

CAI3G Interface Specification for HLR Components

Ericsson Dynamic Activation 1

SYSTEM INTERFACE

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1 Introduction

This document describes the Customer Administration Interface Third Generation (CAI3G) used by Network Elements (NEs) towards Ericsson™ Dynamic Activation (EDA) as well as by a Customer Administration System (CAS).

The content throughout this document is focused on the CAI3G corresponding to the HLR Components interface, inherited from classic Multi Activation, and provides backward compatibility for the Data Layered Architecture (DLA).

1.1 Purpose and Scope

This document describes the supported methods in CAI3G for NEs, the attributes used, and the format of input parameters. This document is not a tutorial of CAI3G. It must be used together with the Generic CAI3G specification.

Note: This document is not intended to be used for M2M subscriptions.

1.2 Target Group

The target group for this document is as follows:

- System Integrator

For information about the different target groups, see *Library Overview*, Reference [1].

1.3 Typographic Conventions

Typographic conventions are described in the document *Library Overview*, Reference [1].

1.4 National Conventions

This specification uses a number of namespace prefixes which are listed in Table 1.

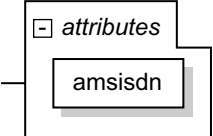


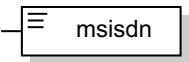
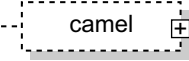
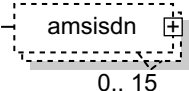

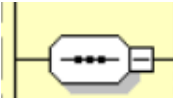

Table 1 Prefixes and Namespaces Used in This Specification

Prefix	Namespace
cai3g	http://schemas.ericsson.com/cai3g1.2/
http	http://schemas.xmlsoap.org/wsdl/http/
mime	http://schemas.xmlsoap.org/wsdl/mime/

Prefix	Namespace
soap	http://schemas.xmlsoap.org/wsdl/soap/
SOAP-ENV	http://schemas.xmlsoap.org/soap/envelope/
SOAP-ENC or soapenc	http://schemas.xmlsoap.org/soap/encoding/
xs or xsd	http://www.w3.org/2001/XMLSchema
xsi	http://www.w3.org/2001/XMLSchema-instance
ema	http://schemas.ericsson.com/ema/UserProvisioning/
gsmhlr	http://schemas.ericsson.com/ema/UserProvisioning/GsmHlr/

Table 2 shows the legends used in XML schema figures in this specification.

Table 2 *Legends Used in XML Schema Figures in This Specification*

Legend	Description
	XML attribute
	Optional XML element
	Choice icon
	Mandatory XML element
	Structured element
	Subobject element The occurrence of this element is 0–15.
	User-defined type This is not a standard XML schema type. It is introduced to describe MO schema structure more clearly. In practice, this type is to be replaced by the corresponding elements.
	Sequence icon A list of elements, the sequence order must be followed.
	All icon An All element specifies that the child elements can appear in any order and that each child element can occur zero or one time.
msisdn *	The “*” after msisdn indicates the element, such as msisdn here, can be used as an MOId.



1.5 Web Service Interface

The Web Services Description Language (WSDL) and XML Schema Definition Language (XSD) files that describe the provisioning interface can be found in `/home/dveinstaller/da/`. It is also possible to download the files and view or store them in an appropriate area by following below instruction:

1. Save the zip file, [Multi_Activation_WSDL_and_XSD_files.zip](#), to a local folder.
2. Unpack the zip file.

The schema files applicable for this document can be found in `interfacesPGNGN\webservice_provisioning_cai3g1.2\schemas\2G_3G\Layered_HLR_Components`.

The WSDL files applicable for this document can be found in `interfacesPGNGN\webservice_provisioning_cai3g1.2\wsdl\2G_3G\Layered_HLR_Components`.



2 CAI3G Overview

CAI3G is a provisioning interface between Multi-Activation and business system. CAI3G is designed to support structured Business System requests conveniently. It defines an interface one or several Managers (typically Business System) can provide user and service data to, and track changes and management information in a System (typically an NE manager or an NE).

For details, refer to the document *Generic CAI3G Interface 1.2*, Reference [2].

A typical deployed environment is shown in Figure 1.

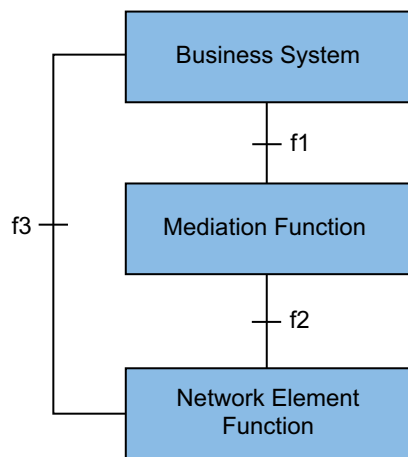


Figure 1 CAI3G Overview

2.1 CAI3G Definitions

Each attribute in CAI3G follows the structure listed in this chapter.

Attribute	An Attribute can be a SimpleAttribute, or a StructureAttribute, or a SubobjectAttribute.
SimpleAttribute	A SimpleAttribute can be either a SingleValueAttribute or a MultipleValueAttribute.
SingleValueAttribute	A SingleValueAttribute comprises of an AttributeName and an AttributeValue
AttributeName	An AttributeName is a plain text string following the regular expression, <A-Za-z><_A-Za-z0-9>.*.
AttributeValue	An AttributeValue is any value defined in MO schema file.

MultipleValueAttribute

A MultipleValueAttribute comprises of an AttributeName and several AttributeValues.

StructureAttribute

A StructureAttribute comprises of an AttributeName and several Attributes.

SubobjectAttribute

A SubobjectAttribute comprises of an AttributeName, a Key and several SubAttributes.

Key

A Key can be either a SingleKey or a CompoundKey.

SingleKey

A SingleKey is a SingleValueAttribute.

CompoundKey

A CompoundKey comprises of several SingleValueAttributes.

2.1.1**MOType**

MOType is a plain text string based on the type `xs:string`. An MO type contains two parts. One is the namespace of the MO, and the other is the MO name string always starting with an alphabetical character in either upper or lower case followed by zero or more alphabetical characters or digits or underscores.

Those two parts are connected with symbol @. The whole MOType string looks like `MO_Name@MO_Namespace`. The name string of an MO type must follow the regular expression `<A-Za-z><_A-Za-z0-9>*`.

The MO name plus MO namespace must be global unique.

2.1.2**MOId**

MOId is an Extensible Markup Language (XML) fragment containing the MOId parameter-value pairs that are used to identify an MO instance in the interface data model. CAI3G 1.2 standard supports compound MO identifiers or multiple MO identifier. The following is an example of MOId:



```
<MOId>
  <msisdn>46455395000</msisdn>
  <imsi>46234563545000</imsi>
</MOId>
Compound MO identifier Example
```

Multi identifier refers to cases where one MO can be identified in more than one way, for example:

```
<MOId>
  <name>Ericsson Shanghai</name>
</MOId>
and:
<MOId>
  <id>RDC</id>
</MOId>
```

and maybe also:

```
<MOId>
  <name>Ericsson Shanghai</name>
  <id>RDC</id>
</MOId>
```

Example 1 Example of MOId

In one specific request only one of the above can be used. The MOId is defined as a sequence of `xs:any` element in CAI3G schema file. It is the developers responsibility to define the real schema for this parameter.

The MOId is also the key attributes that must be defined in the top-level element, `CreateMODefinition` or `SetMODefinition`, within `MOAttributes` parameter.

Each implementation of CAI3G interface SHOULD defines own logic relationship of MOId. It is also the CAI3GAgents responsibility to interpret this parameter correctly by either the hard-coded logic or the dynamic parsing of the schema.

2.1.3 MO Attributes

CAI3G supports three categories of attributes. CAI3G requires each implementation instance to use XML schema to define the structure of the attributes in each method. This chapter provides the XML representation, XML schema and examples of those attributes.

The following table gives out the XML schema binding for different parameters:

Table 3 XML Schema Binding for Different Parameters

MO Attributes Type	Type	minOccurs	maxOccurs
Single Value Parameter	Any simple type defined in standard XML schema and customer schema	0	1
Multiple Value Parameter	Any simple type defined in standard XML schema and customer schema	<=maxOccurs	>1



Structured Parameter	Any complex type without "key" in customer schema	0	1
Sub-object Parameter	Any complex type having "key" in customer schema	0	>=1

2.1.3.1 Simple Parameter

2.1.3.1.1 Single Value Parameter

The XML representation for a single value parameter definition component is an element information item with the following Infoset properties:

- A *<local name>* of the single value parameter name
- A *<namespace name>* of the single value parameter namespace name:
 - An annotation element information model amongst its *<children>*, as A documentation element information model, refer to the document Generic CAI3G Interface 1.2.
 - An optional appinfo element information model, refer to the document Generic CAI3G Interface 1.2.
- The value of the parameter.

The following is XML schema structure of a single value parameter:

```
<xs:element name="paramName" type="paramDataType"
default="paramDefaultValue" minOccurs="0|1"
maxOccurs="1" nillable="true|false">
  <xs:annotation>
    <xs:documentation>
      A single value parameter example.
    </xs:documentation>
  </xs:annotation>
</xs:element>
```

Example 2 XML Schema Structure of a Single Value Parameter

In the above schema string, XML attribute `maxOccurs` must always be set to 1 for a single value parameter. XML attribute `default` is an optional attribute only needed when the single value parameter has a default value.

When XML attribute `minOccurs` equals 0, this single value parameter is an optional one.

The following is an example of a single value parameter in XML instance document:

```
<Zip>200126</Zip>
```

Example 3 Single Value Parameter in XML Instance Document



CREATE Scenario

In CREATE operation, the following XML fragment tells CAI3GAgent to set the single value parameter `Zip` with value `200126`. This must be supported in a CAI3G interface realization.

```
<Zip>200126</Zip>
```

The following XML fragment tells CAI3GAgent to set the single value parameter `Zip` with default value if it exists. If there is no default value for `Zip`, CAI3GAgent SHOULD interpret the XML fragment as the CAI3GManager which wants to set the value of `Zip` to empty.

```
<Zip/>
```

SET Scenario

In SET operation, the following XML fragment tells CAI3GAgent to set the single value parameter `Zip` with value `200126`. This must be supported in a CAI3G interface realization.

```
<Zip>200126</Zip>
```

The following XML fragment tells CAI3GAgent to set the single value parameter `Zip` with default value if it exists. If there is no default value for `Zip`, CAI3GAgent SHOULD set the value of `Zip` to empty. This must be supported in a CAI3G interface realization.

```
<Zip/>
```

The following request tells CAI3GAgent to remove this single value parameter from the MO in the data model. This must be supported in a CAI3G interface realization.

```
<Zip xsi:nil="true"/>
```

2.1.3.1.2 Multiple Value Parameter

Multiple value parameters are the second type of simple parameter. It is a parameter that contains more than one value. The XML presentation of a multiple value parameter is similar to that of a single value parameter. The only difference is that for a multiple value parameter the XML attribute `maxOccurs` in schema is greater than 1. Wherefore a multiple value parameter's name-value pair may occur more than once in an instance document.

The following is XML schema structure of a multiple value parameter:

```
<xs:element name="paramName" type="paramDataType"
default= "paramDefaultValue" minOccurs="minimumOccursTimes"
maxOccurs="maximumOccursTimeGreaterThanOrEqualToOne" nillable=
" [true|false] ">
  <xs:annotation>
    <xs:documentation>
      A multiple value parameter example.
    </xs:documentation>
  </xs:annotation>
</xs:element>
```

Example 4 XML Schema Structure of a Multiple Value Parameter

In the above schema string, XML attribute `maxOccurs` must always be greater than 1 for a multiple value parameter. XML attribute `default` is an optional attribute only needed when a multiple value parameter has a default value. When XML attribute `minOccurs` equals 0, this multiple value parameter is an optional one.

The following is an example of a multiple value parameter in XML instance document:

```
<children>Bob</children>
<children>Claus</children>
<children>John</children>
```

Example 5 Multiple Value Parameter in XML Instance Document

CREATE Scenario

In CREATE operation, the following request tells CAI3GAgent to set the multiple value parameter `children` with value Bob, Claus and John. This must be supported in a CAI3G interface realization.

```
<children>Bob</children>
<children>Claus</children>
<children>John</children>
```

The following request tells CAI3GAgent to set a value to the multiple value parameter `children` with default value if it exists. If there is no default value for `children`, CAI3GAgent SHOULD set the value of `children` to empty. In this case, the CAI3GAgent MIGHT return error since normally the name of `children` does not have a default value. This must be supported in a CAI3G interface realization.

```
<children/>
```

SET Scenario

In SET operation, the following request tells CAI3GAgent to replace the multiple value parameter `children` with value Bob, Claus, John and Lena. This must be supported in a CAI3G interface realization.



```
<children>Bob</children>
<children>Claus</children>
<children>John</children>
<children>Lena</children>
```

The following request tells CAI3GAgent to replace all values of the multiple value parameter `children` with the default value if it exists. If there is no default value for `children`, which is true in this example, CAI3GAgent SHOULD set the value of `children` to empty. This must be supported in a CAI3G interface realization.

```
<children/>
```

The following request tells CAI3GAgent to remove this multiple value parameter from the MO in the data model. This must be supported in a CAI3G interface realization.

```
<children xsi:nil="true"/>
```

2.1.3.2

Structured Parameter

A structured parameter is a single value parameter that contains other type of parameter as its attribute. It is a recursive structure that can further contain another structured parameter as its attribute. The XML representation for a structured parameter definition component is an element information item with the following Infoset properties:

- A *<local name>* of the structured parameter name
- A *<namespace name>* of the structured parameter namespace name
- One or more element information items amongst its *<children>* as follows:
 - An annotation element information model amongst its *<children>*, as either a documentation element information model or an optional appinfo element information model, refer to the document Generic CAI3G Interface 1.2
 - Zero or more structured parameter information items
 - Zero or more sub-object parameter information items, refer to the document Generic CAI3G Interface 1.2
 - One or more simple parameter information items, refer to the document Generic CAI3G Interface 1.2

The following is XML schema structure of a structured parameter:

```

<xs:element name="paramName" type="paramDataType"
  minOccurs="0|1" maxOccurs="1" nillable="[true|false]">
  <xs:annotation>
    <xs:documentation>
      A structured parameter example.
    </xs:documentation>
  </xs:annotation>
</xs:element>

<xs:complexType name="paramDataType">
  <xs:sequence>
    <xs:element name="someSVParam" type="aSingleValueParamType"/>
    <xs:element name="someMVParam" type="aMultiValueParamType"/>
    <xs:element name="someStructParam" type="aStructParamType"/>
    <xs:element name="someSubMoParam" type="aSubMoParamType"/>
  </xs:sequence>
</xs:complexType>

```

Example 6 XML Schema Structure of a Structured Parameter

The following is an example of a structured parameter in XML instance document:

```

<user>
  <name>Alice</name>
  <gender>female</gender>
  <status>married</status>
  <children>Bob</children>
  <children>John</children>
  <homeAddr>
    <street>No.128, Liverpool Street</street>
    <city>London</city>
    <postcode>N1 1LX</postcode>
    <country>UK</country>
  </homeAddr>
</user>

```

Example 7 Structured Parameter in XML Instance Document

The behavior of the structured parameter in CREATE and SET methods depends on the behavior of its sub-parameters in those methods.

CREATE Scenario

In CREATE operation, the following request tells CAI3GAgent to set the value of a structured parameter. This must be supported in a CAI3G interface realization.

```

<user>
  <name>Alice</name>
  <gender>female</gender>
  <status>married</status>
  <children>Bob</children>
  <children>John</children>
  <homeAddr>
    <street>No.128, Liverpool Street</street>
    <city>London</city>
    <postcode>N1 1LX</postcode>
    <country>UK</country>
  </homeAddr>
</user>

```

Example 8 Setting the Value of a Structured Parameter



SET Scenario

In SET operation, the following request tells CAI3GAgent to update `user` parameter with the value specified in the XML fragment structure. In this example the `status` of `user` is changed and the values of `children` are replaced by all new values provided in this structure. The `street` value in `homeAddr` is also updated. This must be supported in a CAI3G interface realization.

```
<user>
  <status>divorce</status>
  <children>Bob</children>
  <children>John</children>
  <children>Li</children>
  <homeAddr>
    <street>No.101, Zunyi Road</street>
  </homeAddr>
</user>
```

Example 9 SET Operation

The following request tells CAI3GAgent to remove the structured parameter from the MO in the data model. This may be supported in a CAI3G interface realization.

```
<user xsi:nil="true"/>
```

2.1.3.3

Sub-object Parameter

A structured parameter can be considered as a special sub-object parameter that can only have one sub-object instance. A sub-object parameter can represent a sub-object having more than one instance. Similar to that an MO requires MO identifiers to specify a single instance, the sub-object needs keys to distinguish an instance from others. A key attribute is a special attribute that occurs as both an XML element and an XML attribute in an instance document, which distinguishes the sub-object instance one from another. The XML representation for a sub-object parameter definition component is an element information item with the following InfoSet properties:

- A *<local name>* of the structured parameter name
- A *<namespace name>* of the structured parameter namespace name
- One or more element information items amongst its *<children>* as follows:
 - An annotation element information model amongst its *<children>*, in order as either a documentation element information model or an optional appinfo element information model, refer to the document Generic CAI3G Interface 1.2.
- Zero or more key element information items
- One or more simple parameter information items, refer to the document Generic CAI3G Interface 1.2.

- Zero or more structured parameter information items, refer to the document Generic CAI3G Interface 1.2.
- Zero or more sub-object parameter information items

The following is XML schema structure of a sub-object parameter:

```
<xs:element name="paramName" type="paramDataType"
minOccurs="minimumOccursTimes" maxOccurs=
"maximumOccursTimeGreaterThanOne" nillable=" [true|false] ">
  <xs:annotation>
    <xs:documentation>
      A sub-object parameter example.
    </xs:documentation>
  </xs:annotation>
  <xs:complexType>
    <xs:complexContent>
      <xs:extension base="paramDataType">
        <xs:attribute name="key1" type=
          "xs:string" use="required"/>
        <xs:attribute name="key2" type=
          "xs:string" use="required"/>
      </xs:extension>
    </xs:complexContent>
  </xs:complexType>
  <key name="paramName" id="CAI3GKey1">
    <selector xpath="paramName" />
    <field xpath="@key1" />
    <field xpath="@key2" />
  </key>
</xs:element>

<xs:complexType name="paramDataType">
  <xs:sequence>
    <xs:element name="key1" type="aSingleValueParamType"/>
    <xs:element name="key2" type="aSingleValueParamType"/>
    <xs:element name="someSVParam" type=
      "aSingleValueParamType"/>
    <xs:element name="someMVParam" type=
      "aMultiValueParamType"/>
    <xs:element name="someStructParam" type=
      "aStructParamType"/>
    <xs:element name="someSubMoParam" type=
      "aSubMoParamType"/>
  </xs:sequence>
</complexType>
```

Example 10 XML Schema Structure of a Sub-object Parameter

Any key attribute must be a single value parameter without default value. The following is an example of a sub-object parameter in XML instance document:

```
<user socialId="123-456-789">
  <socialId>123-456-789</socialId>
  <name>Alice</name>
  <gender>female</gender>
  <status>married</status>
  <children>Bob</children>
  <children>John</children>
  <homeAddr>
    <street>No.128, Liverpool Street</street>
    <city>London</city>
    <postcode>N1 1LX</postcode>
    <country>UK</country>
  </homeAddr>
</user>
```

Example 11 Example of a CAI3G Sub-object Parameter



CREATE Scenario

In CREATE operation, the following XML fragment tells CAI3GAgent to create an instance for sub-object user with key `socialId` as 123-456-789 and other attribute values. This must be supported in a CAI3G interface realization.

```
<user socialId="123-456-789">
  <socialId>123-456-789</socialId>
  <name>Alice</name>
  <gender>female</gender>
  <status>married</status>
  <children>Bob</children>
  <children>John</children>
  <homeAddr>
    <street>No.128, Liverpool Street</street>
    <city>London</city>
    <postcode>N1 1LX</postcode>
    <country>UK</country>
  </homeAddr>
</user>
```

SET Scenario

In SET operation, the following XML fragment tells CAI3GAgent to set an instance for sub-object user with key `socialId` as 123-456-789 and other attribute values. This must be supported in a CAI3G interface realization.

```
<user socialId="123-456-789">
  <name>Alice</name>
  <gender>female</gender>
  <status>married</status>
  <children>Bob</children>
  <children>John</children>
  <homeAddr>
    <street>No.128, Liverpool Street</street>
    <city>London</city>
    <postcode>N1 1LX</postcode>
    <country>UK</country>
  </homeAddr>
</user>
```

The following XML fragment tells CAI3GAgent to update the data of the sub-object user instance whose key `socialId` equals to 123-456-789 with the attribute specified in the request. In this case, a new MO attribute `husband` is added, the `children` list is replaced by the value of all new `children` and the `street` MO sub-attribute is also changed in `homeAddr`. This must be supported in a CAI3G interface realization.

```
<user socialId="123-456-789">
  <husband>Del</husband>
  <children>Bob</children>
  <children>Claus</children>
  <children>John</children>
  <homeAddr>
    <street>No.101, Liverpool Street</street>
  </homeAddr>
</user>
```

The following XML fragment tells CAI3GAgent to change the key value of a sub-object. In this case the `socialId` of Alice is changed from 123-456-789 to 123-456-788. This can be supported in a CAI3G interface realization.

```
<user socialId="123-456-789">
  <socialId>123-456-788</socialId>
</user>
```

The following XML fragment tells CAI3GAgent to remove a `user` sub-object instance whose key `socialId` is 123-456-789 from the data model. This must be supported in a CAI3G interface realization.

```
<user socialId="123-456-789" xsi:nil="true"/>
```

The following XML fragment tells CAI3GAgent to remove all `user` sub-object instances from the data model. This can be supported in a CAI3G interface realization.

```
<user xsi:nil="true"/>
```

2.1.4 CAI3G Extension

Real-time N+1 HLR redundancy is a network configuration with N number of primary classic HLRs and one standby HLR-FE working together. The HLR-FE node supports the possible faults of any of the N number of primary nodes in a classic HLR environment. Each HLR-FE works as a redundant node for some primary HLRs.

To support N+1 redundancy, there is a need for provisioning towards both the primary HLR and the standby HLR-FE nodes. To perform this, the PG system needs to know which primary HLR the subscriber belongs to and which HLR-FE that is the redundant node. CAI3G extension is used for this purpose, to state the `PrimaryHLRID` parameter for the HLR-FE node working as backup of the N number of classic HLRs, see Table 4.

2.1.4.1 Parameters

The following table covers the optional parameters that can be used as CAI3G extension in the all CAI3G HLR operations.

Note: CAI3G extension is only used together with N+1 redundancy.



Extension

Table 4 Extension

Parameter	Type	Description
PrimaryHLRId	String Expressed as <i><a>-</i> where <i>a</i> is Redundancy Group with valid numerical values 1-15 and <i>b</i> is HLR Identity with valid numerical values 1-32. For example 3-18 where 3 refers to Redundancy Group and 18 refers to HLR Identity.	Primary HLR Identity

2.1.4.2

Schemas

This section contains the schemas for the CAI3G extension `PrimaryHLRId`.

