynamicquota name="Key 203G-5Go">
  <Type>Roll-Over</Type>
  <InstanceId>15678</InstanceId>
  <InitialTime>135</InitialTime >
  <InitialTotalVolume>2000</InitialTotalVolume>
  <InitialInputVolume>1500</InitialInputVolume>
  <InitialOutputVolume>500</InitialOutputVolume>
  <InitialServiceSpecific>4</InitialServiceSpecific>
  <ActivationDateTime>32</ActivationDateTime>
  <ExpirationDateTime>28</ExpirationDateTime>
  <InterimReportingInterval>100</InterimReportingInterval>
</dynamicquota></usage>
]]></data></subscriber>

```

State

Name

State

Description

The State table defines a set of properties associated with a subscriber and the version.

Navigation**CLI/WebCI:**

Not applicable. The CLI/WebCI interfaces display the State data only as an xml string within the Subscriber entity.

Command Syntax**CLI:**

Not applicable.

XML-REST:

```
{baseURI}/msr/{KeyName}/{KeyValue}/data/State
```

Operations Permitted**Table 143: State permitted operations per interface**

Interface	Operations	Level of Editing
CLI/WebCI	None*	None*
XML, XML-SOAP	Select, Insert, Update, Delete	Blob
XML-Rest	GET, PUT, POST, DELETE	Blob

Note: *The CLI/WebCI interfaces display the State data only as an XML string in the State field of the Subscriber entity.

Attributes and values

Note: XMLString value fields can be accessed only through XML interfaces.

Table 144: State attributes

Attribute	Value Range	Default	Description
Version	xmlstring	N/A	This element defines the version that is used to represent the Entity State information.
Property	xmlstring	N/A	This element defines a name-value pair. At least one property must be specified in the XML document. The Name must not be empty.

Examples

CLI: Not applicable

XML:

Add State by IMSI

```

<req name="update">
  <ent name="Subscriber" ns="policy"/>
  <set>
    <expr><attr name="State"/><op value="="/><cdata>
<![CDATA[<?xml version="1.0" encoding="UTF-8"?>
<state>
  <version>1</version>
  <property>
    <name>mcc</name>
    <value>315</value>
  </property>
  <property>
    <name>expire</name>
    <value>2010-02-09T11:20:32</value>
  </property>
  <property>
    <name>approved</name>
    <value>yes</value>
  </property>
</State>
]]></cdata></expr>
  </set>
  <where>
    <expr><attr name="IMSI"/><op value="="/><value val="184569547984229"/></expr>
  </where>
</req>

```

XML-REST:

Update State by MSISDN

```

PUT {baseURI}/msr/sub/MSISDN/+33123654862/data/State
Request Content:
<?xml version="1.0" encoding="UTF-8"?>
<subscriber>
<data name="State">
<![CDATA[
<State>
<version>8</version>
<property>
<name>mcc</name>
<value>315</value>
</property>
<property>
<name>expire</name>
<value>2012-02-09T11:20:32</value>
</property>
<property>
<name>approved</name>
<value>yes</value>
</property>
</State>
]]>

```

```
</data>
</subscriber>
```

Pool

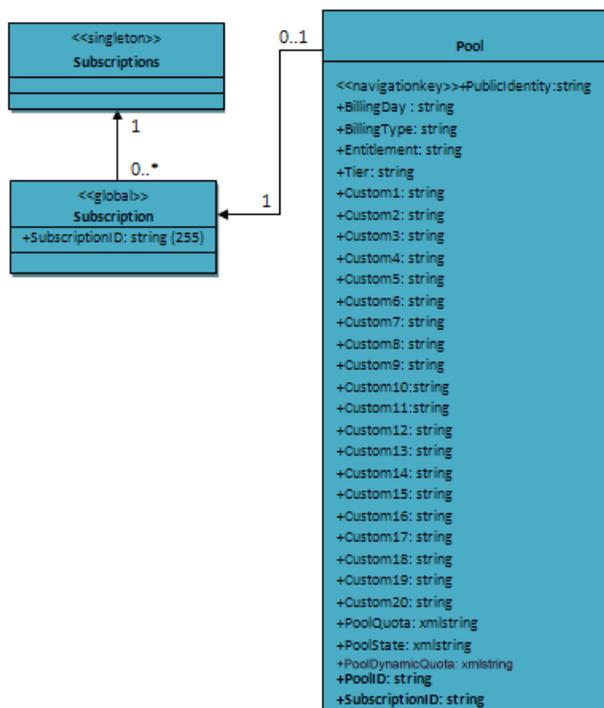
Name

Pool

Description

This entity allows the Network Operator to provision subscriber pools. The Pools are used to group subscribers under a logical entity and allow them to use one or more shared quotas.

Schema



Navigation

CLI:

```
Subscriptions[ ] > Subscription[SubscriptionID = pool:1000] > Pool[PoolID = string]
```

WebCI:

Tekelec SDM Subscription Management Subscriber Provisioning. Search by PoolID.

CLI Inherited Attributes

SubscriptionID

Command Syntax**CLI:**

```
Subscriptions[ ]> Subscription[SubscriptionID = pool:<string>] > add
Pool[PoolID=string; BillingDay=int; Entitlement=string; Tier=string;
Custom1=string; Custom20=string; PoolQuota=xmlstring; PoolState=xmlstring]
```

XML-REST:

```
{baseURI}/msr/pool/{KeyName}/{KeyValue}
```

Operations Permitted**Table 145: Pool permitted operations per interface**

Interface	Operations	Modifiable Element
CLI/WebCI	add, modify, delete, display	Fields
XML, XML-SOAP	Select, Insert, Update, Delete	Fields and blob
XML-Rest	GET, PUT, POST, DELETE	Fields and blob

Attributes and values

Note: XMLString value fields can be accessed only through XML interfaces.

Table 146: Pool mandatory attributes

Attribute	Value Range	Default	Description
PoolID	String (max: 255 bytes)	null	Unique pool identifier

Table 147: Pool optional attributes

Attribute	Value Range	Default	Description
BillingDay	UInt8 (rlo=0; rhi=31)	null	The day of the month on which the pool quota shall be reset.
BillingType	String (max: 255 bytes)	null	The billing frequency, monthly, weekly, daily.
Entitlement	String	---	List (comma-separated values) of entitlement. Each entitlement is the name of the boolean flag that indicates whether the subscriber has

Attribute	Value Range	Default	Description
			a certain capability. See also: Understanding entitlements and custom fields .
Tier	String	255	Pool tier
Custom1 ... Custom20	String (max: 255 bytes)	255	These elements contain customer-specific values for a subscriber. See also: Understanding entitlements and custom fields .
PoolQuota	xmlstring	N/A	This element contains quota usage data for the pool. See the Attributes and values of this blob.
PoolState	xmlstring	N/A	Read-only This element defines a set of properties associated with a pool and the version. See the Attributes and values of this blob.
PoolDynamicQuota	xmlstring	N/A	Read-only Contains dynamic quota information for a pool

Examples

CLI: Delete a pool data

```
Subscriptions[:Subscription[SubscriptionID = pool:1000]> delete Pool[PoolID = 1000]
```

XML: Add/update PoolQuota

```
<req name="update">
  <ent name="Pool" ns="policy"/>
  <set>
    <expr><attr name="PoolQuota"/><op value="="/><cdata>
      <![CDATA[<?xml version="1.0" encoding="UTF-8"?>
        <usage>
          <version>1</version>
          <name>3G-5Go_Key</name>
          <poolQuota name="AggregateLimit">
            <cid>922337203685499999</cid>
            <time>3422</time>
            <totalvolume>514</totalvolume>
            <inputvolume>998</inputvolume>
            <outputvolume>2722</outputvolume>
            <servicespecific>8348</serviceSpecific>
            <nextresettime>2011-12-15T09:04:03</nextresettime>
            <type>pass</type>
            <grantedtime>200</grantedtime>
            <grantedservicespecific>1234</grantedservicespecific>
            <quotastate>Expired</quotastate>
            <refinstanceid>184569547984765</refinstanceid>
          </poolQuota>
        </usage>
      ]]></cdata></expr>
    </set>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="1000"/></expr>
```

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

XML-REST: Add/update PoolDynamicQuota

URL: /rs/msr/pool/1000/data/PoolDynamicQuota

METHOD: PUT

BODY:

```
<?xml version="1.0" encoding="UTF-8"?>  
<pool>  
<data name="pooldynamicquota">  
<![CDATA[  
<?xml version="1.0" encoding="UTF-8"?>  
<definition>  
<version>1</version>  
<dynamicquota name="AggregateLimit">  
<Type>Roll-Over</Type>  
<InstanceId>15678</InstanceId>  
<Priority>4</Priority>  
<InitialTime>135</InitialTime >  
<InitialTotalVolume>2000</InitialTotalVolume>  
<InitialInputVolume>1500</InitialInputVolume>  
<InitialOutputVolume>500</InitialOutputVolume>  
<InitialServiceSpecific>4</InitialServiceSpecific>  
<ActivationDateTime>32</ActivationDateTime>  
<ExpirationDateTime>28</ExpirationDateTime>  
<PurchaseDateTime>28</PurchaseDateTime>  
<Duration>28</Duration>  
<InterimReportingInterval>100</InterimReportingInterval>  
</dynamicquota>  
</definition>  
</data>  
</pool>
```

Pool Quota

Name

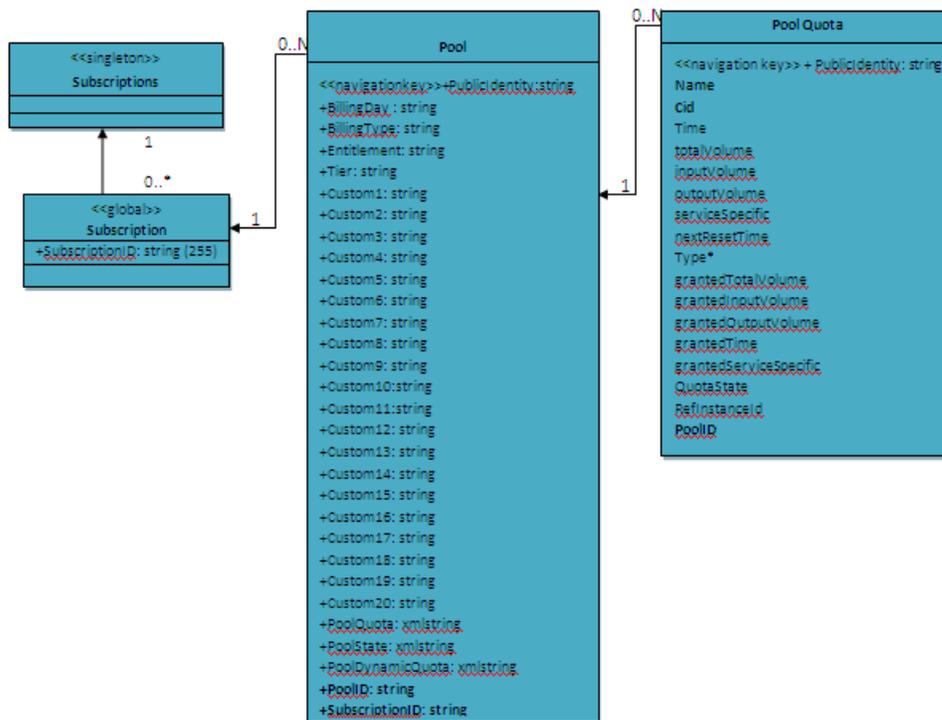
PoolQuota

XML: PoolQuotaEntity

Description

The PoolQuota entity contains quota usage information related to a pool.

Schema



Navigation

CLI/WebCI:

Not applicable. The CLI/WebCI interfaces display a subscriber's PoolQuota data only as an xml string within the Pool entity.

Command Syntax

CLI:

Not applicable.

XML-REST:

{baseURI}/msr/pool/{KeyValue}/data/PoolQuota

Operations Permitted

Table 148: PoolQuota permitted operations per interface

Interface	Operations	Level of Editing
CLI/WebCI	None*	None*
XML, XML-SOAP	Select, Insert, Update, Delete	Blob

Interface	Operations	Level of Editing
XML-Rest	GET, PUT, POST, DELETE	Blob

Note: *The CLI/WebCI interfaces display the PoolQuota data only as an XML string in the PoolQuota field of the Pool entity.

Attributes and values

Note: XMLString value fields can be accessed only through XML interfaces.

Table 149: PoolQuota mandatory attributes

Attribute	Value Range	Default	Description
PoolID	String (max: 255 bytes)	Null	Read-only. Pool identifier
Name	String, (255)	Null	Name of a specific Quota

Table 150: PoolQuota optional attributes

Attribute	Value Range	Default	Description
Cid	String (255)	Null	An automatically generated internal identifier that is used to optimize the association of the PoolQuota element with the PoolQuota Profile, which defines the subscriber limits. Do not add, change, or delete this value.
Time	String (255)	Null	This element tracks the time-based resource consumption for a Quota.