Extension

```
<xs:element name="primaryhlrid" type="PrimaryHLRIdType" />
```

2.2

CAI3G Example

In this chapter, the full CAI3G request-response examples are listed. In the rest of this document, all CAI3G examples give the contents in *<SOAP-ENV:Body>*. If any namespaces cannot be found in the examples, refer to the full examples [here](#).



```

<soapenv:Envelope xmlns:ns="http://schemas.ericsson.com/cai3g1.2/"
  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>
    <ns:sessionId soapenv:actor="http://schemas.xmlsoap.org/
      soap/actor/next" soapenv:mustUnderstand="0"
      xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
      8392993983929939000000001189585132043</ns:sessionId>
    <ns:sequenceId soapenv:actor="http://schemas.xmlsoap.org/
      soap/actor/next" soapenv:mustUnderstand="0"
      xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
      15945609998882996893</ns:sequenceId>
    <ns:transactionId soapenv:actor="http://schemas.xmlsoap.org/
      soap/actor/next" soapenv:mustUnderstand="0" xmlns:ns=
      "http://schemas.ericsson.com/cai3g1.2/">3333</ns:transactionId>
  </soapenv:Header>
  <soapenv:Body>
    <ns:Create xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
      <ns:MOTType>Subscription@http://schemas.ericsson.com/ema/
        UserProvisioning/GsmHlr/</ns:MOTType>
      <ns:MOId>
        <msisdn xmlns="http://schemas.ericsson.com/ema/
          UserProvisioning/GsmHlr/">310013700020011</msisdn>
        <imsi xmlns="http://schemas.ericsson.com/ema/
          UserProvisioning/GsmHlr/">234113700020011</imsi>
      </ns:MOId>
      <ns:MOAttributes>
        <createSubscription xmlns="http://schemas.ericsson.com/
          ema/UserProvisioning/GsmHlr/" xmlns:cai3g="http://
          schemas.ericsson.com/cai3g1.2/" xmlns:xsi="http://www.w3.org/
          2001/XMLSchema-instance" msisdn="310013700020011"
          imsi="234113700020011">
          <msisdn>310013700020011</msisdn>
          <imsi>234113700020011</imsi>
        </createSubscription>
      </ns:MOAttributes>
    </ns:Create>
  </soapenv:Body>
</soapenv:Envelope>

```

Example 12 An Example of CAI3G Request

```

<SOAP-ENV:Envelope
  xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:SOAP-ENC="http://schemas.xmlsoap.org/soap/encoding/"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:ns="http://schemas.ericsson.com/cai3g1.0/2003/05/30/"
  xmlns:ns2="http://schemas.ericsson.com/cai3g1.0/2004/01/22/"
  xmlns:ns3="http://schemas.ericsson.com/cai3g1.1/"
  xmlns:ns4="http://schemas.ericsson.com/cai3g1.2/">
  <SOAP-ENV:Header>
    <ns4:TransactionId>3333</ns4:TransactionId>
    <ns4:SessionId>8392993983929939000000001189587397045
  </ns4:SessionId>
    <ns4:SequenceId>1647602946387903137</ns4:SequenceId>
  </SOAP-ENV:Header>
  <SOAP-ENV:Body>
    <ns4:CreateResponse>
      <MOId xmlns="http://schemas.ericsson.com/cai3g1.2/">
        <msisdn xmlns="http://schemas.ericsson.com/ema/
          UserProvisioning/GsmHlr/">310013700020011</msisdn>
        <imsi xmlns="http://schemas.ericsson.com/ema/
          UserProvisioning/GsmHlr/">234113700020011</imsi>
      </MOId>
    </ns4:CreateResponse>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>

```

Example 13 A Successful CAI3G Response



```

<S:Envelope xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:cai3g="http://schemas.ericsson.com/cai3g1.2/">
  <S:Header>
    <cai3g:SessionId>ecb01d4b15c6489db7ef0070f02ae0fd</cai3g:SessionId>
    <cai3g:TransactionId>1</cai3g:TransactionId>
    <cai3g:SequenceId>1</cai3g:SequenceId>
  </S:Header>
  <S:Body>
    <ns2:Fault xmlns:ns2="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns3="http://www.w3.org/2003/05/soap-envelope">
      <faultcode>ns2:Server</faultcode>
      <faultstring>This is a server fault</faultstring>
      <detail>
        <Cai3gFault:Cai3gFault xmlns="http://schemas.ericsson.com/cai3g1.2/"
xmlns:Cai3gFault="http://schemas.ericsson.com/cai3g1.2/">
          <faultcode>4006</faultcode>
          <faultreason>
            <reasonText>External error.</reasonText>
          </faultreason>
          <faultrole>NEF</faultrole>
          <details>
            <UserProvisioningFault:UserProvisioningFault xmlns="http://
schemas.ericsson.com/ema/UserProvisioning/" xmlns:UserProvisioningFault=
"http://schemas.ericsson.com/ema/UserProvisioning/">
              <respCode>13</respCode>
              <respDescription>IMSI is not defined Main ID does not exist. -
[Processed by PG Node: CL25-2-PL-3]</respDescription>
            </UserProvisioningFault:UserProvisioningFault>
          </details>
        </Cai3gFault:Cai3gFault>
      </detail>
    </ns2:Fault>
  </S:Body>
</S:Envelope>

```

Example 14 An Unsuccessful CAI3G Response





3 HLR Subscription

This section is applicable for Home Location Register (HLR).

3.1 Customer Service Orders

MOType for HLR Subscription:

`Subscription@http://schemas.ericsson.com/ema/
UserProvisioning/GsmHlr/`

MOType for Message Waiting:

`MessageWaiting@http://schemas.ericsson.com/ema/
UserProvisioning/HlrMw/`

3.1.1 Create HLR Subscription

The subscriber is set in-service upon definition.

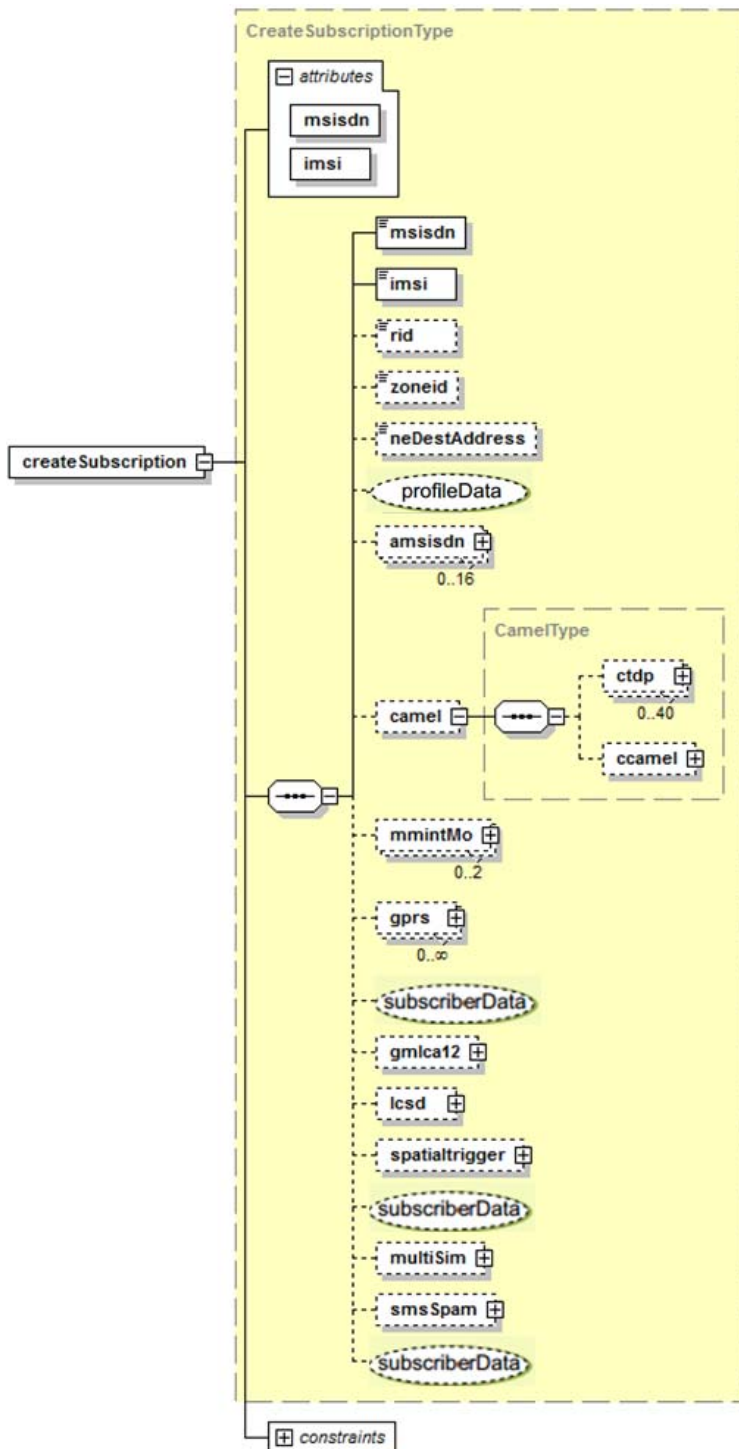


Figure 2 Create HLR Subscription

Table 5 describes a collection of different grouped services, meaning that more attributes with corresponding interface diagrams for the groups can be found in chapters, named in the **Description** column.



Table 5 Create HLR Subscription

Parameter		Type	Occurrence	Description
msisdn		Digit string 5-15 digits. Each digit is 0-9.	Mandatory	Mobile Subscriber ISDN Number (MSISDN)
imsi		Digit string 6-15 digits. Each digit is 0-9.	Mandatory	International Mobile Subscriber Identity
rid		Integer 0-31	Optional	Region Identifier
profileData		User-defined type	Optional	The profile containing the data that is to be copied to the new subscription. For the detailed elements and their sequence for profileData, see Section 3.2.2 on page 65.
amsisdn		Digit string 5-15 digits. Each digit is 0-9.	Optional	Additional MSISDN, see Section 3.2.3.1 on page 68.
camel		CamelType	Optional	Customized Applications for Mobile Networks Enhanced Logic (CAMEL), See Section 3.2.4 on page 72.
	ctdp	CamelTriggerDetectionPointType	Optional	See Section 3.2.4.1 on page 72.
	ccamel	CamelConditionalTriggerType	Optional	See Section 3.2.4.1 on page 72.
mmintMo		MobManInTriggeringType	Optional	See Section 3.2.6.1 on page 110.
cugData		User-defined type	Optional	See Section 3.2.5 on page 98.
gprs		GprsType	Optional	See Section 3.2.7.1 on page 113.
subscriberData		User-defined type	Optional	For the element names and the sequence of subscriberData elements, see Table 12 and Table 13.
gmlca12		GmlcAddType	Optional	See Section 3.2.8.1 on page 123.
lcsd		LcsDataType	Optional	See Section 3.2.9 on page 127.
spatial trigger		SteType	Optional	See Section 3.2.10 on page 139.
subscriberData		User-defined type	Optional	For the element names and the sequence of subscriberData elements, see Table 14.
multiSim		MultiSimType	Optional	See Section 3.2.11 on page 141.
smsSpam		SmsSpamType	Optional	See Section 3.2.12 on page 146.
subscriberData		User-defined type	Optional	For the element names and the sequence of subscriberData elements, see Table 15.

3.1.1.1

Examples

Message Request to Create a Subscription with the following properties:

msisdn 46455381234



Imsi	12345678933333
rid	13
profile	1
nam	0
cat	2
cfu	Provided, active for ts10, Forwarded-to num 0241930203
amsisdn	No.46455383456, bc=20
prbt	1

```

<ns:Create xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
  <ns:MOType xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
    Subscription@http://schemas.ericsson.com/ema/UserProvisioning/GsmHlr/
  </ns:MOType>
  <ns:MOId xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
    <msisdn xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">46455381234</msisdn>
    <imsi xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">12345678933333</imsi>
  </ns:MOId>
  <ns:MOAttributes xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
    <createSubscription
      xmlns="http://schemas.ericsson.com/ema/UserProvisioning/GsmHlr/"
      msisdn="46455381234" imsi="12345678933333">
        <msisdn>46455381234</msisdn>
        <imsi>12345678933333</imsi>
        <rid>13</rid>
        <profileId>1</profileId>
        <amsisdn amsisdn="4645538456">
          <amsisdn>4645538456</amsisdn>
          <bc>20</bc>
        </amsisdn>
        <gprs pdpid="1">
          <pdpid>1</pdpid>
          <apnid>99</apnid>
          <pdpadd>78.54.125.8</pdpadd>
          <eqosid>4</eqosid>
          <vpaa>1</vpaa>
        </gprs>
        <nam>
          <prov>0</prov>
        </nam>
        <cfu>
          <provisionState>1</provisionState>
          <ts10>
            <activationState>1</activationState>
            <fnum>0241930203</fnum>
          </ts10>
        </cfu>
        <cat>2</cat>
        <prbt>1</prbt>
      </createSubscription>
    </ns:MOAttributes>
  </ns:Create>

```

Example 15 Create HLR Subscription Message Request



```
<ns4:CreateResponse>
  <MOId xmlns="http://schemas.ericsson.com/cai3g1.2/">
    <msisdn xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">46455381234</msisdn>
    <imsi xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">12345678933333</imsi>
  </MOId>
</ns4:CreateResponse>
```

Example 16 Successful Message Response

3.1.2 Set HLR Subscription

This chapter includes information on how to set and define a HLR Subscription.

Note: If both MSISDN and IMSI number are used in a provisioning operation from CAS, only IMSI is used in the provisioning operations that are sent to the NE. No check is performed if the MSISDN and IMSI belongs to the same subscription.

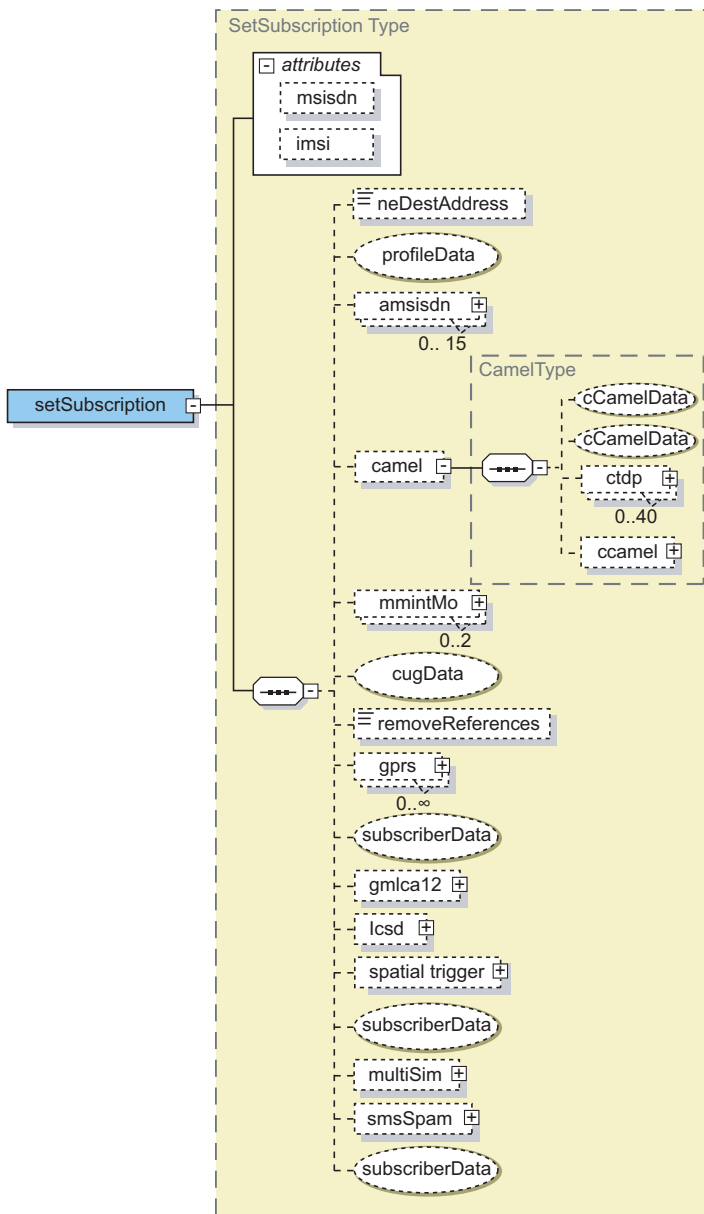


Figure 3 Set HLR Subscription

Table 6 Set HLR Subscription

Parameter	Type	Occurrence	Description
msisdn	Digit string 5-15 digits. Each digit is 0-9.	Optional	Mobile Subscriber ISDN Number (MSISDN) One of MSISDN and IMSI must be appointed.
imsi	Digit string 6-15 digits. Each digit is 0-9.	Optional	International Mobile Subscriber Identity One of MSISDN and IMSI must be appointed.



Parameter	Type	Occurrence	Description
profileData	User-defined type	Optional	The profile of which data is to be copied to the subscription. For the detailed elements and their sequence for profileData, see Section 3.2.2 on page 65.
amsisdn	Digit string 5-15 digits. Each digit is 0-9.	Optional	Additional MSISDN, see Section 3.2.3.1 on page 68 and Section 3.2.3.2 on page 70.
camel	CamelType	Optional	See Section 3.2.4 on page 72.
	eCamel Data	Optional	See Section 3.2.4.2 on page 79.
	oCamel Data	Optional	See Section 3.2.4.2 on page 79.
	ctdp	Optional	See Section 3.2.4.1 on page 72, Section 3.2.4.2 on page 79, and Section 3.2.4.3 on page 87.
	ccamel	Optional	See Section 3.2.4.1 on page 72 and Section 3.2.4.3 on page 87.
mmintMo	MobManInTriggeringType	Optional	See Section 3.2.6 on page 110.
cugData	User-defined type	Optional	See Section 3.2.5 on page 98.
removeReferences	Boolean {true, false}	Optional	See Section 4.2 on page 155.
gprs	GprsType	Optional	See Section 3.2.7.1 on page 113, Section 3.2.7.2 on page 118, and Section 3.2.7.3 on page 121.
subscriberData	User-defined type	Optional	For the element names and the sequence of subscriberData elements, see Table 12 and Table 13.
gmlca12	GmlcAddType	Optional	See Section 3.2.8.1 on page 123 and Section 3.2.8.2 on page 125.
lcsd	LcsDataType	Optional	See Section 3.2.9 on page 127.
spatial trigger	SteType	Optional	See Section 3.2.10 on page 139.
subscriberData	User-defined type	Optional	For the element names and the sequence of subscriberData elements, see Table 14.
smsSpam	SmsSpamType	Optional	See Section 3.2.12 on page 146.
multiSim	MultiSimType	Optional	See Section 3.2.11 on page 141.
subscriberData	User-defined type	Optional	For the element names and the sequence of subscriberData elements, see Table 15.



3.1.2.1 Examples

Message request to modify the following attributes of the subscription with MSISDN 46455381234:

cfu	Not active for TS10, keep Forwarded-to number as 0241930203
cfnrc	Not active for TS10, keep the original Forwarded-to number
cfnry	Active for all Basic Services, Forwarded-to number 0241930203
baoc	Provided
amsisdn	Delete number 46455380001
amsisdn	Define number 46455380002, bc=20



```

<ns:Set xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
  <ns:MOType xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
    Subscription@http://schemas.ericsson.com/ema/
    UserProvisioning/GsmHlr/
  </ns:MOType>
  <ns:MOId xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
    <msisdn xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">46455381234</msisdn>
  </ns:MOId>
  <ns:MOAttributes xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
    <setSubscription xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/" msisdn="46455381234">
      <msisdn>46455381234</msisdn>
      <amsisdn amsisdn="46455380001" xsi:nil="true">
      </amsisdn>
      <amsisdn amsisdn="46455380002">
        <amsisdn>46455380002</amsisdn>
        <bc>20</bc>
      </amsisdn>
      <gprs pdpid="1">
        <pdpid>1</pdpid>
        <apnid>99</apnid>
        <pdpadd>78.54.125.8</pdpadd>
        <eqosid>4</eqosid>
        <vpaa>1</vpaa>
      </gprs>
      <baoc>
        <provisionState>1</provisionState>
      </baoc>
      <cfu>
        <provisionState>1</provisionState>
        <ts10>
          <activationState>0</activationState>
          <fnum>0241930203</fnum>
        </ts10>
      </cfu>
      <cfnrc>
        <provisionState>1</provisionState>
        <ts10>
          <activationState>0</activationState>
          <keep>1</keep>
        </ts10>
      </cfnrc>
      <cfnry>
        <provisionState>1</provisionState>
        <ts10>
          <activationState>1</activationState>
          <fnum>0241930203</fnum>
        </ts10>
      </cfnry>
    </setSubscription>
  </ns:MOAttributes>
</ns:Set>

```

Example 17 Set HLR Subscription Message Request

```

<ns:SetResponse xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
</ns:SetResponse>

```

Example 18 Successful Message Response

3.1.3 Delete HLR Subscription

Previously defined subscriptions can be deleted together with all data associated to the subscription.

Note: If both MSISDN and IMSI number are used in a provisioning operation from CAS, only IMSI is used in the provisioning operations that are sent to the NE. No check is performed if the MSISDN and IMSI belongs to the same subscription.

Table 7 Delete HLR Subscription Request MOld

Parameter	Type	Occurrence	Description
msisdn	Digit string 5-15 digits. Each digit is 0-9.	Optional	Mobile Subscriber ISDN Number (MSISDN) One of MSISDN and IMSI must be appointed.
imsi	Digit string 6-15 digits. Each digit is 0-9.	Optional	International Mobile Subscriber Identity One of MSISDN and IMSI must be appointed.

3.1.3.1

Examples

Request to delete the subscription with the MSISDN 46455381234 and identify the provisioning operation with the number 12345:

```
<ns:Delete xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
  <ns:MOType xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
    Subscription@http://schemas.ericsson.com/ema/UserProvisioning/
    GsmHlr/</ns:MOType>
  <ns:MOId xmlns:ns="http://schemas.ericsson.com/cai3g1.2/"
    msisdn="46455381234">
    <msisdn xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">46455381234</msisdn>
  </ns:MOId>
</ns:Delete>
```

Example 19 Delete Subscription Request

```
<ns:DeleteResponse xmlns:ns="http://schemas.ericsson.com/
cai3g1.2/">
</ns:DeleteResponse>
```

Example 20 Successful Message Response:

3.1.4

Get HLR Subscription

Some Subscriber Data values can differ from those applicable for the setting of Subscriber Data. The differences are as follows:

- The activation status of Supplementary Services, when applicable, can have three statuses:
 - 0 - not active
 - 1 - active operational
 - 2 - active quiescent



- The call forwarding services a Forwarded-to number `fnum` is displayed if registered. Additionally, for `cfnrty` the No-reply-time are displayed.
- The password can have a barred status.
- When using the service SOCB it is possible to get values 0-3 or 0-1 when setting the service.

Note:

- Handle the display request so that CAS is not affected by new HLR releases. This can be done by sending only used services in the display request. If a full response syntax is used, the results are different depending on which release of the HLR the request have been sent to.
- If Mobile Number Portability (MNP) is used in the network, it is recommended that IMSI is used in the display request for performance reason.
- If both MSISDN and IMSI number are used in a provisioning operation from CAS, only IMSI is used in the provisioning operations that are sent to the NE. No check is performed if the MSISDN and IMSI belongs to the same subscription.

3.1.4.1 Get HLR Subscription Request

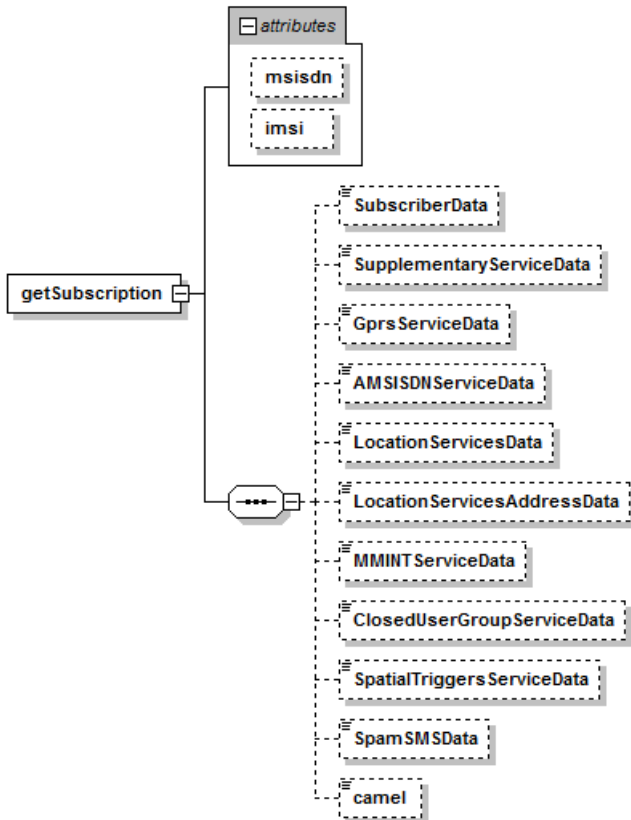


Figure 4 Get HLR Subscription Request

Table 8 MOfd for Get HLR Subscription Request

Parameter	Type	Occurrence	Description
msisdn	Digit string 5-15 digits. Each digit is 0-9.	Optional	Mobile Subscriber ISDN Number (MSISDN) One of MSISDN and IMSI must be appointed.
imsi	Digit string 6-15 digits. Each digit is 0-9.	Optional	International Mobile Subscriber Identity One of MSISDN and IMSI must be appointed.
SubscriberData	-	Optional	Used as a filtering option.
SupplementaryServiceData	-	Optional	Used as a filtering option.
GprsServiceData	-	Optional	Used as a filtering option.
AMSIISDNServiceData	-	Optional	Used as a filtering option.



Parameter	Type	Occurrence	Description
LocationServicesData	-	Optional	Used as a filtering option.
LocationServicesAddressData	-	Optional	Used as a filtering option.
MMINTServiceData	-	Optional	Used as a filtering option.
ClosedUserGroupServiceData	-	Optional	Used as a filtering option.
SpatialTriggersServiceData	-	Optional	Used as a filtering option.
SpamSMSData	-	Optional	Used as a filtering option.
camel	-	Optional	Used as a filtering option.

3.1.4.2 Get HLR Subscription Response

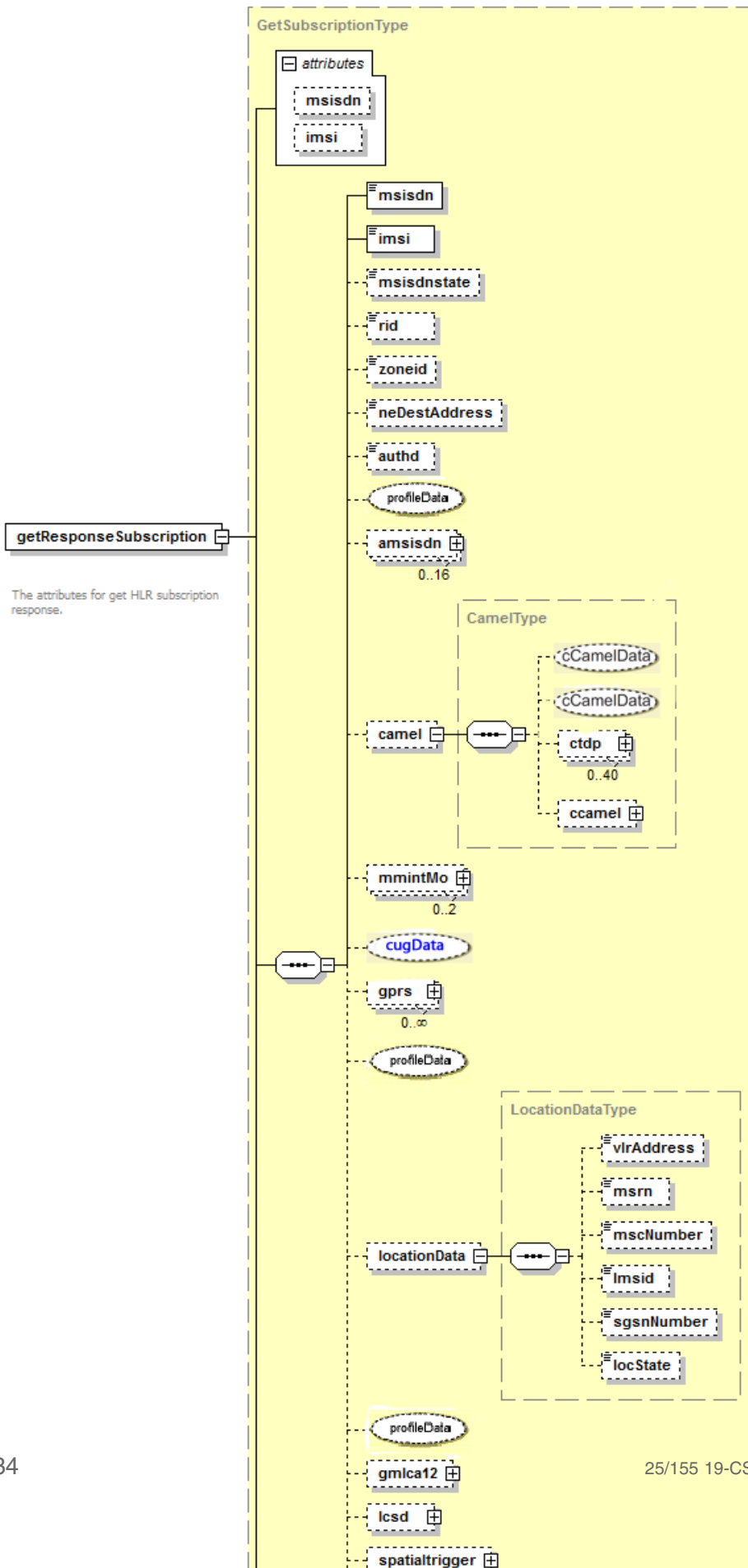




Table 9 Get HLR Subscription Response

Parameter	Type	Occurrence	Description
msisdn	Digit string 5-15 digits. Each digit is 0-9.	Optional	Mobile Subscriber ISDN Number (MSISDN) One of MSISDN and IMSI must be appointed.
imsi	Digit string 6-15 digits. Each digit is 0-9.	Optional	International Mobile Subscriber Identity One of MSISDN and IMSI must be appointed.
msisdnstate	String	Optional	This parameter indicates the MSISDN state. The following values are available: <ul style="list-style-type: none"> • “CONNECTED”: the master MSISDN • “ADDITIONAL”: the additional MSISDN Note: “NOT CONNECTED” is not returned as a value. If the “MSISDN” or “IMSI” does not exist an error message is returned indicating this.
rid	Integer 0-31	Optional	Region Identifier
zoneid	Integer 0-65535	Optional	This attribute indicates to what geographical area the MultiSC or the association belongs
authd	One of the following strings: <ul style="list-style-type: none"> • AVAILABLE • NO IMSI IN AUC • NO ACCESS TO AUC 	Optional	Authentication data. ⁽¹⁾
profileData	User-defined type	Optional	For the detailed elements and their sequence for profileData, see Section 3.2.2 on page 65.
amsisdn	Digit string 5-15 digits. Each digit is 0-9.	Optional	Additional MSISDN, see Section 3.2.3 on page 68.
camel	CamelType	Optional	See Section 3.2.4.4 on page 92.
mmintMo	MobManInTriggeringType	Optional	See Section 3.2.6 on page 110
cugData	User-defined type	Optional	For the element names and the sequence of cugData elements, see Table 30.
gprs	GprsType	Optional	See Section 3.2.7.4 on page 121.
subscriberData	User-defined type	Optional	For the element names and the sequence of subscriberData elements, see Table 12.
locationData	LocationDataType	Optional	



Parameter		Type	Occurrence	Description
	vlrAddress	String expressed as <na>-<ai> or UNKNOWN, RESTRICTED, or BARRED. <na> is Nature of Address, and can have value 3 for National and 4 for International. <ai> is address information; digit string up to 20 digits where each digit is 0-9.	Optional	VLR address.
	msrn	String 0-15 characters	Optional	Mobile Station Roaming Number
	mscNumber	String 0-20 characters	Optional	Mobile Switching Center (MSC) number
	lmsid	String 8 digits	Optional	Local Mobile Station Identity
	sgsnNumber	String expressed as <na>-<ai> or UNKNOWN, RESTRICTED, or BARRED. <na> is Nature of Address, and can have value 3 for National and 4 for International. <ai> is address information; digit string up to 20 digits where each digit is 0-9.	Optional	Serving General Packet Radio Service Support Node (SGSN) number
	locState	String expressed as MSC-AREA RESTRICTED, MSPURGED IN VLR and /or MS PURGED IN SGSN. In the case where multiple values are presented, they are separated by a comma, like MSC-AREA RESTRICTED , MSPURGED IN VLR, MS PURGED IN SGSN	Optional	
subscriberData		User-defined type	Optional	For the element names and the sequence of subscriberData elements, see Table 13.
gmica12		GmIcAddType	Optional	See Section 3.2.8.3 on page 126



Parameter	Type	Occurrence	Description
lcsd	LcsDataType	Optional	See Section 3.2.9 on page 127
spatial trigger	SteType	Optional	See Section 3.2.10 on page 139.
subscriberData	User-defined type	Optional	For the element names and the sequence of subscriberData elements, see Table 14.
multiSim	MultiSimType	Optional	See Section 3.2.11 on page 141.
msim	unsignedByte Values are 0-1.	Optional	Multiple SIM active
smsSpam	SmsSpamType	Optional	See Section 3.2.12 on page 146.
subscriberData	User-defined type	Optional	For the element names and the sequence of subscriberData elements, see Table 15.

(1) AUTHD is only available if subscriber earlier has initiated an Authentication Procedure ("Send Authentication Information" MAP operation has been received for a specific subscriber).

3.1.4.3

Examples

To display all data of a subscriber with MSISDN 46455381234:

```
<ns:Get xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
  <ns:MOType xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
    Subscription@http://schemas.ericsson.com/ema/UserProvisioning/GsmHlr/
  </ns:MOType>
  <ns:MOId xmlns:ns="http://schemas.ericsson.com/cai3g1.2/"
    " msisdn="46455381234">
    <msisdn xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">46455381234</msisdn>
  </ns:MOId>
</ns:Get>
```

Example 21 Get HLR Subscription Message Request

Successful message response from Dynamic Activation is to show all subscriber data:

```
<ns2:GetResponse xmlns:ns2="http://schemas.ericsson.com/cai3g1.2/">
  <ns2:MOAttributes>
    <getResponseSubscription:getResponseSubscription imsi="26400000005010"
      msisdn="491900005010" xmlns="http://schemas.ericsson.com/ema/UserProvisioning/G"
      xmlns:getResponseSubscription="http://schemas.ericsson.com/ema/UserProvisioning"
      <msisdn>491900005010</msisdn>
      <imsi>26400000005010</imsi>
    <camel>
      <eoinci>0</eoinci>
      <eoick>0</eoick>
      <etinci>0</etinci>
      <etick>0</etick>
      <ctdp cch="1" detectionPoint="12" triggeringPoint="1">
        <triggeringPoint>1</triggeringPoint>
        <detectionPoint>12</detectionPoint>
        <gsa>49101924101</gsa>
        <serviceKey>512</serviceKey>
        <defaultErrorHandling>1</defaultErrorHandling>
        <cch>1</cch>
      </ctdp>
    </camel>
    <gprs pdpid="1">
      <pdpid>1</pdpid>
      <apnid>1</apnid>
      <pdpadd>136.225.1.1</pdpadd>
      <eqosid>2</eqosid>
      <pdpch>1-0</pdpch>
      <pdpty>IPv4</pdpty>
```

```

        <vpaa>0</vpaa>
    </gprs>
    <gprs pdpid="2">
        <pdpid>2</pdpid>
        <apnid>2</apnid>
        <pdipadd>136.225.1.1</pdipadd>
        <eqosid>2</eqosid>
        <pdpch>1-0</pdpch>
        <pdpty>IPv4</pdpty>
        <vpaa>1</vpaa>
    </gprs>
    <nam>
        <prov>1</prov>
    </nam>
    <baoc>
        <provisionState>1</provisionState>
        <ts10>
            <activationState>1</activationState>
        </ts10>
    </baoc>
    <cfu>
        <provisionState>1</provisionState>
        <ts10>
            <activationState>1</activationState>
            <fnum>45223344</fnum>
            <subAddress>E0FB001C1A</subAddress>
        </ts10>
        <tsd0>
            <activationState>1</activationState>
            <fnum>45223344</fnum>
            <subAddress>E0FB001C1A</subAddress>
        </tsd0>
    </cfu>
    <cfnry>
        <provisionState>1</provisionState>
        <ts10>
            <activationState>1</activationState>
        </ts10>
    </cfnry>
    <cat>10</cat>
    <dbsg>1</dbsg>
    <ofa>0</ofa>
    <pwd>0000</pwd>
    <schar>0-0</schar>
    <tcsi>1</tcsi>
    </getResponseSubscription:getResponseSubscription>
</ns2:MOAttributes>
</ns2:GetResponse>

```

Example 22 Successful Message Response

3.1.5

Get HLRMWINFO

The CSO can print all service center address stored in the message data waiting list for the given subscriber.



3.1.5.1

Get HLRMWINFO Request

Table 10 MOID for Get HLRMWINFO Request

Parameter	Type	Occurrence	Description
msisdn	Digit string 5-15 digits. Each digit is 0-9.	Optional It is mandatory if IMSI is not defined.	Mobile Subscriber ISDN Number (MSISDN)
imsi	Digit string 6-15 digits. Each digit is 0-9.	Optional It is mandatory if MSISDN is not defined.	International Mobile Subscriber Identity

3.1.5.2

Get HLRMWINFO Response

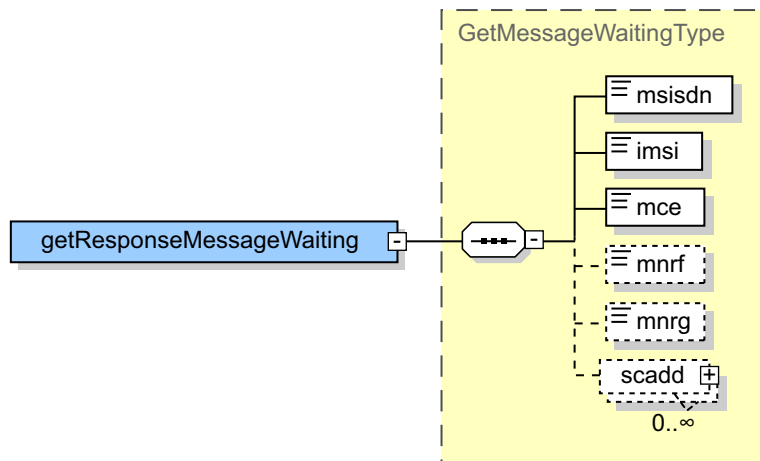


Figure 6 Get HLRMWINFO Response

Table 11 Get HLRMWINFO Response

Parameter	Type	Occurrence	Description
msisdn	Digit string 5-15 digits. Each digit is 0-9.	Mandatory	Mobile Subscriber ISDN Number (MSISDN)
imsi	Digit string 6-15 digits. Each digit is 0-9.	Mandatory	International Mobile Subscriber Identity
mce	unsignedByte Values are 0-1.	Mandatory	Mobile station memory capacity exceeded. It can only be one of the following two values: 0: NO, indicates that the mobile station memory is not exceeded. 1: YES, indicates that the mobile station memory capacity is exceeded.



Parameter	Type	Occurrence	Description
mnrf	unsignedByte Values are 0-1	Optional	Mobile station not reachable. It can only be one of the following two values: 0: NREACH, mobile station is not reachable through the MSC. 1: REACH, mobile station is reachable.
mnrng	unsignedByte Values are 0-1	Optional	Mobile station not reachable through the SGSN. It can only be one of the following two values: 0: NREACH, mobile station is not reachable through the MSC. 1: REACH, mobile station is reachable.
scadd	String expressed as <na>-<ai> <na> is Nature of Address, and can have value 3 for National and 4 for International. <ai> is address information; digit string with acceptable characters 0-9.	Optional	Service Center (SC) Address.

3.1.5.3

Examples

```
<ns:Get xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
  <ns:MOType xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
    MessageWaiting@http://schemas.ericsson.com/ema/UserProvisioning/
    HlrMw/</ns:MOType>
  <ns:MOId xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
    <msisdn xmlns="http://schemas.ericsson.com/ema/
    UserProvisioning/HlrMw/">310013700020070</msisdn>
  </ns:MOId>
</ns:Get>
```

Example 23 Get HLRMWINFO Request Message

All service center addresses contained in the message waiting data list corresponding to the subscriber whose MSISDN is 310013700020070 are printed.



```
<GetResponse xmlns="http://schemas.ericsson.com/cai3gl.2/">
  <MOAttributes>
    <getResponseMessageWaiting:getResponseMessageWaiting
      imsi="234113700020070" msisdn="310013700020070"
      xmlns="http://schemas.ericsson.com/ema/UserProvisioning/HlrMw/"
      xmlns:getResponseMessageWaiting="http://
        schemas.ericsson.com/ema/UserProvisioning/HlrMw/">
      <msisdn>310013700020070</msisdn>
      <imsi>234113700020070</imsi>
      <mce>1</mce>
      <mnrf>1</mnrf>
      <mnrg>0</mnrg>
      <scadd>
        <scaddress>4-1234567</scaddress>
      </scadd>
      <scadd>
        <scaddress>4-49172490</scaddress>
      </scadd>
      <scadd>
        <scaddress>3-19172490</scaddress>
      </scadd>
    </getResponseMessageWaiting:getResponseMessageWaiting>
  </MOAttributes>
</GetResponse>
```

Example 24 Get HLRMWINFO Response Message

3.2 Composite Parameter Definitions

3.2.1 Subscriber Data

For possible Subscriber Data elements and their sequence, see Table 12, Table 13, Table 14, and Table 15.

If the specific Subscriber Data argument is a simple type element, it just has a value of this argument instead of the parameters of SubscriberType shown in Table 16.

Table 12 Subscriber Data

Element Name		Type	Occurrence	Description
nam		SubscriberType For SubscriberType, see Figure 7 and Table 16.	Optional	Network Access Mode
	prov			Indicate the provision state of the service. prov: Integer (0-2) 0 = both non-GPRS and GPRS 1 = non-GPRS only 2 = GPRS only
	keep	Integer 0-1 0 = Do not keep subscriber data, default value. 1 = Keep subscriber data.	Optional	Retain/Not retain subscriber data related to the network, to which access is not allowed.



Element Name		Type	Occurrence	Description
baic		SubscriberType	Optional	Barring of All Incoming Calls
	provisionState			
	activationState			
	ts10			
	ts20			
	ts60			
	tsd0			
	bs20			
	bs30			
baoc		SubscriberType	Optional	Barring of All Outgoing Calls
	The same as baic			
boic		SubscriberType	Optional	Barring of all Outgoing International Calls Excluded in GSM1900
	The same as baic			
bicro		SubscriberType	Optional	Barring of all Incoming Calls when Roaming Outside the home PLMN country Excluded in GSM1900
	The same as baic			
boiexh		SubscriberType	Optional	Barring of all Outgoing International calls Except those directed to the Home Excluded in GSM1900
	The same as baic			
bic		SubscriberType	Optional	Barring of all Incoming Calls Includes the services BAIC and BICRO.
	The same as baic			
boc		SubscriberType	Optional	Barring of all Outgoing Calls Includes the services BAOC, BOIC, and BOIEXH.
	The same as baic			
bac		SubscriberType	Optional	Baring of All Calls Includes the services BAIC, BAOC, BICRO, BOIC, and BOIEXH.
	The same as baic			



Element Name		Type	Occurrence	Description
cfu		SubscriberType	Optional	Call Forwarding Unconditional
	provisionState			
	activationState			
	fnum			
	subAddress			
	ofa			
	keep			
	ts10			
	ts60			
	tsd0			
	bs20			
	bs30			
cfb		SubscriberType	Optional	Call Forwarding on mobile subscriber Busy
	The same as cfu			
cfnrc		SubscriberType	Optional	Call Forwarding on mobile subscriber Not Reachable
	The same as cfu			
cfnry		SubscriberType	Optional	Call Forwarding on No Reply
	provisionState			
	activationState			
	fnum			
	noReplyTime			
	subAddress			
	ofa			
	keep			
	ts10			
	ts60			
	tsd0			
	bs20			
	bs30			
cfs		SubscriberType	Optional	All Call Forwarding Services Includes the services CFU, CFNRC, CFNRY, and CFB.
	The same as cfnry			



Element Name		Type	Occurrence	Description
ccfs		SubscriberType	Optional	All Conditional Call Forwarding Services Includes the services CFB, CFNRC, and CFNRY.
	The same as cfnry			
allss		SubscriberType	Optional	All Supplementary Services Includes the services BAIC, BAOC, BICRO, BOIC, BOIEXH, CFU, CFNRC, CFNRY, CFB, CAW, DCF, and SPN.
	provisionState			
	activationState			
dcf		SubscriberType	Optional	Default Call Forwarding
	The same as cfnry			
spn		SubscriberType	Optional	Single Personal Number
	provisionState			
	activationState			
	fnum			
	ofa			
	ts10			
caw		SubscriberType	Optional	Call Waiting
	provisionState			
	activationState			
	ts10			
	ts60			
	tsd0			
	bs20			
	bs30			
acc		unsignedByte Values are 0-2.	Optional	Account Code
aoc		unsignedByte Values are 0-2.	Optional	Advise of Charge
bs21		unsignedByte Values are 0-1.	Optional	Data circuit asynchronous 300 baud
bs22		unsignedByte Values are 0-1.	Optional	Data circuit asynchronous 1200 baud
bs23		unsignedByte Values are 0-1.	Optional	Data circuit asynchronous 1200-75 baud
bs24		unsignedByte Values are 0-1.	Optional	Data circuit asynchronous 2400 baud



Element Name	Type	Occurrence	Description
bs25	unsignedByte Values are 0-1.	Optional	Data circuit asynchronous 4800 baud
bs26	unsignedByte Values are 0-1.	Optional	Data circuit asynchronous 9600 baud
bs2f	unsignedByte Values are 0-5.	Optional	Fall-back asynchronous bearer service
bs2g	unsignedByte Values are 0-1.	Optional	General asynchronous bearer service
bs31	unsignedByte Values are 0-1.	Optional	General asynchronous bearer service
bs32	unsignedByte Values are 0-1.	Optional	Data circuit synchronous 2400 baud
bs33	unsignedByte Values are 0-1.	Optional	Data circuit synchronous 4800 baud
bs34	unsignedByte Values are 0-1.	Optional	Data circuit synchronous 9600 baud
bs3f	unsignedByte Values are 0-4.	Optional	Fall-back synchronous bearer service
bs3g	unsignedByte Values are 0-1.	Optional	General synchronous bearer service
capl	unsignedByte Values are 0-15.	Optional	Channel Allocation Priority Level
cat	string Values are 0-13, 15, 224-254.	Optional	Subscriber Category
clip	unsignedByte Values are 0-1.	Optional	Calling Line Identification Presentation
clir	unsignedByte Values are 0-1.	Optional	Calling Line Identification Restriction
colp	unsignedByte Values are 0-1.	Optional	Connected Line Identification Presentation
colr	unsignedByte Values are 0-1.	Optional	Connected Line Identification Restriction
dbsg	unsignedByte Values are 1, 3, 5, 6.	Optional	Default Basic Service Group
hold	unsignedByte Values are 0-1.	Optional	Call Hold
ici	unsignedByte Values are 0-1.	Optional	Immediate Call Itemization



Element Name	Type	Occurrence	Description
mmint	unsignedByte Values are 0-1.	Optional	Mobility management Intelligent Network (IN) triggering subscription data.
mpty	unsignedByte Values are 0-1.	Optional	Multi-Party service
oba	unsignedByte Values are 0-1.	Optional Only valid in Create and Set operation.	All incoming and outgoing calls
obi	unsignedByte Values are 0-2.	Optional	All Incoming calls
obo	unsignedByte Values are 0-4.	Optional	All Outgoing calls
obopre	unsignedByte Values are 0-1.	Optional	Outgoing Premium Rate calls (Entertainment)
obopri	unsignedByte Values are 0-1.	Optional	Outgoing Premium Rate calls (Information)
obrf	unsignedByte Values are 0-5.	Optional	Operator Determined Barring of Registration of Forwarded-to number
obssm	unsignedByte Values are 0-1.	Optional	Supplementary Service Management
obr	unsignedByte Values are 0-99. Standard HLR only supports 0-3.	Optional	Roaming
obzi	unsignedByte Values are 0-1.	Optional	Incoming Inter-Zonal calls
obzo	unsignedByte Values are 0-5.	Optional	Outgoing Inter-Zonal calls
oin	unsignedByte Values are 0-1.	Optional	Originating Intelligent Network
oick	unsignedShort Values are 0-999.	Optional	Originating Intelligent Network Category Key
osb1	unsignedByte Values are 0-1.	Optional	Specific Barring in HPMLN (Type 1)
osb2	unsignedByte Values are 0-1.	Optional	Specific Barring in HPMLN (Type 2)
osb3	unsignedByte Values are 0-1.	Optional	Specific Barring in HPMLN (Type 3)
osb4	unsignedByte Values are 0-1.	Optional	Specific Barring in HPMLN (Type 4)



Element Name	Type	Occurrence	Description
ofa	unsignedShort Values are 0-511.	Optional	Origin for Forwarded-to number Analysis
red ⁽¹⁾	unsignedByte Values are 0-1.	Optional	Redundant Condition (0-1) 0 = primary 1 = redundant Incompatible when redmch is set to 1
redmch ⁽¹⁾	unsignedByte Values are 1-2.	Optional	Redundancy Mechanism (1-2) 1 = redundant condition assigned using the Number Series Analysis function 2 = redundant condition assigned not using the Number Series Analysis function
regser	unsignedShort Values are 0-65534.	Optional	Regional Service
pici	String, 1-5 digits Format: a[-b] a: 0-255 b: 0-2	Optional	Primary Interexchange Carrier Identity (highest priority) Excluded in GSM1900
pici2	String, 1-5 digits Format: a[-b] a: 0-255 b: 0-2	Optional	Primary Interexchange Carrier Identity (medium priority)
pici3	String, 1-5 digits Format: a[-b] a: 0-255 b: 0-2	Optional	Primary Interexchange Carrier Identity (lowest priority)
pwd	String, 4 digits Values are 0000-9999. Barred status: BARRED (only Get)	Optional	Subscriber Password
shplmn ⁽¹⁾	unsignedByte Values are 0-31.	Optional	Subscriber Home PLMN
socb	unsignedByte Values are 0-1, 0-3 (when displaying a subscriber)	Optional	Control Of Barring services
socfb	unsignedByte Values are 0-3.	Optional	Call Forwarding on mobile subscriber Busy
socfrc	unsignedByte Values are 0-1.	Optional	Call Forwarding on mobile subscriber not reachable

Element Name	Type	Occurrence	Description
socfry	unsignedByte Values are 0-3.	Optional	Call Forwarding on no Reply
socfu	unsignedByte Values are 0-1.	Optional	Call Forwarding Unconditional
soclip	unsignedByte Values are 0-1.	Optional	Calling Line Identification Presentation
soclr	unsignedByte Values are 0-2.	Optional	Calling Line Identification Restriction
socolp	unsignedByte Values are 0-1.	Optional	Connected Line Identification Presentation Excluded in GSM1900
sodcf	unsignedByte Values are 0-3.	Optional	Default Call Forwarding
soplcs	unsignedByte Values are 0-1.	Optional	Subscription option for LCS
sosdcf	unsignedByte Values are 1-7.	Optional	Supplementary Default Call Forwarding
stype	unsignedByte Values are 0-127.	Optional	Subscription Type
tick	unsignedShort Values are 0-999.	Optional	Terminating Intelligent Network Category Key
tin	unsignedByte Values are 0-1.	Optional	Terminating Intelligent Network
ts11	unsignedByte Values are 0-1.	Optional	Telephony
ts21	unsignedByte Values are 0-1.	Optional	Short message MT/PP
ts22	unsignedByte Values are 0-1.	Optional	Short message MO/PP
ts61	unsignedByte Values are 0-1.	Optional	Alternative speech/fax group 3 transparent
ts62	unsignedByte Values are 0-1.	Optional	Automatic facsimile group 3

(1) This parameter is only applicable for monolithic HLR.