TotalVolume	String (255)	Null	This element tracks the bandwidth volume-based resource consumption for a Quota.
InputVolume	String (255)	Null	This element tracks the upstream bandwidth volume-based resource consumption for a Quota.
OutputVolume	String (255)	Null	This element tracks the downstream bandwidth volume-based resource consumption for a Quota.
ServiceSpecific	String (255)	Null	This element tracks service-specific resource consumption for a Quota.
NextResetTime	String (255)	Null	The NextResetTime, if set, indicates the time after which the usage counters need to be reset. Its syntax is xs:dateTime, i.e.:

Attribute	Value Range	Default	Description
			<p>[-]CCYY-MM-DDThh:mm:ss[Z (+ -)hh:mm]</p> <p>where:</p> <ul style="list-style-type: none"> • - = years before 0001 • CC = century • YY = year • MM = month • DD = day • T = Date/Time separator • hh = hour • mm = minutes • ss = seconds • Z = UTC (Coordinated Universal Time) • + - = time offset from UTC <p>For example:</p> <p>2012-05-07T00:00:00Z (UTC) or</p> <p>2012-05-07T00:00:00-05:00 (UTC minus 5 hours = US Eastern Standard Time)</p>
Type	String (255)	Null	This element identifies basic quota usage (=Quota) versus quota usage with specific handling options (later implementation)
GrantedTotalVolume	String (255)	Null	This element tracks the granted total bandwidth volume-based resource consumption for a quota.
GrantedInputVolume	String (255)	Null	This element tracks the granted upstream bandwidth volume-based resource consumption for a quota.
GrantedOutputVolume	String (255)	Null	This element tracks the granted downstream bandwidth volume-based resource consumption for a quota.
GrantedTime	String (255)	Null	This element tracks the granted time-based resource consumption for a quota.
GrantedService Specific	String (255)	Null	This element tracks the granted service-specific resource consumption for a quota.
QuotaState	String (255)	N/A	Read-only. This element defines a set of properties associated with a subscriber and the version.

Attribute	Value Range	Default	Description
RefInstanceId	String (255)	N/A	Read-only. This element provides the Instance ID of an associated provisioned special handling option. (later implementation)

Examples - Update a pool quota by PoolId

CLI:

Not applicable

XML: Update a pool quota by PoolId and PoolQuota name