Table 13 Subscriber Data

Element Name	Type	Occurrence	Description
vlrData	String	Optional Only valid in the response of Get operation.	Visitor Location Register (VLR) address values: UNKNOWN, RESTRICTED, BARRED 3-<nationalVLR address> (up to 16 digits) 4-<internationalVLR address>(up to 16 digits)
emlpp	unsignedByte Values are 0-1.	Optional	Enhanced Multi-Level Precedence and Preemption
demlpp	unsignedByte Values are 0-6.	Optional	Default Enhanced Multi-Level Precedence and Preemption
memlpp	unsignedByte Values are 0-6.	Optional	Enhanced Multi-Level Precedence and Preemption. Maximum priority level.
tsmo	unsignedByte Values are 0-1: 0 = transfer of SM by the MSC 1 = transfer of SM by the SGSN	Optional	Transfer of Short Message Option
rsa	unsignedByte Values are 0-128. Since HLR UDC 11B, this value range has been changed to 0-4096.	Optional	Roaming Service Area
obp	unsignedByte Values are 0-3.	Optional	Operator determined Barring of Packet oriented services
ect	unsignedByte Values are 0-1.	Optional	Explicit Call Transfer
obct	unsignedByte Values are 0-4.	Optional	Operator Barring of invocation of Call Transfer
obdct	unsignedByte Values are 0-1.	Optional	Operator Barring of invocation of Call Transfer where both calls are charged to the served subscriber
obmct	unsignedByte Values are 0-1.	Optional	Operator Barring of invocation of Call Transfer if there is already one ongoing transferred call for the served subscriber in the serving MSC/VLR

Element Name	Type	Occurrence	Description
schar	String, 1-7 digits Format: <i>pdppl</i> [- <i>pdpgb</i>] <i>pdppl</i> = 0–15 <i>pdpgb</i> = 0–4095	Optional	GPRS Subscriber Charging Characteristic
dcsi	unsignedByte Values are 0–1 ⁽¹⁾ .	Optional Only valid in the response of Get operation.	Dialed services CAMEL Subscription Information
gprcsi	unsignedByte Values are 0–1 ⁽¹⁾ .	Optional Only valid in the response of Get operation.	GPRS CAMEL Subscription Information
ocsi	unsignedByte Values are 0–1 ⁽¹⁾ .	Optional Only valid in the response of Get operation.	Originating CAMEL Subscription Information
mcsi	unsignedByte Values are 0–1 ⁽¹⁾ .	Optional Only valid in the response of Get operation.	Mobility management CAMEL Subscription Information
osmcsi	unsignedByte Values are 0–1 ⁽¹⁾ .	Optional Only valid in the response of Get operation.	Originating SMS CAMEL Subscription Information
tcsi	unsignedByte Values are 0–1 ⁽¹⁾ .	Optional Only valid in the response of Get operation.	Terminating CAMEL Subscription Information
tsmcsi	unsignedByte Values are 0–1 ⁽¹⁾ .	Optional Only valid in the response of Get operation.	Terminating SMS CAMEL Subscription Information
vtcsi	unsignedByte Values are 0–1 ⁽¹⁾ .	Optional Only valid in the response of Get operation.	Visited MSC Terminating CAMEL Subscription Information
tsd1	unsignedByte Values are 0–1.	Optional Only valid in the response of Get operation.	Auxiliary telephony



Element Name	Type	Occurrence	Description
asl	unsignedByte Values are 0-1: 0 = not provided 1 = provided	Optional Only valid in the response of Get operation.	Semi-Autonomous Self-Location Mobile Originating LCS Class
bsl	unsignedByte Values are 0-1: 0 = not provided 1 = provided	Optional Only valid in the response of Get operation.	Basic Self-Location Mobile Originating LCS Class
ttp	Values are 0-1: 0 = not provided 1 = provided	Optional Only valid in the response of Get operation.	Transfer to Third-Party Mobile Originating LCS Class
teardown	unsignedByte	Optional Only valid in Set operation	Call Teardown value: 1
smshr1	String, 1-6 digits Format is v1 [-v2] v1 = 0-128 v2 = 0-63	Optional	SMS Home Routing screening 1
smshr2	String, 1-6 digits Format is v1 [-v2] v1 = 0-128 v2 = 0-63	Optional	SMS Home Routing screening 2

(1) This parameter is printed only if its value is 1.

Table 14 Subscriber Data

Element Name	Type	Occurrence	Description
prbt	unsignedByte Values are 0-1: 0 for disabling PRBT support 1 for enabling PRBT support	Optional	Personal Ring Back Tone
acr	unsignedByte Values are 0-2: 0 = not provided 1 = provided not active 2 = provided and active	Optional	Anonymous Call Rejection
rtca	unsignedByte Values are 0-1.	Optional	Real Time Charging for All
mca	unsignedByte Values are 0-1.	Optional	Mobile Charging Area.

Element Name	Type	Occurrence	Description
msim	unsignedByte Values are 0-1.	Optional	Multiple SIM active
smspam	unsignedByte Values are 0-1.	Optional	SMS Spam service
ist	unsignedByte Values are 0, 15-255: 0 = subscriber not under IST condition. 15-255 = subscriber under IST condition, IST alert timer in minutes.	Optional	Immediate Service Termination
istcso	unsignedByte Values are 0-1: 0 = call allowed when the IST Alert message is received from G(MSC-VLR) 1 = call not allowed when the IST Alert message is received from G(MSC-VLR)	Optional	IST Call Subscription Option
istgso	unsignedByte Values are 0-1: 0 = Service allowed when IST is not supported in the interrogated GMSC 1 = only Operator Determined Barring of all incoming calls when IST is not supported in the interrogated GMSC.	Optional	IST GMSC Subscription Option
istvso	unsignedByte Values are 0-1: 0 = service allowed when IST is not supported in the serving VLR 1 = network induced activation of supplementary service Barring of All Outgoing Calls (BAOC) performed when IST is not supported in the serving VLR.	Optional	IST VLR Subscription Option

Table 15 *Subscriber Data*

Element Name	Type	Occurrence	Description
ard	unsignedByte Values are 0-2: 0 = UTRAN/GERAN access allowed 1 = UTRAN access not allowed 2 = GERAN access not allowed	Optional	Access Restriction Data
rdp	unsignedByte Values are 0-32: 0 = No profile assigned 1-32 = Roaming Distribution Profile	Optional	Roaming Distribution Profile



Element Name	Type	Occurrence	Description
obcc	unsignedByte Values are 0-1: 0 = not active 1 = active	Optional	Operator determined Barring of Collect Call dialling automatic call
mrddpid	String, 1-5 digits Format: [<i>Redundancy Group</i>]- <i>HLR identity</i> Redundancy Group: 1-15 (This parameter is used only when the redundancy node is in N+1 HLR Redundancy.) HLR identity: 1-32 Applicable for HLR in N+1 HLR Redundancy cluster only.	Optional Only valid in the response of Get operation.	Multiple Redundancy Primary HLR Identity, which specifies the identity of the primary HLR for a redundant subscriber.
mrddmch	unsignedByte Values are 1-2: 1 = redundant condition assigned using the Number Series Analysis function 2 = redundant condition assigned not using the Number Series Analysis function	Optional	Multiple Redundancy Mechanism for N+1 redundancy. Applicable for HLR in N+1 HLR Redundancy cluster only.
ora	unsignedByte Values are 0-255.	Optional Supported since HLR UDC 11B	Origin for Restriction in number series Analysis
cbnf	unsignedByte Values are 0-1: 0 = Notification not required 1 = Notification required	Optional	Call Barring Notification Flag
cfnf	unsignedByte Values are 0-1: 0 = Notification not required 1 = Notification required	Optional	Call Forwarding Notification Flag
chnf	unsignedByte Values are 0-1: 0 = Notification not required 1 = Notification required	Optional	Call Hold Notification Flag
clipnf	unsignedByte Values are 0-1: 0 = Notification not required 1 = Notification required	Optional	Calling line Identification Presentation Notification Flag



Element Name	Type	Occurrence	Description
clirnf	unsignedByte Values are 0-1: 0 = Notification not required 1 = Notification required	Optional	Calling Line Identification Restriction Notification Flag
cwnf	unsignedByte Values are 0-1: 0 = Notification not required 1 = Notification required	Optional	Call Waiting Notification Flag
dcsinf	unsignedByte Values are 0-1: 0 = Notification not required 1 = Notification required	Optional	Dialled Services CAMEL Subscription Information Notification Flag
ectrf	unsignedByte Values are 0-1: 0 = Notification not required 1 = Notification required	Optional	Explicit Call Transfer Notification Flag
gprscsinf	unsignedByte Values are 0-1: 0 = Notification not required 1 = Notification required	Optional	General Packet Radio Service (GPRS) CAMEL Subscription information Notification Flag
mcsinf	unsignedByte Values are 0-1: 0 = Notification not required 1 = Notification required	Optional	Mobility Management CAMEL Subscription Information Notification Flag
ocsinf	unsignedByte Values are 0-1: 0 = Notification not required 1 = Notification required	Optional	Originating CAMEL Subscription Information Notification Flag
odbnf	unsignedByte Values are 0-1: 0 = Notification not required 1 = Notification required	Optional	Operator Determined Barring Notification Flag
osmcsinf	unsignedByte Values are 0-1: 0 = Notification not required 1 = Notification required	Optional	Originating Short Message Service (SMS) CAMEL Subscription Information Notification Flag



Element Name	Type	Occurrence	Description
tcsinf	unsignedByte Values are 0-1: 0 = Notification not required 1 = Notification required	Optional	Terminating CAMEL Subscription Information Notification Flag
tifcsinf	unsignedByte Values are 0-1: 0 = Notification not required 1 = Notification required	Optional	Translation Information Flag to CAMEL Subscription Information Notification Flag
tsmcsinf	unsignedByte Values are 0-1: 0 = Notification not required 1 = Notification required	Optional	Terminating SMS CAMEL Subscription Information Notification Flag
vtcsinf	unsignedByte Values are 0-1: 0 = Notification not required 1 = Notification required	Optional	Visited MSC Terminating CAMEL Subscription Information Notification Flag
dcsist	unsignedByte Values are 0-1 ⁽¹⁾ : 0 = Not Active 1 = Active	Optional	Dialled Services CAMEL Subscription Information Activation State
gprscsist	unsignedByte Values are 0-1 ⁽¹⁾ : 0 = Not Active 1 = Active	Optional	General Packet Radio Service (GPRS) CAMEL Subscription Information Activation State
mcsist	unsignedByte Values are 0-1 ⁽¹⁾ : 0 = Not Active 1 = Active	Optional	Mobility Management CAMEL Subscription Information Activation State
ocsist	unsignedByte Values are 0-1 ⁽¹⁾ : 0 = Not Active 1 = Active	Optional	Originating CAMEL Subscription Information Activation State
osmcsist	unsignedByte Values are 0-1 ⁽¹⁾ : 0 = Not Active 1 = Active	Optional	Originating Short Message Service (SMS) CAMEL Subscription Information Activation State



Element Name	Type	Occurrence	Description
tcsist	unsignedByte Values are 0-1 ⁽¹⁾ : 0 = Not Active 1 = Active	Optional	Terminating CAMEL Subscription Information Activation State
tsmsist	unsignedByte Values are 0-1 ⁽¹⁾ : 0 = Not Active 1 = Active	Optional	Terminating SMS CAMEL Subscription Information Activation State
vtcsist	unsignedByte Values are 0-1 ⁽¹⁾ : 0 = Not Active 1 = Active	Optional	Visited MSC terminating CAMEL Subscription Information Activation State
ics	unsignedByte Values are 0-1 0 = Not Provided 1 = Provided	Optional	IMS Centralized Services (ICS) indicator

(1) Parameter is printed only if corresponding xCSI is provided in HLR CAMEL Subscription Information or HLR CAMEL Profile.

Each Subscriber Data parameter, either in a message request or in a message response, is to be made up of an identifier followed by one or more attributes (for example, provision status, Basic Service Group, activation status, Forwarded-to number), defining the value of the parameter.

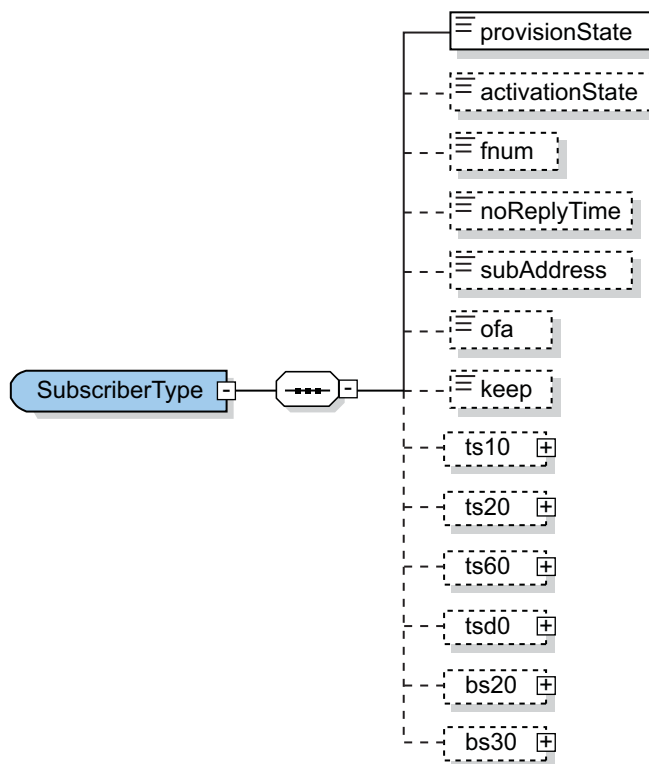


Figure 7 Subscriber Data Parameter

Table 16 Subscriber Data Parameter

Parameter	Type	Occurrence	Description
provisionState	unsignedByte Values are 0-1.	Mandatory	Provision state of a service.
activationState	unsignedByte Values are 0-2.	Optional	Activation state of a service.
fnum	String 0-15 characters. Values are 0-9, a-z, A-Z, *, and #.	Optional	Forwarded-to Number applicable for call forwarding services.
noReplyTime	unsignedByte	Optional	No-reply-time, only applicable for the service 'Call Forwarding on No Reply' (CFNRY).
subAddress	String Expressed as a-b: a = 0.1 or 2 b = 2-40 hexadecimal octets in pair	Optional	Subaddress, can be added to the Forwarded-to number.
ofa	unsignedShort Values are 0-511.	Optional	Origin Forward to number Analysis.
keep	unsignedByte	Optional	Keeps the original Forwarded-to number. Only can be used when the value of activationState is 0.

Parameter	Type	Occurrence	Description
ts10	BsgType	Optional	All speech transmission services
ts20	BsgType	Optional	Short Message
ts60	BsgType	Optional	Facsimile Basic Service Group
tsd0	BsgType	Optional	Auxiliary speech services
bs20	BsgType	Optional	All Data Circuit Asynchronous
bs30	BsgType	Optional	All Data Circuit Synchronous

All possible Subscriber Data parameter together with their applicable values can be found in Table 12, Table 13, Table 14, and Table 15.

If the specific Subscriber Data argument is a simple type element, it just has a value instead of the parameters as shown in the previous table.

The following figure shows the parameter defining BsgType data:

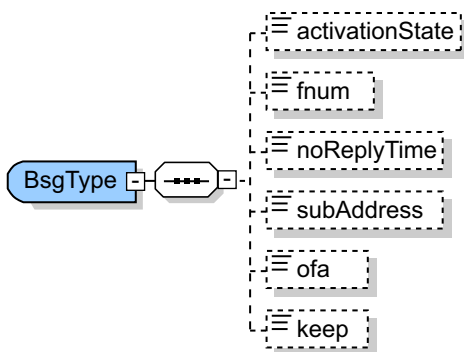


Figure 8 BSG Data Parameter

Table 17 BSG Data Parameter

Parameter	Type	Occurrence	Description
activationState	unsignedByte Values are 0-2.	Optional	Activation state of a service.
fnum	String	Optional	Forwarded-to Number applicable for call forwarding services.
noReplyTime	unsignedByte	Optional	No-reply-time, only applicable for the service 'Call Forwarding on No Reply' (CFNRY).
subAddress	String	Optional	Subaddress, can be added to the Forwarded-to number.
ofa	unsignedShort Values are 0-511.	Optional	Origin Forward to number Analysis.
keep	unsignedByte	Optional	Keeps the original Forwarded-to number. Only can be used when the value of activationState is 0.



3.2.1.1

Set Subscriber Data/Providing Services

- a If a Supplementary Service or Supplementary Service Group is only to be provided and not activated, only then its provision status is given. This deactivates the activated service and leaving it provided, for example:

```
<caw>
  <provisionState>1</provisionState>
</caw>
```

– provide call waiting, not activated.

```
<bic>
  <provisionState>1</provisionState>
</bic>
```

– provide barring of all incoming calls (baic) and barring of all incoming calls when roaming outside the home PLMN country (bicro), but not activated.

- b If the provision of a service or service group is being withdrawn, the service or service group cannot be activated or registered, for example:

```
<cfnry>
  <provisionState>0</provisionState>
</cfnry>
```

– do not provide cfnry.

```
<ccfs>
  <provisionState>0</provisionState>
</ccfs>
```

– do not provide cfb, cfnrc, and cfnry.

3.2.1.2

Activate Supplementary Services or Supplementary Services Group

- a Supplementary Services or Supplementary Service Groups can be activated independently for each Basic Service Group (BSG) or for all subscribed BSGs, for example:

```
<baic>
  <provisionState>1</provisionState>
  <ts10>
    <activationState>1</activationState>
  </ts10>
</baic>
```

– provide and activate baic only for the speech transmission services in Basic Service Group.

- b If a service or service group is to be activated, the provision state can be provided or ignored. If no BSG is specified, the service is activated for all applicable BSGs, for example:

```
<baic>
  <provisionState>1</provisionState>
  <activationState>1</activationState>
</baic>
```

– provide and activate baic for all BSGs.

```

<cfs>
  <activationState>1</activationState>
  <fnum>12345678</fnum>
  <noReplyTime>15</noReplyTime>
  <subAddress>1-A0AFBE01C001</subAddress>
  <ofa>1</ofa>
  <ts10>
    <activationState>1</activationState>
    <fnum>123456</fnum>
  </ts10>
  <bs20>
    <activationState>1</activationState>
    <fnum>123456</fnum>
    <noReplyTime>10</noReplyTime>
    <subAddress>2-A0AFBE01C001</subAddress>
    <ofa>1</ofa>
  </bs20>
</cfs>

```

– activate `cfs` for BSG `ts10` and BSG `20`.

- c A service or service group can be activated for several BSGs at the same time by repeating the required attributes for the different BSG identifiers, for example:

```

<baic>
  <provisionState>1</provisionState>
  <ts10>
    <activationState>1</activationState>
  </ts10>
  <ts60>
    <activationState>1</activationState>
  </ts60>
</baic>

```

– provide and activate `baic` for the speech transmission services and facsimile transmission services in BSG.

```

<bic>
  <provisionState>1</provisionState>
  <ts10>
    <activationState>1</activationState>
  </ts10>
  <ts60>
    <activationState>1</activationState>
  </ts60>
</bic>

```

– provide `baic`, `bicro`, and activate `bic` for the speech transmission services and facsimile transmission services in BSG.

3.2.1.3 Register Forwarded-to Numbers

- a When activating (by registration) call forwarding services and single personal number Supplementary Service, a Forwarded-to number must be provided, for example:

```

<cfnc>
  <provisionState>1</provisionState>
  <ts10>
    <activationState>1</activationState>
    <fnum>46455381234</fnum>
  </ts10>
</cfnc>

```




– provide, activate, and register cfnc for Basic Service Group 'Speech transmission services' with forwarded-to number 491019120000.

It is also possible to supply a subaddress with the Forwarded-to number, which is of the format: *a-b* - where *a* is 0.1 or 2 and *b* is 2 – 40 characters (in octet pairs). Each character representing a hexadecimal value 0–9, A–F, for example:

```
<cfnc>
  <provisionState>1</provisionState>
  <activationState>1</activationState>
  <fnum>46455381234</fnum>
  <subAddress>1-0AFBE01C001A</subAddress>
</cfnc>
```

- b When activating (by registration) 'Call forwarding on no reply', a no-reply-time can be specified (5 s - 30 s in 5 s steps). If the no-reply-time is not given, then the HLR default no-reply-time are taken, for example:

```
<cfnc>
  <provisionState>1</provisionState>
  <activationState>1</activationState>
  <fnum>46455381234</fnum>
  <noReplyTime>20</noReplyTime>
</cfnc>
```

– a 20 sec. No-reply-time is set.

3.2.1.4

Origin for Forwarded-to Number Analysis

- a Each time a subscriber registers a forwarding-to-number, a check is performed in the HLR that this number is not restricted. Restricted numbers are those which are not allowed to be used for call forwarding, for example, the number to a police station:

```
<ofa>1</ofa>
```

– 1 is origin for forwarding-to number analysis. When parameter *ofa* is required, and has not been specified in the command, a value assigned as default to the mobile subscriber is used.

3.2.1.5

Deactivate/Keep Registration

- a A Supplementary Service or Supplementary Service Group can be explicitly deactivated for a certain Basic Service Group without the withdrawal of the service, for example:

```
<baic>
  <provisionState>1</provisionState>
  <ts10>
    <activationState>0</activationState>
  </ts10>
</baic>
```

- Deactivate *baic* only for Basic Service Group 'Speech transmission services' and leave it provided.

- b If no BSG is specified, the service is deactivated for all applicable BSGs, for example:

```
<baic>
  <provisionState>1</provisionState>
  <activationState>0</activationState>
</baic>
```

– deactivate BAIC for all applicable BSGs but leave it provided.

- c If a service is withdrawn it is automatically deactivated for all Basic Service Groups, for example:

```
<baic>
  <provisionState>0</provisionState>
</baic>
```

– do not provide BAIC and therefore deactivate.

- d Upon the deactivation of a Supplementary Service the registered forwarded-to number (and no-reply-time if applicable) is lost if it is not included in the deactivation request. When the service is to be reactivated it must be specified again, for example:

```
<cfnrc>
  <provisionState>1</provisionState>
  <ts10>
    <activationState>0</activationState>
  </ts10>
</cfnrc>
```

– deactivate cfnrc, the forwarded-to number is not kept.

```
<cfnrc>
  <provisionState>1</provisionState>
  <ts10>
    <activationState>1</activationState>
    <fnum>491019120000</fnum>
  </ts10>
</cfnrc>
```

– reactivate cfnrc, the Forwarded-to number must be specified again.

- e The forwarded-to number (and No-reply-time if applicable) are kept upon deactivation of a service, if the forwarded-to number is given in the deactivation command, for example:

```
<cfnrc>
  <provisionState>1</provisionState>
  <ts10>
    <activationState>0</activationState>
    <fnum>491019120000</fnum>
  </ts10>
</cfnrc>
```

– deactivate cfnrc but keep the forwarded-to number as 491019120000.

```
<cfnrc>
  <provisionState>1</provisionState>
  <ts10>
    <activationState>1</activationState>
  </ts10>
</cfnrc>
```



- activate cfncr again, using the “old” forwarded-to number.
- f There is another way to keep the Forwarded-to number upon deactivation of a service, if "keep" is given in the deactivation command, for example:

```
<cfncr>
  <provisionState>1</provisionState>
  <ts10>
    <activationState>0</activationState>
    <keep>1</keep>
  </ts10>
</cfncr>
```

- deactivate cfncr but keep the original forwarded-to number.

```
<cfncr>
  <provisionState>1</provisionState>
  <ts10>
    <activationState>1</activationState>
  </ts10>
</cfncr>
```

- activate cfncr again, using the "old" forwarded-to number.

3.2.1.6

Restrictions and Deviations

There are a number of Supplementary Service interactions possible in the network that is to be kept in mind when working with Subscriber Data. Interaction means that the activation or registration of service can be influenced by the provision/activation/registration of other Supplementary Services or the roaming of the mobile subscriber.

Furthermore, exceptional cases are:

allss The provision state of this service can only be provided, not provided, and ignored. The activation state can only be deactivated, for example:

```
<allss>
  <provisionState>1</provisionState>
  <activationState>0</activationState>
</allss>
```

Provided/deactivated

```
<allss>
  <provisionState>1</provisionState>
</allss>
```

Provided

```
<allss>
  <provisionState>0</provisionState>
</allss>
```

Not provided

**spn**

```
<allss>
  <activationState>0</activationState>
</allss>
```

Deactivated only

This service can only be activated or deactivated. Therefore it is not possible to keep the registered forwarded-to number. Allowed requests are:

```
<spn>
  <provisionState>0</provisionState>
</spn>
```

Deactivated

```
<spn>
  <activationState>0</activationState>
</spn>
```

Deactivated

```
<spn>
  <provisionState>1</provisionState>
  <activationState>1</activationState>
  <fnum>333344445555</fnum>
</spn>
```

Activated/registered

```
<spn>
  <activationState>1</activationState>
  <fnum>333344445555</fnum>
</spn>
```

Activated/registered**dcf**

This service can only be activated or deactivated. Therefore it is not possible to keep the registered forwarded-to number. Allowed requests are:

```
<dcf>
  <provisionState>0</provisionState>
</dcf>
```

Deactivated

```
<dcf>
  <activationState>0</activationState>
</dcf>
```

Deactivated

```
<dcf>
  <provisionState>1</provisionState>
  <ts10>
    <activationState>1</activationState>
    <fnum>222233334444</fnum>
  </ts10>
</dcf>
```

Activated/registered, for example:



```

<dcf>
  <provisionState>1</provisionState>
  <ts10>
    <activationState>1</activationState>
    <fnum>46455381233</fnum>
  </ts10>
  <ts60>
    <activationState>1</activationState>
    <fnum>46455381234</fnum>
  </ts60>
</dcf>

```

tsd1 The teleservice “Auxiliary Telephony” is automatically provided if a dual MSISDN is defined for a subscription. A dual number is an additional MSISDN with bc 1 associated to it. Therefore tsd1 cannot be provided, it is a ‘read-only’ subscriber data.

3.2.2 Profiles

All Subscriber Data excluding password, MSISDN, and IMSI can be set in a HLR profile. For Supplementary Services (for example, cfu) only the provision status can be set.

HLR GPRS Subscriber Data or HLR CAMEL Subscriber Data can be set into a HLR GPRS profile or a HLR CAMEL profile.

HLR GPRS Roaming Distribution Subscriber Data or HLR non-GPRS Roaming Distribution Subscriber Data can be set in a HLR GPRS Roaming Distribution profile or a HLR non-GPRS Roaming Distribution profile.

A GSM HLR has up to 8192 profiles. In earlier versions, a GSM HLR has up to 256 profiles. These profiles can be defined through the GSM HLR Administration application.

A GSM HLR has up to 8161 GPRS profiles and CAMEL profiles respectively. In earlier versions, a GSM HLR has up to 256 GPRS profiles and CAMEL profiles respectively. These profiles can be defined through the GSM HLR Administration application. Users can also use GPRS or CAMEL profile to define or modify a subscriber.

A GSM HLR has up to 255 gsmSCF profiles. These profiles can be defined through the GSM HLR Administration application. Users can also use gsmSCF profile to define or modify a subscriber.

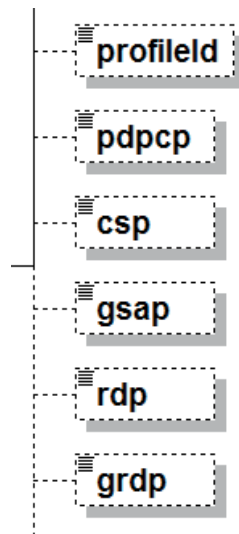


Figure 9 Profiles

Table 18 Profiles

Parameter	Type	Occurrence	Description
profileId	nonNegativeInteger Values are 0-8191.	Optional	Profile number,
pdpcp	nonNegativeInteger Values are 0-8160.	Optional	HLR GPRS Packet Data Protocol Context Profile number
csp	nonNegativeInteger Values are 0-8160.	Optional	CAMEL Subscription Profile number
gsap	nonNegativeInteger Values are 0-255.	Optional	gsmSCF Profile number
rdp	unsignedByte Values are 0-32 for a HLR.	Optional	HLR non-GPRS Roaming Distribution Profile number
grdp	unsignedByte Values are 0-32 for a HLR.	Optional	HLR GPRS Roaming Distribution Profile number

The use of profiles for creation and modification of subscriptions is highly recommended because the requests can then be executed much faster. The HLR profile data is copied to the subscription data within the HLR in one step. Without the HLR profile, Dynamic Activation sends at least one Multimedia Messaging Library (MML) command per argument (provided service) to the HLR.

Additional parameter in the message request is only necessary if they are not contained in the profile (for example, activation of a service), or if profile parameter values are to be replaced. Any additional argument generates additional MML commands, increasing the time needed to create or to modify a subscription in the HLR.



3.2.2.1

Use of Profiles When Creating a Subscriber

- a If a profile is used, in the service request to create a subscriber the profile data is copied. Assume Profile number 1 contains the following data:

ofa	1
cat	10
socb	1
caw	1
cfb	1
cfu	0

The request to create a subscriber with profile number 1 can be:

```
<ns:Create xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
  <ns:MOType xmlns:ns="http://schemas.ericsson.com/
    cai3g1.2/">Subscription@http://schemas.ericsson.com/ema/
    UserProvisioning/GsmHlr/</ns:MOType>
  <ns:MOId xmlns:ns="http://schemas.ericsson.com/
    cai3g1.2/">
    <msisdn xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">46455381234</msisdn>
    <imsi xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">12345678912345</imsi>
  </ns:MOId>
  <ns:MOAttributes xmlns:ns="http://schemas.ericsson.com/
    cai3g1.2/">
    <createSubscription xmlns="http://schemas.ericsson.com/
      ema/UserProvisioning/GsmHlr/" msisdn="46455381234"
      imsi="12345678912345">
      <msisdn>46455381234</msisdn>
      <imsi>12345678912345</imsi>
      <profileId>1</profileId>
    </createSubscription>
  </ns:MOAttributes>
</ns:Create>
```

Hence, a request to display the Subscriber Data return:

```
<GetResponse>
  <MOAttributes>
    <getResponseSubscription>
      <msisdn>46455381234</msisdn>
      <imsi>12345678912345</imsi>
      <cat>10</cat>
      <caw>
        <provisionState>1</provisionState>
      </caw>
      <cfb>
        <provisionState>1</provisionState>
        <ts10>
          <activationState>0</activationState>
        </ts10>
      </cfb>
      <cfu>
        <provisionState>0</provisionState>
      </cfu>
      <ofa>1</ofa>
      <socb>1</socb>
    </getResponseSubscription>
  </MOAttributes>
</GetResponse>
```

- b Profile number 0 is the default profile in the HLR. When a subscriber is defined in the HLR, all the services and Subscriber Data specified in profile 0 are allocated if no profile is specified in the request.

Note: Exercise with great care when changing profile number 0, since a Create operation always uses profile number 0 if no other profile is selected. This can cause operations like copying of old subscriptions (for example, IMSI Changeover) to generate unexpected result.

- c To minimize the time required for defining a subscriber, only parameters specifying different data to that in the relevant HLR profile is to be included when creating a subscriber.

3.2.2.2 Use of Profiles When Setting a Subscriber

- a A profile can also be specified in a subscriber data setting request (using operation Set). Thus, the profile data are copied to the subscription.
- b There is no default profile for a setting request: If no profile is shown, none are used.
- c If a profile is used in a subscription setting request, then all previously assigned services and Subscriber Data are reset, excluding the subscriber password.

Note: This means that all services are deactivated and previously defined Forwarded-to numbers are lost.

- d Because of the fact that the profile data is copied when it is used, there is no coupling between profile and subscription after the operation. This means that already created/modified subscribers cannot be affected by an updated profile.

3.2.3 Additional MSISDN

The HLR uses several MSISDNs called “Additional MSISDNs” (AMISDNs), so that each of them are uniquely associated with a specific Bearer Capability (BC). Up to 15 AMISDNs can be defined per subscription. Each of them has an associated BC. AMISDNs can be defined and deleted but not modified for a certain subscriber.



3.2.3.1 Create Additional MSISDNs

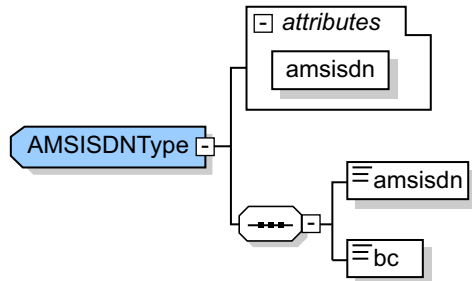


Figure 10 Create Additional MSISDNs

Table 19 Create Additional MSISDNs

Parameter	Type	Occurrence	Description
amsisdn	Digit string 5-15 digits. Each digit is 0-9.	Mandatory	Additional MSISDN
bc	unsignedShort Values are 0, 1, 2, 3, 8-65534, must be defined in the HLR.	Mandatory	Bearer Capability number

- a AMSISDN data can be defined with the same message request to create a subscriber, for example:

```
<ns:Create xmlns:ns="http://schemas.ericsson.com/
cai3g1.2/">
  <ns:MOType>Subscription@http://schemas.ericsson.com/
ema/UserProvisioning/GsmHlr/</ns:MOType>
  <ns:MOId>
    <msisdn xmlns="http://schemas.ericsson.com/ema/
UserProvisioning/GsmHlr/">46455381234</msisdn>
    <imsi xmlns="http://schemas.ericsson.com/ema/
UserProvisioning/GsmHlr/">12345678933333</imsi>
  </ns:MOId>
  <ns:MOAttributes>
    <createSubscription xmlns="http://schemas.ericsson.com/
ema/UserProvisioning/GsmHlr/" xmlns:cai3g="http://
schemas.ericsson.com/cai3g1.2/" xmlns:xsi="http://
www.w3.org/2001/XMLSchema-instance"
msisdn="46455381234" imsi="12345678933333">
      <msisdn>46455381234</msisdn>
      <imsi>12345678933333</imsi>
      <profileId>1</profileId>
      <amsisdn amsisdn="46455381222">
        <amsisdn>46455381222</amsisdn>
        <bc>0</bc>
      </amsisdn>
      <amsisdn amsisdn="46455381223">
        <amsisdn>46455381223</amsisdn>
        <bc>10</bc>
      </amsisdn>
    </createSubscription>
  </ns:MOAttributes>
</ns:Create>
```

Creates a subscriber and defines the AMSISDN 46455381222 associated with Bearer Capability number 0 and the AMSISDN 46455381223 associated with Bearer Capability number 10 for the new subscriber.

Note: The Bearer Capability which is to be associated with an AMSISDN must be already defined in the HLR. The value range for GSM Bearer Capabilities is 0, 1, 2, 3, 8-65534. The BC number 1 is predefined and reserved for the teleservice 'Auxiliary Speech'. BC number 8 and number 9 are predefined and reserved for the teleservice 'Automatic Facsimile group 3'. The BC number 2 is used to define a dual subscription and BC number 3 is used to change the master subscription in a dual subscription that is defined previously.

3.2.3.2 Delete Additional MSISDNs

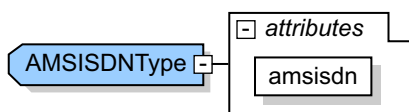


Figure 11 Delete Additional MSISDNs

Table 20 Delete Additional MSISDNs

Parameter	Type	Occurrence	Description
amsisdn	Digit string 5-15 digits. Each digit is 0-9.	Mandatory	Additional MSISDN

- a AMSISDNs can be deleted with the message request to modify a subscriber, for example:

```
<ns:Set xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
  <ns:MOType>Subscription@http://schemas.ericsson.com/ema/
    UserProvisioning/GsmHlr/</ns:MOType>
  <ns:MOId>
    <msisdn xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">46455381234</msisdn>
  </ns:MOId>
  <ns:MOAttributes>
    <setSubscription xmlns="http://schemas.ericsson.com/
      ema/UserProvisioning/GsmHlr/" xmlns:cai3g=
        "http://schemas.ericsson.com/cai3g1.2/" xmlns:xsi=
        "http://www.w3.org/2001/XMLSchema-instance" msisdn=
        "46455381234">
      <amsisdn amsisdn="46455381222" xsi:nil="true"/>
      <amsisdn amsisdn="46455381223" xsi:nil="true"/>
    </setSubscription>
  </ns:MOAttributes>
</ns:Set>
```

Both AMSISDNs for the subscription are deleted.

- b It is possible to delete and create AMSISDNs with the same message request, for example:

```
<ns:Set xmlns:ns="http://schemas.ericsson.com/cai3gl.2/">
  <ns:MOType>Subscription@http://schemas.ericsson.com/ema/
    UserProvisioning/GsmHlr/</ns:MOType>
  <ns:MOId>
    <msisdn xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">46455381234</msisdn>
  </ns:MOId>
  <ns:MOAttributes>
    <setSubscription xmlns="http://schemas.ericsson.com/
      ema/UserProvisioning/GsmHlr/" xmlns:cai3g=
        "http://schemas.ericsson.com/cai3gl.2/" xmlns:xsi=
          "http://www.w3.org/2001/XMLSchema-instance" msisdn=
            "46455381234">
      <amsisdn amsisdn="46455381222" xsi:nil="true"/>
      <amsisdn amsisdn="46455381223" xsi:nil="true"/>
      <amsisdn amsisdn="46455381225">
        <amsisdn>46455381225</amsisdn>
        <bc>25</bc>
      </amsisdn>
      <amsisdn amsisdn="46455381226">
        <amsisdn>46455381226</amsisdn>
        <bc>26</bc>
      </amsisdn>
    </setSubscription>
  </ns:MOAttributes>
</ns:Set>
```

Delete the AMSISDNs 4645538122 and 46455381223. The AMSISDNs 46455381225 and 46455381226 are defined and associated with the Bearer Capabilities number 25 and number 26.

3.2.3.3

Get Additional MSISDN

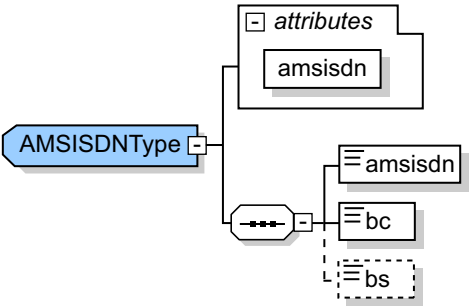


Figure 12 Get Additional MSISDN

Table 21 Get Additional MSISDN

Parameter	Type	Occurrence	Description
amsisdn	Digit string 5-15 digits. Each digit is 0-9.	Mandatory	Additional MSISDN



Parameter	Type	Occurrence	Description
bc	unsignedShort Values are 0, 1, 2, 3, 8-65534, must be defined in the HLR.	Mandatory	Bearer Capability number
bs	String	Optional	Basic Service identifier. The Basic Service is represented by an associated Bearer Capability number. The connection between the Basic Service and its associated Bearer Capability number is done in the HLR.

```
<GetResponse>
  <MOAttributes>
    <getResponseSubscription msisdn="46455381234" imsi=
      "12345678933333">
      <msisdn>46455381234</msisdn>
      <imsi>12345678933333</imsi>
      <authd>NO ACCESS TO AUC</authd>
      <amsisdn amsisdn="46455381222">
        <amsisdn>46455381222</amsisdn>
        <bc>20</bc>
        <bs>BS33</bs>
      </amsisdn>
    </getResponseSubscription>
  </MOAttributes>
</GetResponse>
```

Example 25 Get Additional MSISDN Response

3.2.4 Customized Applications for Mobile Networks Enhanced Logic (CAMEL)

Customized Applications for Mobile Networks Enhanced Logic (CAMEL) services are predefined in the HLR. Each subscriber can have one service for originating calls, one for terminating calls and one for GPRS calls.

3.2.4.1 Create CAMEL Subscription Data

Create CAMEL Subscription Trigger Detection Points

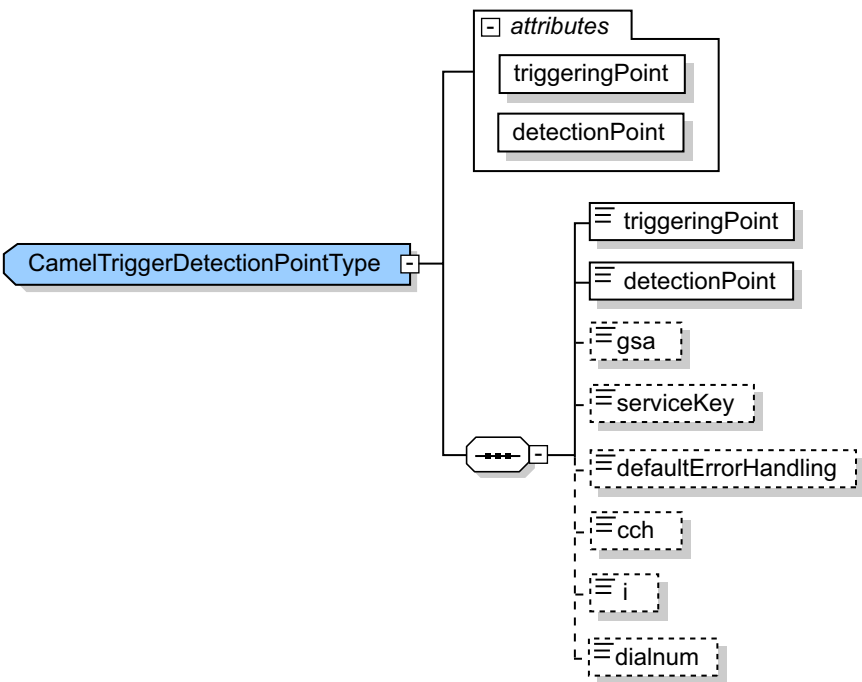


Figure 13 Create CAMEL Subscription Trigger Detection Points

Table 22 Create CAMEL Subscription Trigger Detection Points

Parameter	Type	Occurrence	Description
triggeringPoint	unsignedByte Values are 0 - 7: 0 = Originating CAMEL subscription data triggering point 1 0 Terminating CAMEL subscription data triggering point 2 = GPRS CAMEL subscription data triggering point 3 = Originating SMS CAMEL subscription data triggering point 4 = Visitor MSC Terminating CAMEL subscription data triggering point 5 = Mobility Management CAMEL subscription data triggering point 6 = Dialed service CAMEL subscription data triggering point 7 = Terminating SMS CAMEL subscription data triggering point	Mandatory	CAMEL subscription data triggering point



Parameter	Type	Occurrence	Description
detectionPoint	String If the value of triggeringPoint is 0, its values can be 2 and 4. If the value of triggeringPoint is 1, its values can be 12, 13 and 14. If the value of triggeringPoint is 2, its possible values can be 1, 2, 11, 12, and 14. If the value of triggeringPoint is 3, its value is 1. If the value of triggeringPoint is 4, its possible values are 12, 13, and 14. If the value of triggeringPoint is 5, the possible values are 0-4. If the value of triggeringPoint is 6, the possible values are 1-10. If the value of triggeringPoint is 7, the value is 2.	Mandatory	CAMEL subscription data trigger detection point
gsa	String, 3-15 digits	Optional If the value of triggeringPoint is not 5, it is mandatory.	GSM communication Service control function Address
serviceKey	unsignedInt Values are 0-2147483647.	Optional If the value of triggeringPoint is not 5, it is mandatory.	Service Key number
defaultErrorHandling	unsignedByte Values are 0-1.	Optional If the value of triggeringPoint is not 5, it is mandatory. If the value of triggeringPoint is 5, it is invalid.	Default Error Handling



Parameter	Type	Occurrence	Description
cch	unsignedByte Values are 1-4: If triggeringPoint is 0 and detectionPoint is set as 4, or triggeringPoint is 1 and detectionPoint is set as 13 or 14 in the command, or if triggeringPoint is set as 4 or 5, cch can accept value 3 only. Default value 1 is assigned when cch is not present. If triggeringPoint is set as 2 or 3 in the command, cch can accept value 3 only. Default value 3 is assigned when cch is not present. If triggeringPoint is set as 6 in the command, cch can accept value 3 only. Default value 3 is assigned when cch is not present. If triggeringPoint is set as 7 in the command, cch can accept value 4 only. Default value 4 is assigned when cch is not present.	Optional	CAMEL Capability Handling. Application system-dependent parameter
i	Enumeration value: <ul style="list-style-type: none"> • Y • N (default) 	Optional Only valid when the value of triggeringPoint is 1.	Inhibition indicator. Application System dependent parameter
dialnum	String Expressed as na-dial where: <ul style="list-style-type: none"> • na = Nature of address indicator -0: Unknown -1, 2: Not used -3: National number -4: International number • dial = Dialed number series. Text String 1-15 characters. Only digits 0-9, *, #, a, b, and c are allowed as characters. 	Optional This parameter is only valid and is mandatory when the value of triggeringPoint is 6.	Dialed Number

Create CAMEL Conditional Triggering Criteria Data

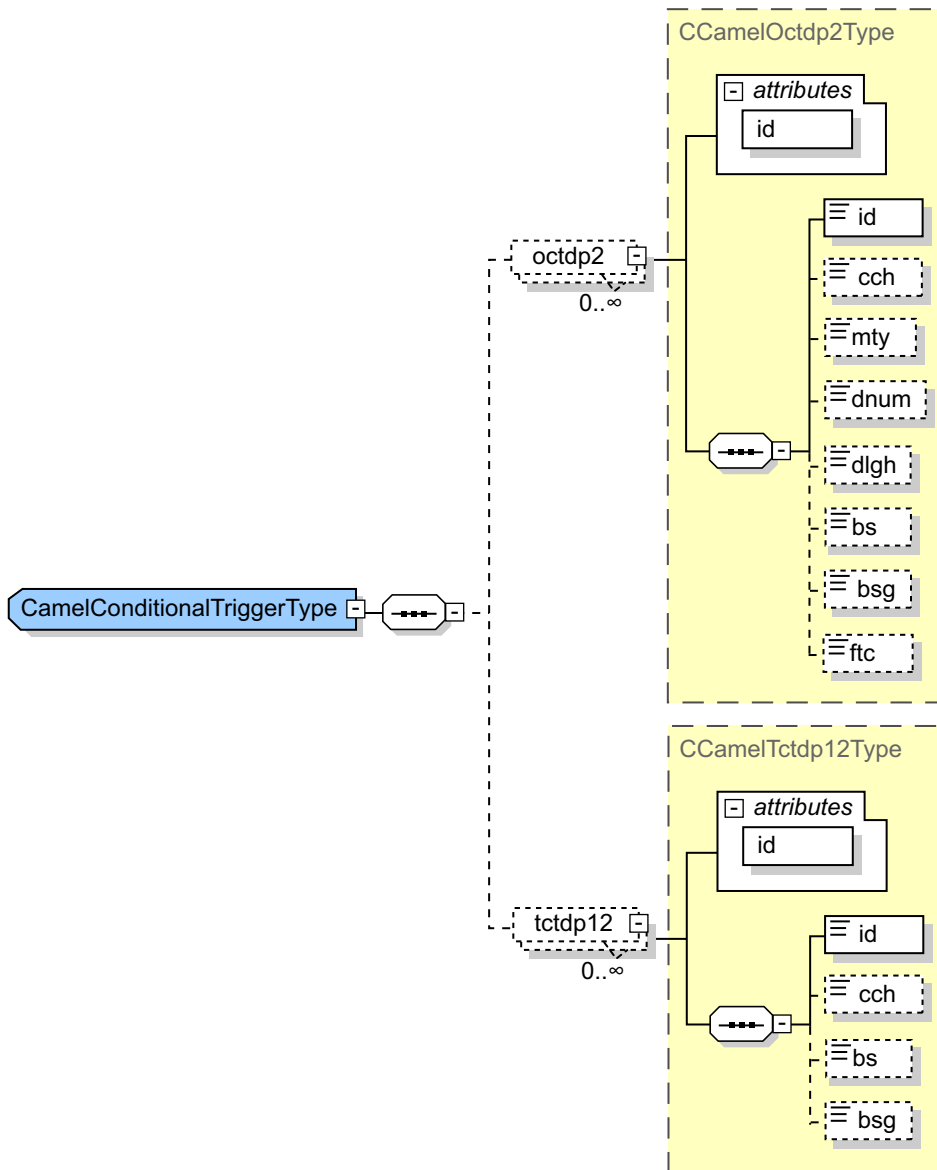


Figure 14 Create CAMEL Conditional Triggering Criteria Data

Table 23 Create CAMEL Conditional Triggering Criteria Data

Parameter	Type	Occurrence	Description
octdp2	CCamelOctdp2Type	Optional with multiple occurrences	



Parameter		Type	Occurrence	Description
	id	unsignedByte	Mandatory	Attribute to identify the octdp2
	cch	unsignedByte Values are 2-4.	Optional	CAMEL Capability Handling. Application system-dependent parameter
	mty	Enumeration value: <ul style="list-style-type: none"> E = Enabling I = Inhibiting 	Optional This parameter is mandatory when setting the parameter <dnum> and <dlgh> for the first time. It is NOT to be used again when setting other values of <dnum> and <dlgh>.	Match Type
	dnum	String Expressed as na-nb format: na = 0-4 nb = 1-15 digits, *, and #.	Optional	Destination Number
	dlgh	String Values are 1-15.	Optional If dnum is not set, it is mandatory.	Destination number Length
	bs	String Values are TS11, TS61, TS62, TSD1, BS21, BS22, BS23, BS24, BS25, BS26, BS2G, BS31, BS32, BS33, BS34, and BS3G.	Optional	Basic Service. It is used to define basic service triggering criteria.
	bsg	String Values are TS10, TS60, TSD0, TS20, and TS30.	Optional	Basic Service Group identifier. It is used to define basic service triggering criteria.
	ftc	Enumeration value: <ul style="list-style-type: none"> N = Not forwarding F = Forwarding 	Optional	Forwarding Triggering Criteria
tctdp12		CCamelTctdp12Type	Optional with multiple occurrences	
	id	unsignedByte	Optional	Attribute to identify the tctdp12
	cch	unsignedByte Values are 2-4.	Optional	CAMEL Capability Handling. Application system-dependent parameter
	bs	String Values are TS11, TS61, TS62, TSD1, BS21, BS22, BS23, BS24, BS25, BS26, BS2G, BS31, BS32, BS33, BS34, and BS3G.	Optional	Basic Service. It is used to define basic service triggering criteria.
	bsg	String Values are TS10, TS60, TSD0, BS20, and BS30.	Optional If bs is not set, it is mandatory.	Basic Service Group identifier. It is used to define basic service triggering criteria.