```
<<req name="update">
  <ent name="Pool" ns="policy"/>
  <set>
    <expr><attr name="PoolQuota"/><op value="="/><cdata>
      <![CDATA[<?xml version="1.0" encoding="UTF-8"?>
        <usage>
          <version>1</version>
          <poolQuota name="AggregateLimit">
            <cid>9223372036854999999</cid>
            <time>3422</time>
            <totalvolume>514</totalvolume>
            <inputvolume>998</inputvolume>
            <outputvolume>2722</outputvolume>
            <servicespecific>8348</serviceSpecific>
            <nextresettime>2011-12-15T09:04:03</nextresettime>
            <type>pass</type>
            <grantedtime>200</grantedtime>
            <grantedservicespecific>1234</grantedservicespecific>
            <quotastate>Expired</quotastate>
            <refinstanceid>184569547984765</refinstanceid>
          </poolQuota>
        </usage>
      ]]></cdata></expr>
    </set>
  <where>
    <expr><attr name="PoolID"/><op value="="/><value val="1000"/></expr>
  </where>
</req>
```

XML-REST: Update a pool quota by PoolId

```
URL: /rs/msr/pool/1000/data/PoolQuota
METHOD: PUT
BODY:
<pool><data name="PoolQuota">
  <![CDATA[
    <?xml version="1.0" encoding="UTF-8"?>
    <usage>
      <version>1</version>
      <quota name="AggregateLimit">
        <cid>9223372036854775807</cid>
        <time>3422</time>
        <totalVolume>1000</totalVolume>
        <inputVolume>980</inputVolume>
        <outputVolume>20</outputVolume>
        <serviceSpecific>12</serviceSpecific>
        <nextResetTime>2011-04-22T00:00:00-05:00</nextResetTime>
        <Type>Pass</Type>
```

```
<QuotaState>Expired</QuotaState>
<RefInstanceId>184569547984765</RefInstanceId >
</quota></>
</usage>
]]>
</data></pool>
```

Pool State

Name

PoolState

Description

The PoolState table defines a set of properties associated with a pool and the version.

Navigation

CLI/WebCI:

Not applicable. The CLI/WebCI interfaces display a pool's PoolState data only as an xml string within the Subscriber entity.

Command Syntax

CLI:

Not applicable.

XML-REST:

```
{baseURI}/msr/pool/{KeyValue}/data/PoolState
```

Operations Permitted

Table 151: PoolState permitted operations per interface

Interface	Operations	Level of Editing
CLI/WebCI	None*	None*
XML, XML-SOAP	Select, Insert, Update, Delete	Blob
XML-Rest	GET, PUT, POST, DELETE	Blob

Note: *The CLI/WebCI interfaces display the PoolState data only as an XML string in the PoolState field of the Pool entity.

Attributes and values

Note: XMLString value fields can be accessed only through XML interfaces.

Table 152: PoolState attributes

Attribute	Value Range	Default	Description
Version	xmlstring	N/A	This element defines the version that is used to represent the Entity PoolState information.
Property	xmlstring	N/A	This element defines a name-value pair. At least one property must be specified in the XML document. The Name must not be empty.

Examples

CLI:

Not applicable.

XML: Update PoolState by PoolID

```
<req name="update">
<ent name="Pool" ns="policy"/>
<set>
<expr><attr name="PoolState"/><op value="="/><cdata>
<![CDATA[<?xml version="1.0" encoding="UTF-8"?>
<state>
<version>8</version>
<property>
<name>mcc</name>
<value>315</value>
</property>
<property>
<name>expire</name>
<value>2012-02-09T11:20:32</value>
</property>
<property>
<name>approved</name>
<value>yes</value>
</property>
</state>
]]</cdata></expr>
</set>
<where>
<expr><attr name="PoolID"/><op value="="/><value val="1000"/></expr>
</where>
</req>
```

XML- REST: Update PoolState

```
URL: /rs/msr/pool/1000/data/poolstate
METHOD: PUT
BODY:
<?xml version="1.0" encoding="UTF-8"?>
<pool>
<data name="poolstate">
<![CDATA[
<state>
<version>1</version>
<property><name>mcc</name><value>315</value></property>
<property><name>expire</name><value>2010-02-09T11:20:32</value></property>
<property><name>approved</name><value>yes</value></property>
```

```

</state>
]]>
</data>
</pool>

```

Other SPR Operations

The Subscription Profile Repository (SPR) supports these additional operations.

AddPoolMember()

Request to add a Subscriber to a Pool by PoolID and PublicIdentity.

CLI:

```

Subscriptions[]:Subscription[SubscriptionID = 1000]> AddPoolMember() PublicIdentity
= tel:90 ; PoolID = 1000

```

WebCI:

Tekelec SDM ► Subscription Management ► Subscriber Provisioning. Search by PoolID; then click **Manage Subscribers Add Subscriber.**

XML:

```

<req name="operation">
<oper name="AddPoolMember" ent="Subscription" ns="global">
<expr><param name="PoolID" /><op value="=" /><value val="1000" /></expr>
<expr><param name="MSISDN" /><op value="=" /><value val="+380561234567" /></expr>
</oper>
</req>

```

XML-REST:

```

{BaseURI}/msr/pool/1000/member/MSISDN/+380561234567
METHOD: POST
BODY: None

```

DelPoolMember()

Request to delete a Subscriber from a Pool by PoolID and MSISDN.

CLI:

```

Subscriptions[]:Subscription[SubscriptionID = 1000]> DelPoolMember() PublicIdentity
= tel:90 ; PoolID=1000

```

WebCI:

Tekelec SDM ► Subscription Management ► Subscriber Provisioning. Search by PoolID; then click **Manage Subscribers ► Delete Subscriber.**

XML:

```

<req name="operation">
<oper name="DelPoolMember" ent="Subscription" ns="global">
<expr><param name="PoolID" /><op value="=" /><value val="1000" /></expr>
<expr><param name="MSISDN" /><op value="=" /><value val="+380561234567" /></expr>
</oper>
</req>

```

XML-REST

```
{BaseURI}/msr/pool/PoolID/1000/member/MSISDN/+380561234567
METHOD: DELETE
BODY: None
```

GetPoolMember()

Request to get the list of Subscriber members of a Pool by PoolID.

CLI:

```
Subscriptions[]:Subscription[SubscriptionID = 1000]> GetPoolMember() PoolID=1000
```

WebCI:

Tekelec SDM ► Subscription Management ► Subscriber Provisioning. Search by PoolID; then click **Manage Subscribers.**

XML:

```
<req name="operation">
<oper name="GetPoolMember" ent="Subscription" ns="global">
<expr><param name="PoolID" /><op value="="/><value val="1000"/></expr>
</oper>
</req>
```

XML-REST:

```
{BaseURI}/msr/pool/PoolID/1000/member
METHOD: GET
BODY: None
```

GetPoolID()

Request to get the PoolID of a subscriber if any by PublicIdentity

CLI:

```
Subscriptions[]:Subscription[SubscriptionID = ]> GetPoolID() PublicIdentity = tel:90
```

WebCI:

Tekelec SDM ► Subscription Management ► Subscriber Provisioning. Search by PublicIdentity.

XML:

```
<req name="operation">
<oper name="GetPoolID" ent="Subscription" ns="global">
<expr><param name="PublicIdentity" /><op value="="/><value
val="tel:+380561234567"/></expr>
</oper>
</req>
```

XML_REST:

```
{BaseURI}/msr/sub/MSISDN/+380561234567/PoolID
METHOD: GET
BODY: None
```

ResetQuota()

Request to reset a quota by MSISDN and Quota name. This operation removes all pool quota from a subscriber pool.

CLI:

```
Subscriptions[]:Subscription[SubscriptionID = +380561234567]> ResetQuota() QuotaName=
```

WebCI:

Tekelec SDM ► Subscription Management ► Subscriber Provisioning. Search by MSISDN. In the Quota table, click **Manage Quota ► ResetQuota** next to the respective Quota name.

XML:

```
<<req name="operation">
<oper name="ResetQuota" ent="Subscription" ns="global">
  <expr><param name="MSISDN"/><op value="="/><value val="+380561234567"/></expr>
  <expr><param name="Name"/><op value="="/><value val="NEW QUOTA"/></expr>
</oper>
</req>
```

XML-REST:

```
{BaseURI}/msr/sub/MSISDN/+380561234567/data/Quota/Cle%203G-5Go
METHOD: POST
BODY: None
```

Chapter 9

Enum (Telephone Number Mapping)

Topics:

- [DNS Enum User.....286](#)

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, WiMAX, 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 153: 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
<i>NAPTRRegExp</i>	Varchar(128)	N/A	The regular expression that corresponds to this phone number.

Table 154: 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 10

Authentication, Authorization, and Accounting (AAA)

Topics:

- *Subscription Management – AAA Application.....290*
- *AAA Operations.....298*

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 155: 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 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 156: 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. Note: 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"> • The re-authentication of a AAA user fails, if its 'AAAUsername' is longer than 15 characters. • The authentication of a AAA user fails, if the first 15 characters of its 'AAAUsername' are the same as the ones of a

Attribute	Value Range	Default	Description
			AAA user already authenticated.
FramedProtocol	7(GPRS_PDP_Context)	7	Indicates the framing to be used for framed access.
AuthMethod	Enumerated: 0(PAP_CHAP) 1(TYPE_EAP_PASSTHROUGH) 13 (TYPE_EAP_TLS) 18 (TYPE_EAP_SIM) 21 (TYPE_EAP_TTLS) 47(TYPE_EAP_PSK)	N/A	Defines the authentication method associated to the user defined. 0: defines password authentication, no EAP method 1: EAP method used for testing purpose (no authentication) 13: EAP-TLS method 18: EAP-SIM method 21: EAP-TTLS method 47: EAP-PSK method

Table 157: 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	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. Note: The attribute SessionWatchdogPeriod in the AAA Config table must be set to a non-zero value for the SessionTimeout to take effect.

Attribute	Value Range	Default	Description
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. 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)

Attribute	Value Range	Default	Description
			is sent back in the Access-Accept message.
EAPIdentity	String	Not Defined	Defines the EAP Identity.
EAPSIMSimId	String	Not Defined	Associates an EAP SIM Id (defined in AUC configuration).
PreferredAuthMethod	Boolean 0: not preferred 1: preferred	0	Sets the preferred authentication method for a user. In case of multiple authentication methods for a user, the administrator should set one method to the PreferredAuthMethod.
MIPType	Enumerated: 0(FIXED_IP) 1(PROXY_MOBILE_IP) 2(CLIENT_MOBILE_IP)	0	Defines the MIP type of WiMAX user.

CLI Example:

```
:Hss[]:Subscription[SubscriptionID = subs1]> add AAAUserId[ServiceType =
2; AAAUserName = wimax89@tekelec.com; AuthMethod = 47; FramedProtocol = 7;
AAAEncryptedPassword = 12345678901234567890123456789012]
```

WiMax Packet Flow Descriptor**Name**

WimaxPacketFlowDescriptor

Description

This allows the operator to define the WiMAX Packet Flow Descriptors associated to a WiMAX AAA user.

CLI Navigation

```
Hss[]:Subscription[SubscriptionID = string]:AAAUserId[AAAUserName = string;
AuthMethod = enum]> WimaxPacketFlowDescriptor[]
```

CLI Inherited Attributes

SubscriptionID, AAAUserName, AuthMethod

CLI Command Syntax