- a CAMEL subscriber data can be created by creating either one or two or all the followings: Originating CAMEL Subscription Trigger Detection Points (OCTDP), Terminating CAMEL Subscription Trigger Detection Points (TCTDP), GPRS CAMEL Subscription Trigger Detection Points, Terminating SMS CAMEL subscription data Trigger Detection Point and Dialed service CAMEL subscription data Trigger Detection Point:

```
<ns:Create xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
  <ns:MOType xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
    Subscription@http://schemas.ericsson.com/ema/UserProvisioning/
    GsmHlr/</ns:MOType>
  <ns:MOId xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
    <msisdn xmlns="http://schemas.ericsson.com/ema/
    UserProvisioning/GsmHlr/">310013700010001</msisdn>
    <imsi xmlns="http://schemas.ericsson.com/ema/
    UserProvisioning/GsmHlr/">234113700010001</imsi>]]>
  </ns:MOId>
  <ns:MOAttributes xmlns:ns="http://schemas.ericsson.com/
  cai3g1.2/">
    <createSubscription xmlns="http://schemas.ericsson.com/ema/
    UserProvisioning/GsmHlr/" msisdn="310013700010001" imsi=
    "234113700010001">
      <msisdn>310013700010001</msisdn>
      <imsi>234113700010001</imsi>
      <camel>
        <ctdp triggeringPoint="0" detectionPoint="2">
          <triggeringPoint>0</triggeringPoint>
          <detectionPoint>2</detectionPoint>
          <gsa>45000000</gsa>
          <serviceKey>1234</serviceKey>
          <defaultErrorHandling>1</defaultErrorHandling>
        </ctdp>
        <ctdp triggeringPoint="1" detectionPoint="12">
          <triggeringPoint>1</triggeringPoint>
          <detectionPoint>12</detectionPoint>
          <gsa>45000000</gsa>
          <serviceKey>3234</serviceKey>
          <defaultErrorHandling>1</defaultErrorHandling>
        </ctdp>
        <ctdp triggeringPoint="2" detectionPoint="1">
          <triggeringPoint>2</triggeringPoint>
          <detectionPoint>1</detectionPoint>
          <gsa>98765432</gsa>
          <serviceKey>1234333</serviceKey>
          <defaultErrorHandling>0</defaultErrorHandling>
          <cch>3</cch>
        </ctdp>
        <ctdp triggeringPoint="7" detectionPoint="2">
          <triggeringPoint>7</triggeringPoint>
          <detectionPoint>2</detectionPoint>
          <gsa>8888</gsa>
          <serviceKey>1234</serviceKey>
          <defaultErrorHandling>1</defaultErrorHandling>
          <cch>4</cch>
        </ctdp>
        <ctdp triggeringPoint="6" detectionPoint="1">
          <triggeringPoint>6</triggeringPoint>
          <detectionPoint>1</detectionPoint>
          <gsa>8888</gsa>
          <serviceKey>1234</serviceKey>
          <defaultErrorHandling>1</defaultErrorHandling>
          <cch>3</cch>
          <dialnum>3-1234</dialnum>
        </ctdp>
      </camel>
    </createSubscription>
  </ns:MOAttributes>
</ns:Create>
```

The previous example shows how to create a subscriber in HLR with a CAMEL service. One for originating calls on detection point 2, one for



terminating calls on detection point 12, one for GPRS calls on detection point 1, one for terminating SMS calls on detection point 2 and one for dialled service calls on detection point 1.

b To create CAMEL Conditional Triggering Criteria Data, for example:

```
<ns:Create xmlns:ns="http://schemas.ericsson.com/cai3gl.2/">
  <ns:MOType xmlns:ns="http://schemas.ericsson.com/cai3gl.2/">
    Subscription@http://schemas.ericsson.com/ema/
    UserProvisioning/GsmHlr/</ns:MOType>
  <ns:MOId xmlns:ns="http://schemas.ericsson.com/cai3gl.2/">
    <msisdn xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">310013700010001</msisdn>
    <imsi xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">234113700010001</imsi>
  </ns:MOId>
  <ns:MOAttributes xmlns:ns="http://schemas.ericsson.com/
    cai3gl.2/">
    <createSubscription xmlns="http://schemas.ericsson.com/
      ema/UserProvisioning/GsmHlr/" msisdn="310013700010001"
      imsi="234113700010001">
      <msisdn>310013700010001</msisdn>
      <imsi>234113700010001</imsi>
      <camel>
        <ccamel>
          <octdp2 id="0">
            <id>0</id>
            <cch>2</cch>
            <ftc>F</ftc>
          </octdp2>
        </ccamel>
      </camel>
    </createSubscription>
  </ns:MOAttributes>
</ns:Create>
```

This example creates Conditional Triggering Criteria Data for originating calls on detection point 2, and forwarding triggering criteria on CAMEL phase 2.

3.2.4.2

Set CAMEL Subscription Data

Set Data in CAMEL Subscription Trigger Detection Points

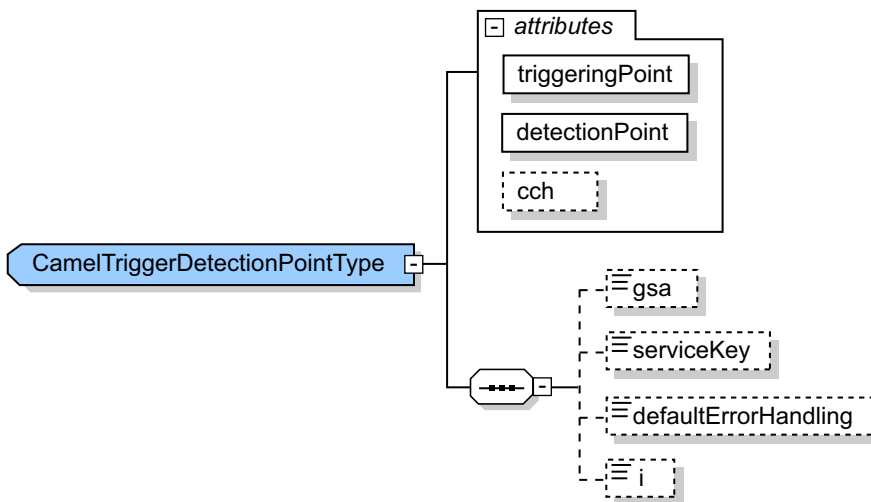


Figure 15 Set Data in CAMEL Subscription Trigger Detection Points

Table 24 Set Data in CAMEL Subscription Trigger Detection Points

Parameter	Type	Occurrence	Description
triggeringPoint	unsignedByte Values are 0-7: 0 = Originating CAMEL subscription data triggering point 1 0 Terminating CAMEL subscription data triggering point 2 = GPRS CAMEL subscription data triggering point 3 = Originating SMS CAMEL subscription data triggering point 4 = Visitor MSC Terminating CAMEL subscription data triggering point 5 = Mobility Management CAMEL subscription data triggering point 6 = Dialed service CAMEL subscription data triggering point 7 = Terminating SMS CAMEL subscription data triggering point	Mandatory	CAMEL subscription data triggering point



Parameter	Type	Occurrence	Description
detectionPoint	String If the value of triggeringPoint is 0, its values can be 2 and 4. If the value of triggeringPoint is 1, its values can be 12, 13 and 14. If the value of triggeringPoint is 2, its possible values can be 1, 2, 11, 12, and 14. If the value of triggeringPoint is 3, its value is 1. If the value of triggeringPoint is 4, its possible values are 12, 13, and 14. If the value of triggeringPoint is 5, the possible values are 0-4. If the value of triggeringPoint is 6, the possible values are 1-10. If the value of triggeringPoint is 7, the value is 2.	Mandatory	CAMEL subscription data trigger detection point
gsa	String, 3-15 digits	Optional	GSM communication Service control function Address
serviceKey	unsignedInt Values are 0-2147483647.	Optional	Service Key number
defaultErrorHandling	unsignedByte Values are 0-1.	Optional If the value of triggeringPoint is 5, it is invalid.	Default Error Handling
cch	unsignedByte Values are 1-4: If triggeringPoint is 0 and detectionPoint is set as 4, or triggeringPoint is 1 and detectionPoint is set as 13 or 14 in the command, or if triggeringPoint is set as 4 or 5, cch can accept value 3 only. Default value 1 is assigned when cch is not present. If triggeringPoint is set as 2 or 3 in the command, cch can accept value 3 only. Default value 3 is assigned when cch is not present. If triggeringPoint is set as 6 in the command, cch can accept value 3 only. Default value 3 is assigned when cch is not present. If triggeringPoint is set as 7 in the command, cch can accept value 4 only. Default value 4 is assigned when cch is not present.	Optional	CAMEL Capability Handling. Application system-dependent parameter

Parameter	Type	Occurrence	Description
i	Enumeration value: <ul style="list-style-type: none"> Y N (default) 	Optional It is only invalid if the value of triggeringPoint is 1.	Inhibition indicator. Application System dependent parameter
dialnum	String Expressed as na-dial where: <ul style="list-style-type: none"> na = Nature of address indicator -0: Unknown -1, 2: Not used -3: National number -4: International number dial = Dialed number series. Text String 1-15 characters. Only digits 0-9, *, #, a, b, and c are allowed as characters. 	Optional This parameter is only valid and is mandatory when the value of triggeringPoint is 6.	Dialed Number

Set Extended CAMEL Data for a Subscriber

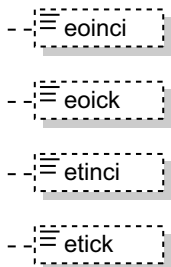


Figure 16 Set Extended CAMEL Data for a Subscriber

Table 25 Set Extended CAMEL Data for a Subscriber

Parameter	Type	Occurrence	Description
eoinci	unsignedByte Values are 0-255.	Optional If neither of etinci and etick are set, one of eoinci and eoick is to be set.	Extended Originating IN Capability Indicator
eoick	unsignedShort Values are 0-999.	Optional If neither of etinci and etick are set, one of eoinci and eoick is to be set.	Extended Originating IN Category Key
etinci	unsignedByte Values are 0-255.	Optional	Extended Terminating IN Capability Indicator
etick	unsignedShort Values are 0-999.	Optional	Extended Terminating IN Category Key

Set Optional CAMEL Data for a Subscriber

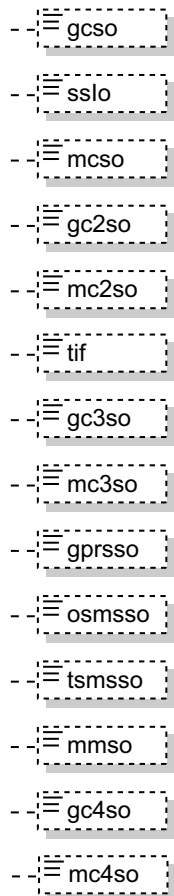


Figure 17 Set the Optional CAMEL Subscription Data for a Subscriber

Table 26 Set the Optional CAMEL Subscription Data for a Subscriber

Parameter	Type	Occurrence	Description
gcsso	unsignedByte Values are 0-1.	Optional	CAMEL Subscription Option when CAMEL phase 1 is not supported in the interrogating GMSC
sslo	unsignedByte Values are 0-1.	Optional	CAMEL Subscription Option Subscriber State and Location Information
mcso	unsignedByte Values are 0-2.	Optional	MSC/VLR CAMEL Support subscription Option when CAMEL phase 1 is not supported in the servicing MSC/VLR
gc2so	unsignedByte Values are 0-1.	Optional	CAMEL subscription Option when CAMEL phase 2 is not supported in the interrogating GMSC

Parameter	Type	Occurrence	Description
mc2so	unsignedByte Values are 0-2.	Optional	MSC/VLR CAMEL Support subscription Option when CAMEL phase 2 is not supported in the servicing MSC/VLR
tif	unsignedByte Values are 0-1.	Optional	Translation Information Flag
gc3so	unsignedByte Values are 0-1.	Optional	CAMEL subscription Option when CAMEL phase 3 is not supported in the interrogating GMSC
mc3so	unsignedByte Values are 0-2.	Optional	MSC/VLR CAMEL Support subscription Option when CAMEL phase 3 is not supported in the servicing MSC/VLR
gprso	unsignedByte Values are 0-1.	Optional	GPRS CAMEL phase3 denied Subscription Option Application system-dependent parameter
osmso	unsignedByte Values are 0-2.	Optional	Originating SMS CAMEL denied Subscription Option Application system-dependent parameter
tsmso	unsignedByte Values are 0-2.	Optional	Terminating SMS CAMEL phase 4 denied subscription option Application system-dependent parameter
mmso	unsignedByte Values are 0-1.	Optional	Mobility Management CAMEL denied Subscription Option Application system-dependent parameter
gc4so	unsignedByte Values are 0-1.	Optional	GMSC/gsmSCF CAMEL Support subscription Option when CAMEL phase 4 is supported in the servicing GMSC/gsmSCF
mc4so	unsignedByte Values are 0-2.	Optional	MSC/VLR CAMEL Support subscription Option when CAMEL phase 4 is not supported in the servicing MSC/VLR

Note: Only one of mcso, mc2so, mc3so, mc4so can be defined in one request.



- a To change the subscription data for either one or two or all the followings: Originating Trigger Detection Points, Terminating Trigger Detection Points, GPRS Trigger Detection Points, Terminating SMS CAMEL subscription data Trigger Detection Point and Dialed service CAMEL subscription data Trigger Detection Point. This is done per detection point, for example:

```
<ns:Set xmlns:ns="http://schemas.ericsson.com/cai3gl.2/">
  <ns:MOType>Subscription@http://schemas.ericsson.com/ema/
    UserProvisioning/GsmHlr/</ns:MOType>
  <ns:MOId>
    <msisdn xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">46455381234</msisdn>
  </ns:MOId>
  <ns:MOAttributes>
    <setSubscription xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/" xmlns:cai3g=
        "http://schemas.ericsson.com/cai3gl.2/"
        xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
        msisdn="46455381234">
      <camel>
        <ctdp triggeringPoint="0" detectionPoint="2">
          <serviceKey>9876</serviceKey>
        </ctdp>
      </camel>
    </setSubscription>
  </ns:MOAttributes>
</ns:Set>
```

The example shows how to change the service key for the Originating CAMEL Subscription Data Trigger Detection Point 2–9876.

- b To change the Optional CAMEL Subscription Data, for example:

```
<ns:Set xmlns:ns="http://schemas.ericsson.com/cai3gl.2/">
  <ns:MOType>Subscription@http://schemas.ericsson.com/ema/
    UserProvisioning/GsmHlr/</ns:MOType>
  <ns:MOId>
    <msisdn xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">46455381234</msisdn>
  </ns:MOId>
  <ns:MOAttributes>
    <setSubscription xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/" xmlns:cai3g=
        "http://schemas.ericsson.com/cai3gl.2/" xmlns:xsi=
        "http://www.w3.org/2001/XMLSchema-instance"
        msisdn="46455381234">
      <camel>
        <gcso>1</gcso>
        <mcsso>2</mcsso>
        <gc2so>1</gc2so>
      </camel>
    </setSubscription>
  </ns:MOAttributes>
</ns:Set>
```

This request changes the GSM CAMEL Subscription Options. Apply ODB of all incoming calls when no CAMEL phase is supported in the interrogating GMSC. Allow mobile subscribers registration in the serving MSC/VLR without sending any CAMEL data when no CAMEL data is allowed to be sent to the MSC/VLR. Allow call terminating handling with CAMEL phase 1 invocation when CAMEL phase 2 is not supported in the interrogating GMSC.

- c To change the Extended CAMEL Subscription Data, for example:

```
<ns:Set xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
  <ns:MOType>Subscription@http://schemas.ericsson.com/ema
    /UserProvisioning/GsmHlr/</ns:MOType>
  <ns:MOId>
    <msisdn xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">46455381234</msisdn>
  </ns:MOId>
  <ns:MOAttributes>
    <setSubscription xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/" xmlns:cai3g=
        "http://schemas.ericsson.com/cai3g1.2/
        " xmlns:xsi="http://www.w3.org/2001/
        XMLSchema-instance" msisdn="46455381234">
      <camel>
        <eoick>9</eoick>
        <etinci>123</etinci>
      </camel>
    </setSubscription>
  </ns:MOAttributes>
</ns:Set>
```

The previous example changes the Extended Terminating IN Capability Indicator to 123 and the Extended Originating IN Capability Key to 9. It is only possible to change an Extended Originating CAMEL service if an Originating CAMEL Subscription Data Trigger Detection Point is already defined for the subscriber. The same behavior goes for the Extended Terminating CAMEL data.

- d Create, Delete, and Set requests can occur in any order, for example:

```
<ns:Set xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
  <ns:MOType>Subscription@http://schemas.ericsson.com
    /ema/UserProvisioning/GsmHlr/</ns:MOType>
  <ns:MOId>
    <msisdn xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">46455381234</msisdn>
  </ns:MOId>
  <ns:MOAttributes>
    <setSubscription xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/" xmlns:cai3g=
        "http://schemas.ericsson.com/cai3g1.2/
        " xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
        msisdn="46455381234">
      <camel>
        <eoick>123</eoick>
        <gcso>1</gcso>
        <ctdp triggeringPoint="0" detectionPoint="2">
          <triggeringPoint>0</triggeringPoint>
          <detectionPoint>2</detectionPoint>
          <gsa>451000000</gsa>
          <serviceKey>123</serviceKey>
          <defaultErrorHandling>1</defaultErrorHandling>
        </ctdp>
        <ctdp triggeringPoint="1" detectionPoint="12"
          xsi:nil="true"/>
      </camel>
    </setSubscription>
  </ns:MOAttributes>
</ns:Set>
```

This example defines an Originating Trigger Detection Point 2, changes the optional CAMEL data attribute gcso to 1 and the extended CAMEL attribute eoick to 123. The Terminating Trigger Detection Point 12 is removed from the CAMEL subscription data.

Note: It is possible to combine different CAMEL operations in one command by using the Set, Create, and Delete delimiter. That means it is possible to combine one Extended data, one Optimal Subscription data and one or more Triggering points requests in one command.

3.2.4.3

Delete CAMEL Subscription Data

Delete CAMEL Subscription Trigger Detection Points

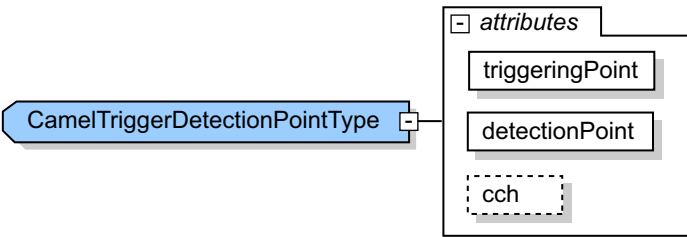


Figure 18 Delete CAMEL Subscription Trigger Detection Points

Table 27 Delete CAMEL Subscription Trigger Detection Points

Parameter	Type	Occurrence	Description
triggeringPoint	unsignedByte Values are 0-7: 0 = Originating CAMEL subscription data triggering point 1 0 Terminating CAMEL subscription data triggering point 2 = GPRS CAMEL subscription data triggering point 3 = Originating SMS CAMEL subscription data triggering point 4 = Visitor MSC Terminating CAMEL subscription data triggering point 5 = Mobility Management CAMEL subscription data triggering point 6 = Dialled service CAMEL subscription data triggering point 7 = Terminating SMS CAMEL subscription data triggering point	Optional ⁽¹⁾	CAMEL subscription data triggering point



Parameter	Type	Occurrence	Description
detectionPoint	String If the value of triggeringPoint is 0, its values can be 2, 4 and ALL. If the value of triggeringPoint is 1, its values can be 12, 13, 14 and ALL. If the value of triggeringPoint is 2, its possible values can be 1, 2, 11, 12, 14 and ALL. If the value of triggeringPoint is 3, its value is 1 and ALL. If the value of triggeringPoint is 4, its possible values are 12, 13, 14 and ALL. If the value of triggeringPoint is 5, the possible values are 0-4 and ALL. If the value of triggeringPoint is 6, the possible values are 1-10 and ALL. If the value of triggeringPoint is 7, the value is 2(SMS Delivery Request) and ALL.	Optional ⁽¹⁾	CAMEL subscription data trigger detection point.
cch	unsignedByte Values are 1-4: If triggeringPoint is 0 and detectionPoint is set as 4, or triggeringPoint is 1 and detectionPoint is set as 13 or 14 in the command, or if triggeringPoint is set as 4 or 5, cch can accept value 3 only. Default value 1 is assigned when cch is not present. If triggeringPoint is set as 2 or 3 in the command, cch can accept value 3 only. Default value 3 is assigned when cch is not present. If triggeringPoint is set as 6 in the command, cch can accept value 3 only. Default value 3 is assigned when cch is not present. If triggeringPoint is set as 7 in the command, cch can accept value 4 only. Default value 4 is assigned when cch is not present.	Optional	CAMEL Capability Handling. Application system-dependent parameter

(1) Mandatory when cch is not given in the command.

Delete CAMEL Conditional Triggering Criteria Data

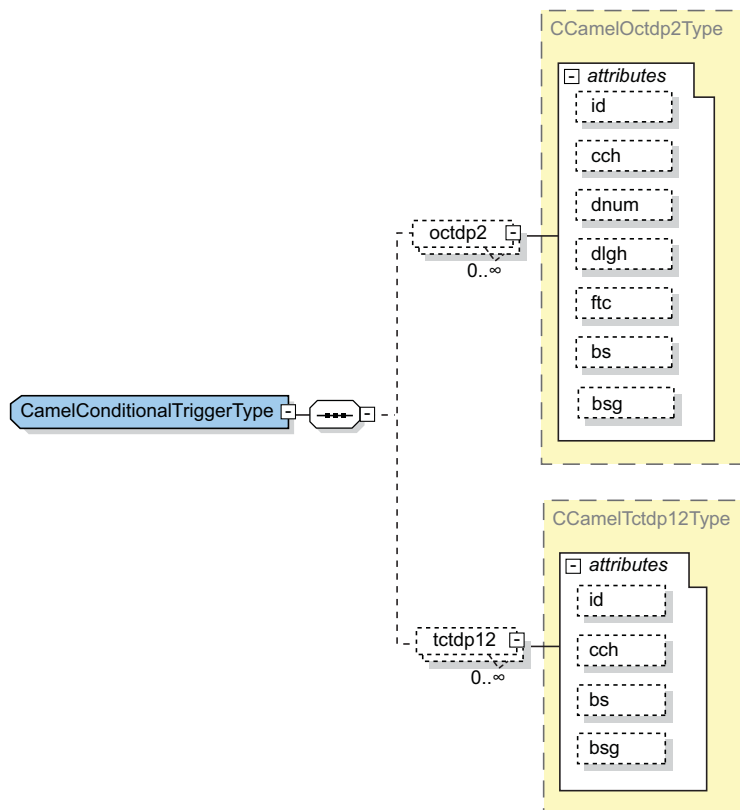


Figure 19 Delete CAMEL Conditional Triggering Criteria Data

Table 28 Delete CAMEL Conditional Triggering Criteria Data

Parameter		Type	Occurrence	Description
octdp2		CCamelOctdp2Type	Optional with multiple occurrences	
	id	unsignedByte	Optional	Attribute to identify the octdp2
	cch	unsignedByte Values are 2-4.	Optional	CAMEL Capability Handling. Application system-dependent parameter
	dnum	String Expressed as na-nb format: na = 0-4 nb = 1-15 digits, *, # or ALL.	Optional	Destination Number
	dlgh	String Values are 1-15 and ALL.	Optional	Destination number Length
	bs	String Values are TS11, TS61, TS62, TSD1, BS21, BS22, BS23, BS24, BS25, BS26, BS2G, BS31, BS32, BS33, BS34, BS3G and ALL.	Optional	Basic Service. It is used to define basic service triggering criteria.

Parameter	Type	Occurrence	Description
bsg	String Values are TS10, TS60, TSD0, BS20, BS30 and ALL.	Optional	Basic Service Group identifier. It is used to define basic service triggering criteria.
	Enumeration value: • N = Not forwarding • F = Forwarding	Optional	Forwarding Triggering Criteria When deleting the <code>ftc</code> parameter it needs to be empty, <code>ftc=""</code> .
tctdp12	CCamelTctdp12Type	Optional with multiple occurrences	
id	unsignedByte	Optional	Attribute to identify the tctdp12
	unsignedByte Values are 2-4.	Optional	CAMEL Capability Handling. Application system-dependent parameter
	String Values are TS11, TS61, TS62, TSD1, BS21, BS22, BS23, BS24, BS25, BS26, BS2G, BS31, BS32, BS33, BS34, BS3G and ALL.	Optional	Basic Service. It is used to define basic service triggering criteria.
	String Values are TS10, TS60, TSD0, BS20, BS30 and ALL.	Optional	Basic Service Group identifier. It is used to define basic service triggering criteria.

- a The deletion of the CAMEL subscription data is done for each CAMEL Subscription Data Trigger Detection Point, for example:

```
<ns:Set xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
  <ns:MOType>Subscription@http://schemas.ericsson.com/ema/
    UserProvisioning/GsmHlr/</ns:MOType>
  <ns:MOId>
    <msisdn xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">46455381234</msisdn>
  </ns:MOId>
  <ns:MOAttributes>
    <setSubscription xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/" xmlns:cai3g=
        "http://schemas.ericsson.com/cai3g1.2/"
        xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
        msisdn="46455381234">
      <camel>
        <ctdp triggeringPoint="0" detectionPoint="2"
          xsi:nil="true"/>
      </camel>
    </setSubscription>
  </ns:MOAttributes>
</ns:Set>
```

- b If the parameter triggeringPoint is set as "0" or "1" and followed by detectionPoint set as "ALL", all the originating or termination CAMEL subscription data of the specified phase are removed. If the parameter triggeringPoint is set as "2" and followed by detectionPoint set as "ALL", all the GPRS CAMEL subscription data are removed.



- c Following example deletes CAMEL Conditional Triggering Data. For triggering point octdp2, all Destination numbers and Forwarding Triggering Criteria for CAMEL phase 2 are deleted, except for octdp2. For triggering point tctdp12, only Basic service TS11 is deleted.

```
<ns:Set xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
<ns:MOType>Subscription@http://schemas.ericsson.com/ema/
UserProvisioning/GsmHlr/</ns:MOType
><ns:MOId>
<msisdn xmlns="http://schemas.ericsson.com/ema/
UserProvisioning/GsmHlr/">46455381234</msisdn>
</ns:MOId>
<ns:MOAttributes>
  <setSubscription xmlns="http://schemas.ericsson.com/ema/UserProvisioning/GsmHlr/"
    xmlns:cai3g="http://schemas.ericsson.com/cai3g1.2/"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" msisdn="46455381234">
    <camel>
      <ccamel>
        <octdp2 cch="2" dnum="ALL" ftc="" xsi:nil="true" />
        <tctdp12 bs="TS11" xsi:nil="true" />
      </ccamel>
    </camel>
  </setSubscription>
</ns:MOAttributes>
</ns:Set>
```

3.2.4.4 Get CAMEL Subscription Response

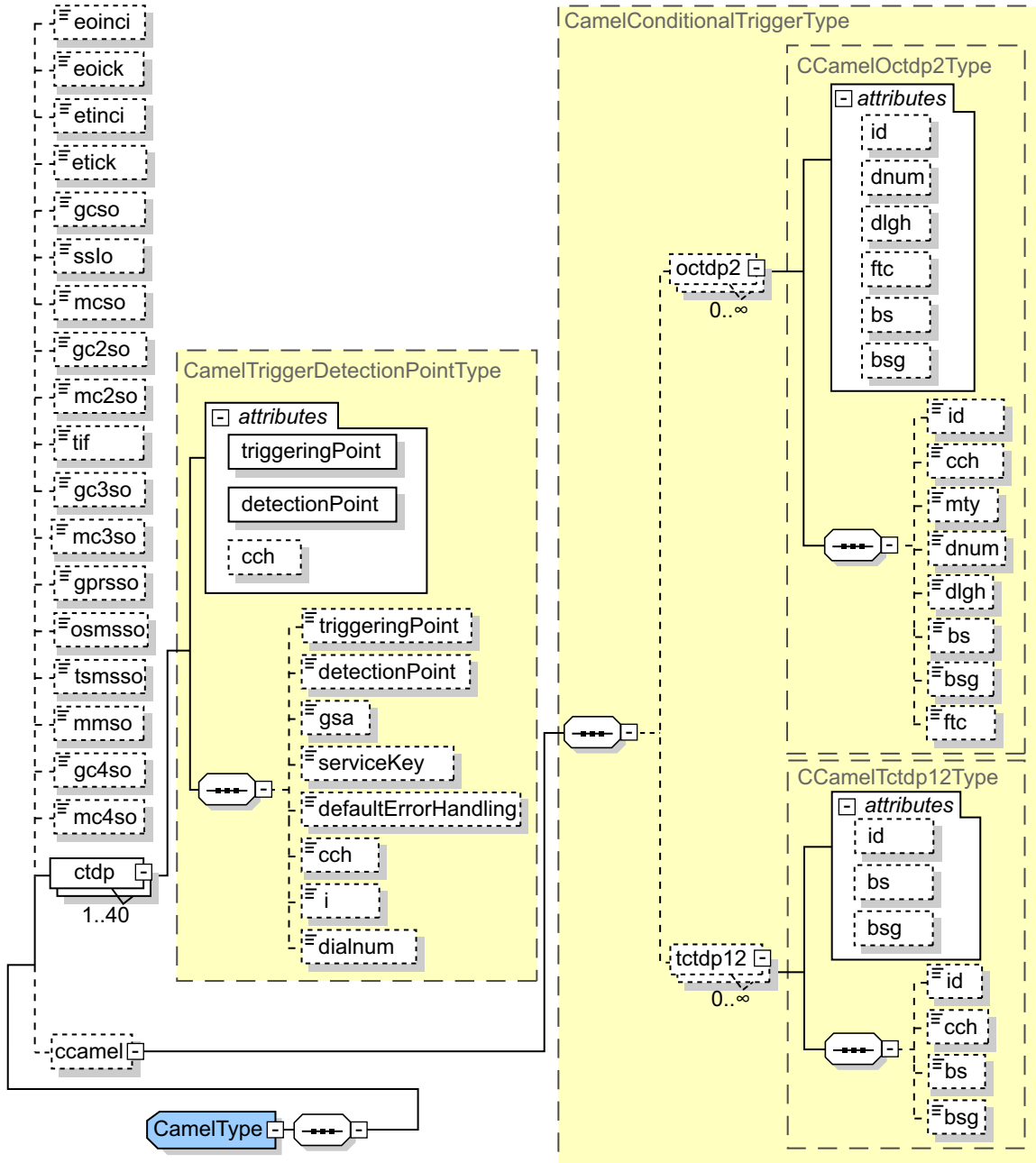


Figure 20 Get CAMEL Subscription Response

Table 29 Get CAMEL Subscription Response

Parameter	Type	Occurrence	Description
eoinci	unsignedByte Values are 0-255.	Optional	Extended Originating IN Capability Indicator



Parameter	Type	Occurrence	Description
eoick	unsignedShort Values are 0-999.	Optional	Extended Originating IN Category Key
etinci	unsignedByte Values are 0-255.	Optional	Extended Terminating IN Capability Indicator
etick	unsignedShort Values are 0-999.	Optional	Extended Terminating IN Category Key
gcso	unsignedByte Values are 0-1.	Optional	CAMEL Subscription Option when CAMEL phase 1 is not supported in the interrogating GMSC
sslo	unsignedByte Values are 0-1.	Optional	CAMEL Subscription Option Subscriber State and Location Information
mcsso	unsignedByte Values are 0-2.	Optional	MSC/VLR CAMEL Support subscription Option when CAMEL phase 1 is not supported in the servicing MSC/VLR
gc2so	unsignedByte Values are 0-1.	Optional	CAMEL subscription Option when CAMEL phase 2 is not supported in the interrogating GMSC
mc2so	unsignedByte Values are 0-2.	Optional	MSC/VLR CAMEL Support subscription Option when CAMEL phase 2 is not supported in the servicing MSC/VLR
tif	unsignedByte Values are 0-1.	Optional	Translation Information Flag
gc3so	unsignedByte Values are 0-1.	Optional	CAMEL subscription Option when CAMEL phase 3 is not supported in the interrogating GMSC
mc3so	unsignedByte Values are 0-2.	Optional	MSC/VLR CAMEL Support subscription Option when CAMEL phase 3 is not supported in the servicing MSC/VLR
gprso	unsignedByte Values are 0-1.	Optional	GPRS CAMEL phase3 denied Subscription Option, Application system-dependent parameter
osmso	unsignedByte Values are 0-2.	Optional	Originating SMS CAMEL denied Subscription Option, Application system-dependent parameter



Parameter		Type	Occurrence	Description
tsmsso		unsignedByte Values are 0-2.	Optional	Terminating SMS CAMEL phase 4 denied subscription option, Application system-dependent parameter
mmso		unsignedByte Values are 0-1.	Optional	Mobility Management CAMEL denied Subscription Option, Application system-dependent parameter
gc4so		unsignedByte Values are 0-1.	Optional	GMSC/gsmSCF CAMEL Support subscription Option when CAMEL phase 4 is supported in the servicing GMSC/gsmSCF
mc4so		unsignedByte Values are 0-2.	Optional	MSC/VLR CAMEL Support subscription Option when CAMEL phase 4 is not supported in the servicing MSC/VLR
ctdp		CamelTriggerDetectionPointType	Optional with multiple occurrences	CAMEL Trigger Detection Point
	triggeringPoint	unsignedByte Values are 0-7: 0 = Originating CAMEL subscription data triggering point 1 0 Terminating CAMEL subscription data triggering point 2 = GPRS CAMEL subscription data triggering point 3 = Originating SMS CAMEL subscription data triggering point 4 = Visitor MSC Terminating CAMEL subscription data triggering point 5 = Mobility Management CAMEL subscription data triggering point 6 = Dialed service CAMEL subscription data triggering point 7 = Terminating SMS CAMEL subscription data triggering point	Optional	CAMEL subscription data triggering point



	detectionPoint	String If the value of triggeringPoint is 0, its values can be 2 and 4. If the value of triggeringPoint is 1, its values can be 12, 13 and 14. If the value of triggeringPoint is 2, its possible values can be 1, 2, 11, 12, and 14. If the value of triggeringPoint is 3, its value is 1. If the value of triggeringPoint is 4, its possible values are 12, 13, and 14. If the value of triggeringPoint is 5, the possible values are 0-4. If the value of triggeringPoint is 6, the possible values are 1-10. If the value of triggeringPoint is 7, the value is 2.	Optional	CAMEL subscription data trigger detection point
	gsa	String, 3-15 digits	Optional	GSM communication Service control function Address
	serviceKey	unsignedInt Values are 0-2147483647.	Optional	Service Key number
	defaultErrorHandling	unsignedByte Values are 0-1.	Optional If the value of triggeringPoint is 5, it is invalid.	Default Error Handling value
	cch	unsignedByte Values are 1-4: If triggeringPoint is 0 and detectionPoint is set as 4, or triggeringPoint is 1 and detectionPoint is set as 13 or 14 in the command, or if triggeringPoint is set as 4 or 5, cch can accept value 3 only. Default value 1 is assigned when cch is not present. If triggeringPoint is set as 2 or 3 in the command, cch can accept value 3 only. Default value 3 is assigned when cch is not present. If triggeringPoint is set as 6 in the command, cch can accept value 3 only. Default value 3 is assigned when cch is not present. If triggeringPoint is set as 7 in the command, cch can accept value 4 only. Default value 4 is assigned when cch is not present.	Optional	CAMEL Capability Handling, Application system-dependent parameter
	i	Enumeration value: <ul style="list-style-type: none">• Y• N (default)	Optional If the value of triggeringPoint is 5, it is invalid.	Inhibition indicator, Application System dependent parameter



	dialnum	String Expressed as <code>na-dial</code> where: <ul style="list-style-type: none"><code>na</code> = Nature of address indicator -0: Unknown -1, 2: Not used -3: National number -4: International number<code>dial</code> = Dialed number series. Text String 1-15 characters. Only digits 0-9, *, #, a, b, and c are allowed as characters.	Optional If the value of <code>triggeringPoint</code> is 5, it is invalid.	Dialed Number	
ccamel		CamelConditionalTriggerType	Optional with multiple occurrences		
	octdp2	CCamelOctdp2Type	Optional with multiple occurrences		
		id	unsignedByte	Optional	Attribute to identify the octdp2
		cch	unsignedByte Values are 1-4.	Optional	CAMEL Capability Handling, Application system-dependent parameter
		mty	Enumeration value: <ul style="list-style-type: none"><code>E</code> = Enabling<code>I</code> = Inhibiting	Optional This parameter is mandatory when setting the parameter <code><dnum></code> and <code><dlgh></code> for the first time.	Match Type This parameter is NOT to be used again when setting other values of <code><dnum></code> and <code><dlgh></code> .
		dnum	String Expressed as <code>na-nb</code> format: <code>na</code> = 0-4 <code>nb</code> can be 1-15 digits, *, and #.	Optional	Destination Number
		dlgh	String Values are 1-15.	Optional	Destination number Length



		bs	String Values are TS11, TS61, TS62, TSD1, BS21, BS22, BS23, BS24, BS25, BS26, BS2G, BS31, BS32, BS33, BS34, and BS3G.	Optional	Basic Service. It is used to define basic service triggering criteria.
		bsg	String Values are TS10, TS60, TSD0, TS20, and TS30.	Optional	Basic Service Group identifier. It is used to define basic service triggering criteria.
		ftc	Enumeration value: • N = Not forwarding • F = Forwarding	Optional	Forwarding Triggering Criteria
	tctdp12		CCamelTctdp12Type	Optional with multiple occurrences	
		id	unsignedByte	Optional	Attribute to identify the tctdp12
		cch	unsignedByte Values are 1-4.	Optional	CAMEL Capability Handling, Application system-dependent parameter
		bs	String Values are TS11, TS61, TS62, TSD1, BS21, BS22, BS23, BS24, BS25, BS26, BS2G, BS31, BS32, BS33, BS34, and BS3G.	Optional	Basic Service. It is used to define basic service triggering criteria.
		bsg	String Values are TS10, TS60, TSD0, BS20, and BS30.	Optional	Basic Service Group identifier. It is used to define basic service triggering criteria.

```

<ns4:GetResponse>
  <MOAttributes xmlns="http://schemas.ericsson.com/cai3g1.2/">
    <getResponseSubscription msisdn="22220000" imsi="11110000"
      xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/" xmlns:xsi=
      "http://www.w3.org/2001/XMLSchema-instance">
      <msisdn>22220000</msisdn>
      <imsi>11110000</imsi>
      <authd>NO ACCESS TO AUC</authd>
      <camel>
        <eoinci>0</eoinci>
        <eoick>0</eoick>
        <etinci>0</etinci>
        <etick>0</etick>
        <gcso>0</gcso>
        <sslo>0</sslo>
        <mcsso>0</mcsso>
        <gc2so>0</gc2so>
        <mc2so>0</mc2so>
        <gc3so>0</gc3so>
        <mc3so>0</mc3so>
        <gprssso>0</gprssso>
        <osmssso>0</osmssso>
        <tsmssso>1</tsmssso>
        <mmso>0</mmso>
        <gc4so>0</gc4so>
        <mc4so>0</mc4so>
        <ctdp triggeringPoint="7" detectionPoint="2" cch="4">
          <triggeringPoint>7</triggeringPoint>
          <detectionPoint>2</detectionPoint>
          <gsa>8888</gsa>
          <serviceKey>1234</serviceKey>
          <defaultErrorHandling>1</defaultErrorHandling>
          <cch>4</cch>
        </ctdp>
      </camel>
    </nam>
    <prov>1</prov>
  </nam>
  <cat>0</cat>
  <dbsg>1</dbsg>
  <ofa>0</ofa>
  <pwd>0000</pwd>
  <schar>0-0</schar>
</getResponseSubscription>
</MOAttributes>
</ns4:GetResponse>

```

Example 26 Get CAMEL Subscription Response

3.2.5 Closed User Groups

Closed User Group (CUG) is an Ericsson-specific feature that makes it possible to group a number of subscribers with equal restrictions/possibilities.

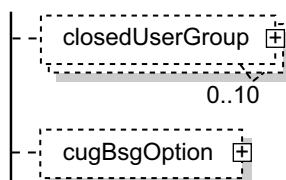


Figure 21 CUG in HLR Subscription



Table 30 CUGData

Element Name	Type	Occurrence	Description
closedUserGroup	ClosedUserGroupType	Optional	See Section 3.2.5.1 on page 99.
cugBsgOption	CugBsgOptionType	Optional	See Section 3.2.5.2 on page 104.

3.2.5.1 Closed User Group Subscription

A subscriber can be a member of up to ten Closed User Groups (CUGs). A subscriber can join or form a Closed User Group. A Closed User Group can have different restrictions for different groups of members. Each Closed User Group is defined by a unique Interlock Code (IC). Following restrictions are possible to attach to the CUG subscription:

- a Incoming Calls Barred within CUG (ICB)
- b Outgoing Calls Barred within CUG (OCB)
- c No restrictions within CUG (NONE)

3.2.5.1.1 Create CUG Subscription

To create a CUG Subscription attribute, the following definition is applied:

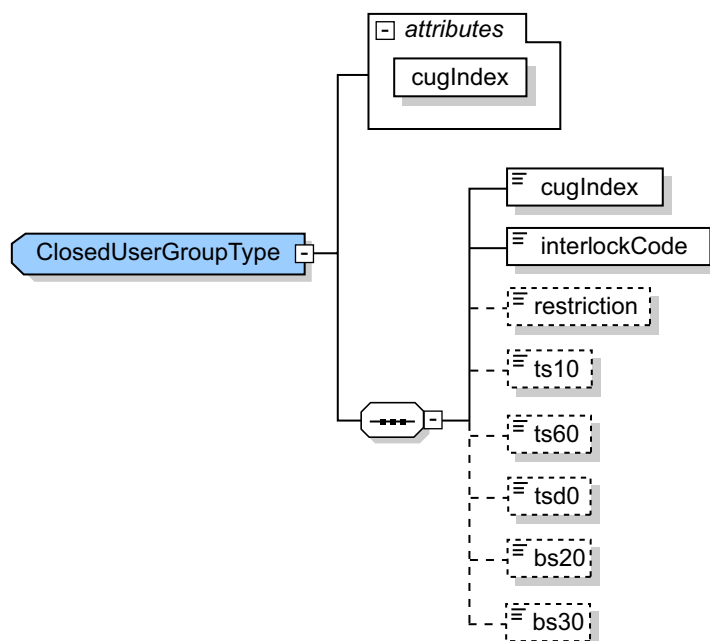


Figure 22 Create CUG Subscription

Table 31 *Create CUG Subscription*

Parameter	Type	Occurrence	Description
cugIndex	String Values are 0-32767.	Mandatory	CUG Index
interlockCode	String The value format falls into two parts that are connected with a -. The range starts from 0000-0 to 9999-65535.	Mandatory	Interlock Code
restriction	unsignedByte Values are 0-2: <ul style="list-style-type: none"> 0 = NONE 1 = ICB 2 = OCB 	Optional	CUG restriction
ts10	unsignedByte Values are 0-1.	Optional	Basic Service Group: All speech transmission services
ts60	unsignedByte Values are 0-1.	Optional	Basic Service Group: Facsimile Basic Service Group
tsd0	unsignedByte Values are 0-1.	Optional	Basic Service Group: Auxiliary speech services
bs20	unsignedByte Values are 0-1.	Optional	Basic Service Group: All Data Circuit Asynchronous
bs30	unsignedByte Values are 0-1.	Optional	Basic Service Group: All Data Circuit Synchronous

3.2.5.1.2 Set CUG Subscription

To set attributes of a CUG subscription, the following definition is applied:

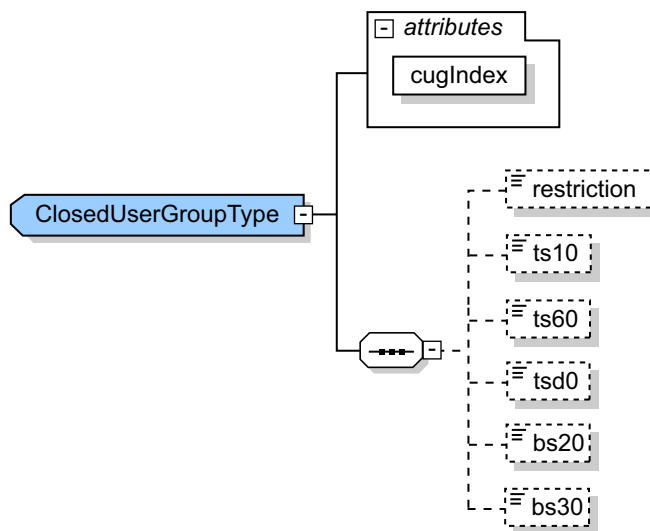


Figure 23 Set CUG Subscription

Table 32 Set CUG Subscription

Parameter	Type	Occurrence	Description
cugIndex	String Values are 0-32767.	Mandatory	CUG Index
restriction	unsignedByte Values are 0-2: <ul style="list-style-type: none"> 0 = NONE 1 = ICB 2 = OCB 	Optional	CUG Restriction
ts10	unsignedByte Values are 0-1.	Optional	Basic Service Group: All speech transmission services
ts60	unsignedByte Values are 0-1.	Optional	Basic Service Group: Facsimile Basic Service Group
tsd0	unsignedByte Values are 0-1.	Optional	Basic Service Group: Auxiliary speech services
bs20	unsignedByte Values are 0-1.	Optional	Basic Service Group: All Data Circuit Asynchronous
bs30	unsignedByte Values are 0-1.	Optional	Basic Service Group: All Data Circuit Synchronous

3.2.5.1.3 Delete CUG Subscription

To delete attributes of a CUG subscription, the following definition is applied:

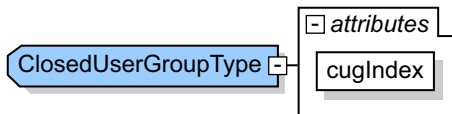


Figure 24 Delete CUG Subscription

Table 33 Delete CUG Subscription

Parameter	Type	Occurrence	Description
cugIndex	String Values are 0-32767 and ALL.	Mandatory	CUG Index

If there is a modifying message request, create/set/delete CUG subscriptions can be combined in any order, for example:

```
<ns:Set xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
<ns:MOType>Subscription@http://schemas.ericsson.com/ema/
  UserProvisioning/GsmHlr/</ns:MOType>
  <ns:MOId>
    <msisdn xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">46455381234</msisdn>
  </ns:MOId>
  <ns:MOAttributes>
    <setSubscription xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/" xmlns:cai3g=
        "http://schemas.ericsson.com/cai3g1.2/" xmlns:xsi=
        "http://www.w3.org/2001/XMLSchema-instance" msisdn=
        "46455381234">
      <closedUserGroup cugIndex="12">
        <cugIndex>12</cugIndex>
        <interlockCode>0017-2871</interlockCode>
        <restriction>1</restriction>
        <bs20>1</bs20>
      </closedUserGroup>
      <closedUserGroup cugIndex="1" xsi:nil="true"/>
      <closedUserGroup cugIndex="38" xsi:nil="true"/>
      <closedUserGroup cugIndex="34">
        <restriction>2</restriction>
        <ts60>0</ts60>
      </closedUserGroup>
    </setSubscription>
  </ns:MOAttributes>
</ns:Set>
```