```
Hss[:Subscription[SubscriptionID = string]:AAAUserId[AAAUserName = string;
AuthMethod = enum]>display WimaxPacketFlowDescriptor[]
```

Operations Permitted

Add, delete, display and modify.

Attributes and Values**Table 158: WimaxPacketFlowDescriptor mandatory attributes**

Attribute	Value Range	Default	Description
WimaxPacketFlowDescriptorId	String	N/A	Defines the identifier of the WiMAX Packet Flow Descriptor.

Table 159: WimaxPacketFlowDescriptor optional attributes

Attribute	Value Range	Default	Description
ServiceProfileID	Integer	N/A	Identifies the identity of a service profile pre-configured at the NAS.
PdfId	Integer	N/A	Identifies a packet data flow instance.
SdfId	Integer	N/A	Represents the service flow identifier.
Direction	Enumerated: 0 (RESERVED) 1 (UPLINK) 2 (DOWNLINK) 3(BIDIRECTIONAL)	N/A	Defines the direction of the packet flow.
ActivationTrigger	Enumerated: 0 (RESERVED) 1 (PROVISIONED) 2 (ADMIT) 3 (ACTIVATE)	N/A	Specifies the trigger to be used for the activation of the service flow.

Attribute	Value Range	Default	Description
	4 (DYNAMICALLY_CHANGEABLE)		
TransportType	Enumerated: 0 (Reserved) 1 (IPv4_CS) 2 (IPv6_CS) 3 (ETHERNET)	N/A	Defines the transport type.
UpLinkQosId	Integer	N/A	Defines the identifier of the QoS descriptor. Refers to a WimaxQOSDescriptor configured in WimaxConfiguration entity.
DownLinkQosIdd	Integer	N/A	Defines the identifier of the QoS descriptor. Refers to a WimaxQOSDescriptor configured in WimaxConfiguration entity.
UpLinkClassifier	String	N/A	Contains an IP-Filter Rule.
DownLinkClassifier	String	N/A	Contains an IP-Filter Rule.
PagingPreference	Enumerated: 0 (NO_PAGING_GENERATION) 1 (PAGING_GENERATION)	N/A	Defines the Paging preference.

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 160: 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 161: 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 162: 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[]:AAUserId[AAUserName = 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 AAUserName. 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 AAUserName contains a Realm (i.e., the AAUserName 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

AAAUserName 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]:AAAUserId[AAAUserName = string;
AuthMethod=enum]> ReleaseIPAddress() CalledStation = string; CallingStation
= string;
```

CLI Example

```
:Hss[:Subscription[SubscriptionID = sub1]:AAAUserId[AAAUserName = 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]:AAAUserId[AAAUserName =
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).

Glossary

#

3GPP 3rd Generation Partnership Project

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

blob binary large object
A collection of binary data stored as a single entity in the Subscription Profile Repository.

BOIC Barring of Outgoing International Calls

BS Base Station
Bearer Services

C

CC Country Code

C

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 System A system for converting Internet host and domain names into IP addresses.

E

ECT	Explicit Call Transfer
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G

General Packet Radio Service	See GPRS.
GPRS	General Packet Radio Service A mobile data service for users of GSM mobile phones.
GUI	Graphical User Interface The term given to that set of items and facilities which provide the user with a graphic means for manipulating screen data rather than being limited to character based commands.

H

HLR	Home Location Register
HSS	Home Subscriber Server A central database for subscriber information.

I

IC	Integrated Circuit
IMEI	International Mobile Equipment Identifier
IMSI	International Mobile Subscriber Identity
ITU	International Telecommunications Union

M

MAP	Mobile Application Part
MPTY	Multiparty

M

MS	Mobile Station The equipment required for communication with a wireless telephone network.
MSC	Mobile Switching Center
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.

N

NAPTR	Name Authority Pointer Domain Name System resource record that identifies possible URLs and numbers that can be returned.
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NDC	Network destination code
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O

OA	Onboard Administrator The management processor for an HP c-Class enclosure.
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opaque data	A data type whose specific schema is not defined as a part of the interface, but rather is handled as a unit and not interpreted or parsed. The values within opaque data can only be manipulated by calling subroutines that have specific knowledge of the structure/schema of the data.
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OS	Operations Systems
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P

P

PCRF	Policy and Charging Rules Function The ability to dynamically control access, services, network capacity, and charges in a network.
PLMN	Public Land Mobile Network

S

SIP	Session Initiation Protocol
SN	service node
SOAP	Simple Object Access Protocol
SPR	Subscriber Profile Repository A logical entity that may be a standalone database or integrated into an existing subscriber database such as a Home Subscriber Server (HSS). It includes information such as entitlements, rate plans, etc. The PCRF and SPR functionality is provided through an ecosystem of partnerships.
SS	Subsystem

T

TDP	Trigger Detection Point
TS	Test Strategy Traffic Server Technical Specification Teleservices

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.
XSD	XML Schema Definition