3.2.5.1.4 Get CUG Subscription

The Get message response of a request to display a subscriber contains the CUG subscription data in following format:

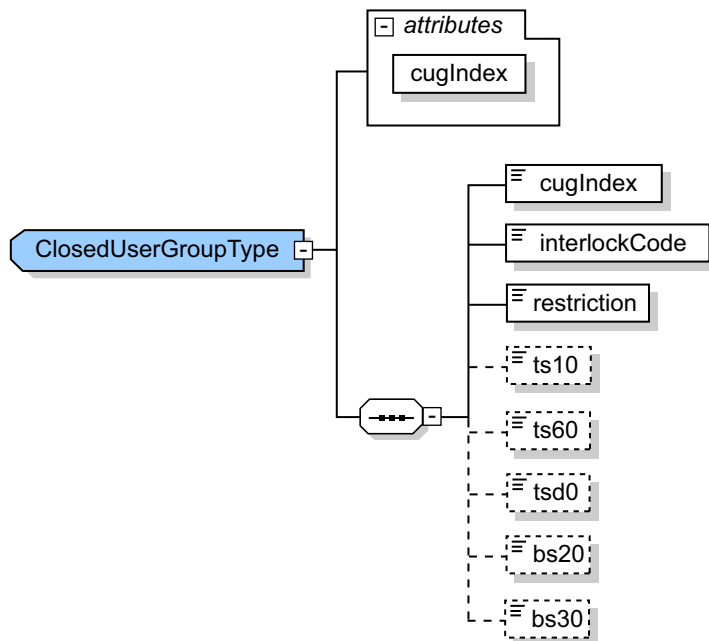


Figure 25 Get CUG Subscription

Table 34 Get CUG Subscription

Parameter	Type	Occurrence	Description
cugIndex	String Values are 0-32767.	Mandatory	CUG Index
interlockCode	String The value format falls into two parts that are connected with a -. The range is from 0000-0 to 9999-65535.	Mandatory	Interlock Code
restriction	unsignedByte Values are 0-2: <ul style="list-style-type: none"> 0 = NONE 1 = ICB 2 = OCB 	Mandatory	CUG Restriction
ts10	unsignedByte Values are 0-1.	Optional	Basic Service Group: All speech transmission services
ts60	unsignedByte Values are 0-1.	Optional	Basic Service Group: Facsimile Basic Service Group
tsd0	unsignedByte Values are 0-1.	Optional	Basic Service Group: Auxiliary speech services
bs20	unsignedByte Values are 0-1.	Optional	Basic Service Group: All Data Circuit Asynchronous
bs30	unsignedByte Values are 0-1.	Optional	Basic Service Group: All Data Circuit Synchronous

```

<ns4:GetResponse>
  <MOAttributes xmlns="http://schemas.ericsson.com/cai3g1.2/">
    <getResponseSubscription msisdn="46455381234" imsi=
      "12345678933333" xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/" xmlns:xsi="http://www.w3.org/2001/
      XMLSchema-instance">
      <msisdn>46455381234</msisdn>
      <imsi>12345678933333</imsi>
      <authd>NO ACCESS TO AUC</authd>
      <closedUserGroup cugIndex="12">
        <cugIndex>12</cugIndex>
        <interlockCode>0007-98</interlockCode>
        <restriction>1</restriction>
        <tsd0>1</tsd0>
        <bs20>1</bs20>
      </closedUserGroup>
      <closedUserGroup cugIndex="78">
        <cugIndex>78</cugIndex>
        <interlockCode>0089-457</interlockCode>
        <restriction>2</restriction>
        <ts10>1</ts10>
      </closedUserGroup>
      <nam>
        <prov>1</prov>
      </nam>
      <cug>1</cug>
    </getResponseSubscription>
  </MOAttributes>
</ns4:GetResponse>

```

Example 27 Get CUG Subscription

3.2.5.2 Closed User Group BSG Options

It is possible to change a HLR subscribers CUG Basic Service Group option by the attribute CUG. The options that can be attached to a CUG BSG are:

- a Access, determines the specific access for a BSG. Can be one of following:
 - Outgoing Access (OA) - Incoming Access (IA) - Outgoing and Incoming Access (OIA) - No access (NONE)
- b Preferential CUG index, determines the default CUG to be used by the network when no explicit CUG index is received from the mobile subscriber.

The CUG BSG options argument is defined as follows:

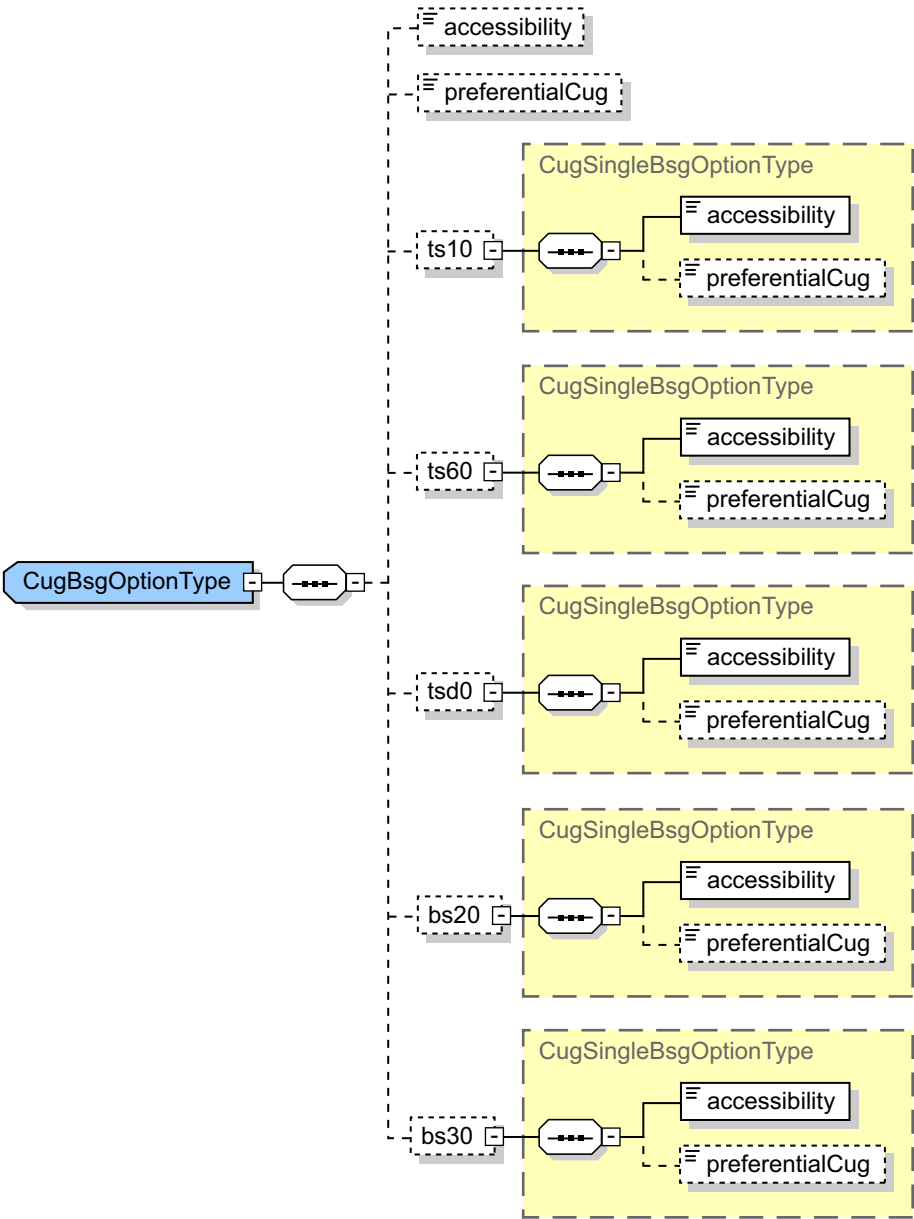


Figure 26 Closed User Group Options

Table 35 Closed User Group Options

Parameter	Type	Occurrence	Description
accessibility	unsignedByte Values are 0-3: <ul style="list-style-type: none">0 = NONE1 = OA2 = IA3 = OIA	Optional It is mandatory if preferentialCug is not defined.	Access attribute



Parameter		Type	Occurrence	Description
preferentialCug		String Values are 0-32767, NONE.	Optional	Preferential CUG index
ts10		CugSingleBsgOptionType	Optional	Basic Service Group: All speech transmission services
	accessibility	unsignedByte Values are 0-3: <ul style="list-style-type: none">• 0 = NONE• 1 = OA• 2 = IA• 3 = OIA	Mandatory	Access attribute
	preferentialCug	String Values are 0-32767, NONE.	Optional	Preferential CUG index
ts60		CugSingleBsgOptionType	Optional	Basic Service Group: Facsimile Basic Service Group
	accessibility	unsignedByte Values are 0-3: <ul style="list-style-type: none">• 0=NONE• 1=OA• 2=IA• 3=OIA	Mandatory	Access attribute
	preferentialCug	String Values are 0-32767, NONE.	Optional	Preferential CUG index
tsd0		CugSingleBsgOptionType	Optional	Basic Service Group: Auxiliary speech services
	accessibility	unsignedByte Values are 0-3: <ul style="list-style-type: none">• 0 = NONE• 1 = OA• 2 = IA• 3 = OIA	Mandatory	Access attribute
	preferentialCug	String Values are 0-32767, NONE.	Optional	Preferential CUG index
bs20		CugSingleBsgOptionType	Optional	Basic Service Group: All Data Circuit Asynchronous



Parameter	Type	Occurrence	Description
accessibility	unsignedByte Values are 0-3: <ul style="list-style-type: none"> 0 = NONE 1 = OA 2 = IA 3 = OIA 	Mandatory	Access attribute
preferentialCug	String Values are 0-32767, NONE.	Optional	Preferential CUG index
bs30	CugSingleBsgOptionType	Optional	Basic Service Group: All Data Circuit Synchronous
accessibility	unsignedByte Values are 0-3: <ul style="list-style-type: none"> 0=NONE 1=OA 2=IA 3=OIA 	Mandatory	Access attribute
preferentialCug	String Values are 0-32767, NONE.	Optional	Preferential CUG index

A CUG BSG options set can be used in an ordinary Create/Set operation, for example:

```
<ns:Set xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
<ns:MOType>Subscription@http://schemas.ericsson.com/ema/
  UserProvisioning/GsmHlr/</ns:MOType>
  <ns:MOId>
    <msisdn xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">46455381234</msisdn>
  </ns:MOId>
  <ns:MOAttributes>
    <setSubscription xmlns="http://schemas.ericsson.com/
      ema/UserProvisioning/GsmHlr/" xmlns:cai3g=
        "http://schemas.ericsson.com/cai3g1.2/" xmlns:xsi=
          "http://www.w3.org/2001/XMLSchema-instance" msisdn=
            "46455381234">
      <cugBsgOption>
        <ts10>
          <accessibility>2</accessibility>
        </ts10>
        <ts60>
          <accessibility>1</accessibility>
          <preferentialCug>76</preferentialCug>
        </ts60>
      </cugBsgOption>
    </setSubscription>
  </ns:MOAttributes>
</ns:Set>
```

3.2.5.2.1 Get CUG Options

The Get response message of a request to display a subscription contains the CUG data in following format:

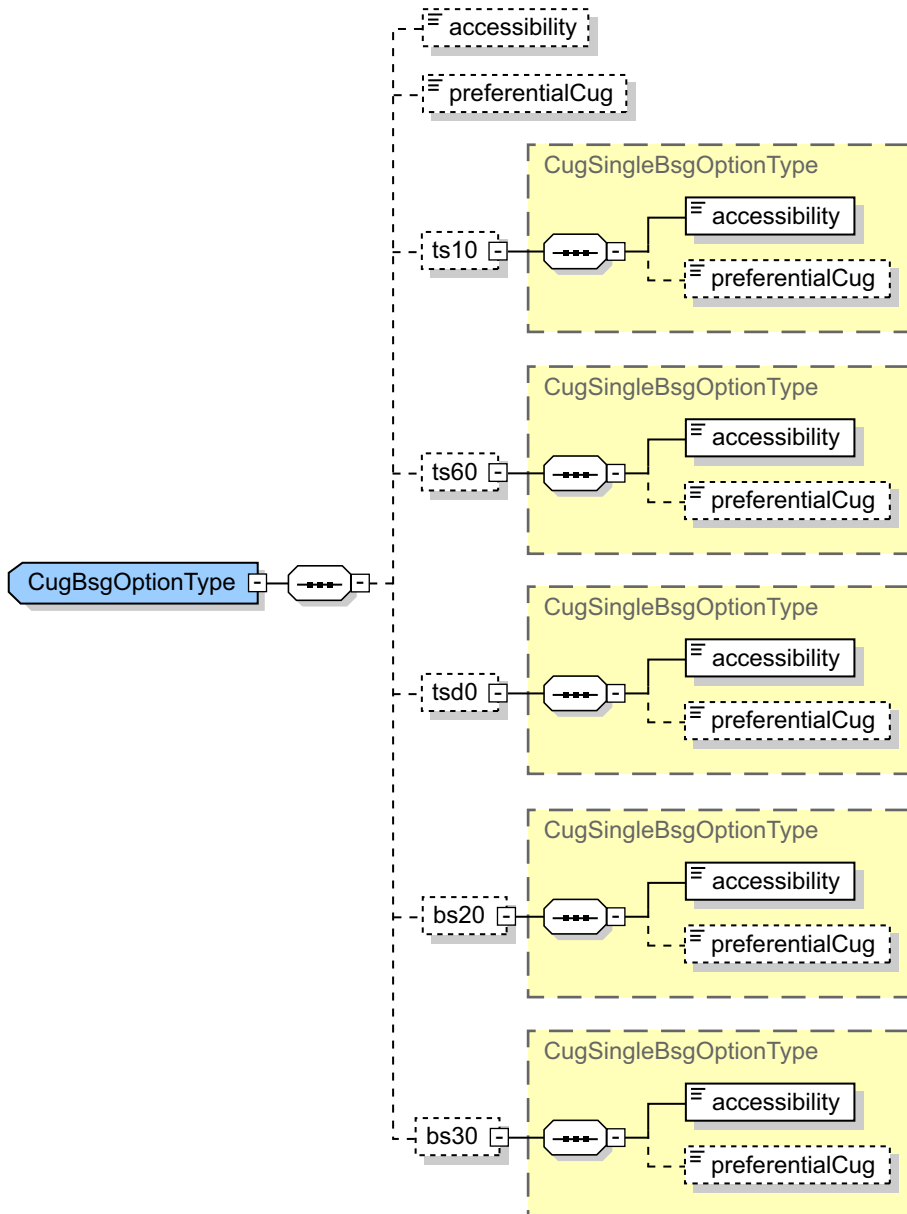


Figure 27 Get CUG Options Response



Table 36 Get CUG Options Response

Parameter		Type	Occurrence	Description
accessibility		unsignedByte Values are 0-3: <ul style="list-style-type: none">0 = NONE1 = OA2 = IA3 = OIA	Optional	Access attribute
preferentialCug		String Values are 0-32767, NONE.	Optional	Preferential CUG index
ts10		CugSingleBsgOptionType	Optional	Basic Service Group
	accessibility	unsignedByte Values are 0-3: <ul style="list-style-type: none">0 = NONE1 = OA2 = IA3 = OIA	Mandatory	Access attribute
	preferentialCug	String Values are 0-32767, NONE.	Optional	Preferential CUG index
ts60		CugSingleBsgOptionType	Optional	Basic Service Group
	accessibility	unsignedByte Values are 0-3: <ul style="list-style-type: none">0=NONE1=OA2=IA3=OIA	Mandatory	Access attribute
	preferentialCug	String Values are 0-32767, NONE.	Optional	Preferential CUG index
tsd0		CugSingleBsgOptionType	Optional	Basic Service Group
	accessibility	unsignedByte Values are 0-3: <ul style="list-style-type: none">0 = NONE1 = OA2 = IA3 = OIA	Mandatory	Access attribute
	preferentialCug	String Values are 0-32767, NONE.	Optional	Preferential CUG index
bs20		CugSingleBsgOptionType	Optional	Basic Service Group

Parameter		Type	Occurrence	Description
	accessibility	unsignedByte Values are 0-3: <ul style="list-style-type: none"> 0 = NONE 1 = OA 2 = IA 3 = OIA 	Mandatory	Access attribute
	preferentialCug	String Values are 0-32767, NONE.	Optional	Preferential CUG index
bs30		CugSingleBsgOptionType	Optional	Basic Service Group
	accessibility	unsignedByte Values are 0-3: <ul style="list-style-type: none"> 0 = NONE 1 = OA 2 = IA 3 = OIA 	Mandatory	Access attribute
	preferentialCug	String Values are 0-32767, NONE.	Optional	Preferential CUG index

3.2.6 Mobility Management Related IN Triggering

3.2.6.1 Create a Mobility Management Related IN Trigger

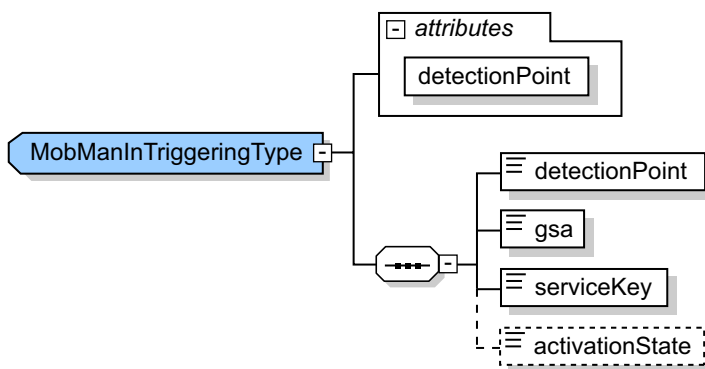


Figure 28 Create a Mobility Management Related IN Trigger

Table 37 Create a Mobility Management Related IN Trigger

Parameter	Type	Occurrence	Description
detectionPoint	unsignedByte Values are 0-1.	Mandatory	The detection point which is to be triggered



Parameter	Type	Occurrence	Description
gsa	String, 3-15 digits	Mandatory	The GSM communication Service control function Address which points out the SCF node
serviceKey	unsignedInt Values are 0-2147483647.	Mandatory	The service key value which points out the IN service in the SCF node
activationState	unsignedByte Value 1.	Optional	Activate/deactivate the Mobility Management Related IN Trigger data for a specific Detection Point

- a When defining the Mobility Management Related IN Trigger data, the Detection Point, the GSM SCF address, and the service key is to be provided in the request, for example:

```

<ns:Set xmlns:ns="http://schemas.ericsson.com/cai3gl.2/">
  <ns:MOType>Subscription@http://schemas.ericsson.com/
    ema/UserProvisioning/GsmHlr/</ns:MOType>
  <ns:MOId>
    <msisdn xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">46455381234</msisdn>
  </ns:MOId>
  <ns:MOAttributes>
    <setSubscription xmlns="http://schemas.ericsson.com/
      ema/UserProvisioning/GsmHlr/" xmlns:cai3g=
        "http://schemas.ericsson.com/cai3gl.2/" xmlns:xsi=
        "http://www.w3.org/2001/XMLSchema-instance" msisdn=
        "46455381234">
      <mmintMo detectionPoint="1">
        <detectionPoint>1</detectionPoint>
        <gsa>491000000</gsa>
        <serviceKey>12345</serviceKey>
      </mmintMo>
    </setSubscription>
  </ns:MOAttributes>
</ns:Set>

```

This example defines a Mobility Management Related IN Trigger on the Detection Point 1 for the subscriber with MSISDN 46455381234. The GSM SCF address to the IN service is 491000000 and the Service Key is 12345.

3.2.6.2

Set Mobility Management Related IN Trigger Data

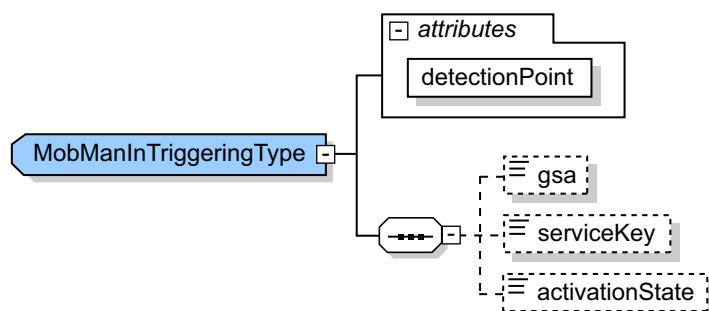


Figure 29 Set Mobility Management Related IN Trigger Data

Table 38 Set Mobility Management Related IN Trigger Data

Parameter	Type	Occurrence	Description
detectionPoint	unsignedByte Values are 0-1.	Mandatory	The detection point which is to be triggered
gsa	String, 3-15 digits	Optional	The GSM communication Service control function Address which points out the SCF node
serviceKey	unsignedInt Values are 0-2147483647.	Optional	The service key value which points out the IN service in the SCF node
activationState	unsignedByte Values are 0-1.	Optional	Activate/deactivate the Mobility Management Related IN Trigger data for a specific Detection Point

- a It is possible to change the Mobility Management Related IN Trigger data which is to be used for a specific Detection Point. It is also possible to activate/deactivate a specific Detection Point, for example:

```

<ns:Set xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
  <ns:MOType>Subscription@http://schemas.ericsson.com/
    ema/UserProvisioning/GsmHlr/</ns:MOType>
  <ns:MOId>
    <msisdn xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">46455381234</msisdn>
  </ns:MOId>
  <ns:MOAttributes>
    <setSubscription xmlns="http://schemas.ericsson.com/
      ema/UserProvisioning/GsmHlr/" xmlns:cai3g=
        "http://schemas.ericsson.com/cai3g1.2/" xmlns:xsi=
        "http://www.w3.org/2001/XMLSchema-instance" msisdn=
        "46455381234">
      <mmintMo detectionPoint="1">
        <serviceKey>565656</serviceKey>
        <activationState>1</activationState>
      </mmintMo>
    </setSubscription>
  </ns:MOAttributes>
</ns:Set>

```

The Mobility Management Related IN Trigger data which points out the IN service that is to be used when Detection Point 1 is triggered point on the new Service Key value 565656.

3.2.6.3

Delete Mobility Management Related IN Trigger Data

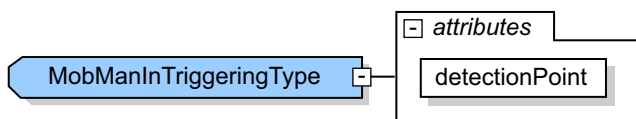


Figure 30 Delete Mobility Management Related IN Trigger Data



Table 39 Delete Mobility Management Related IN Trigger Data

Parameter	Type	Occurrence	Description
detectionPoint	unsignedByte Values are 0-1.	Mandatory	The detection point which is to be triggered

- a The deletion of the Mobility Management Related IN Trigger data is done by using the Detection Point as an identifier, for example:

```
<ns:Set xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
  <ns:MOType>Subscription@http://schemas.ericsson.com/
    ema/UserProvisioning/GsmHlr/</ns:MOType>
  <ns:MOId>
    <msisdn xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">46455381234</msisdn>
  </ns:MOId>
  <ns:MOAttributes>
    <setSubscription xmlns="http://schemas.ericsson.com/
      ema/UserProvisioning/GsmHlr/" xmlns:cai3g=
        "http://schemas.ericsson.com/cai3g1.2/" xmlns:xsi=
        "http://www.w3.org/2001/XMLSchema-instance" msisdn=
        "46455381234">
      <mmintMo detectionPoint="1" xsi:nil="true"/>
    </setSubscription>
  </ns:MOAttributes>
</ns:Set>
```

This example removes the Mobility Management Related IN Trigger data for Detection Point 1.

3.2.7

GPRS

GPRS is a set of GSM phase 2+ bearer services that allow subscribers to send and receive data in an end-to-end packet transfer mode. It enables efficient use of network resources for packet mode data applications that exhibit characteristics such as non-periodic data transmission, frequent transmission of small volumes of data, or infrequent transmission of larger volumes of data. The permanent subscriber data for a GPRS subscription is stored in the HLR. A Network Access Mode (NAM) decides what type of network access the subscriber has. It can be:

- Access to non-GPRS network only
- Access to GPRS network only
- Access to both non-GPRS network and GPRS network

The GPRS subscription data is handled in the HLR Subscription MO in Dynamic Activation. To differentiate the GPRS data from non-GPRS as well as to provide a future-proof solution, two tags are defined: GPRS, starting tag of all GPRS subscription data and PDPCONTEXT, starting tag of the contents of PDP context. Below the syntax of GPRS subscription data administration is described.

3.2.7.1 Create GPRS Subscription Data

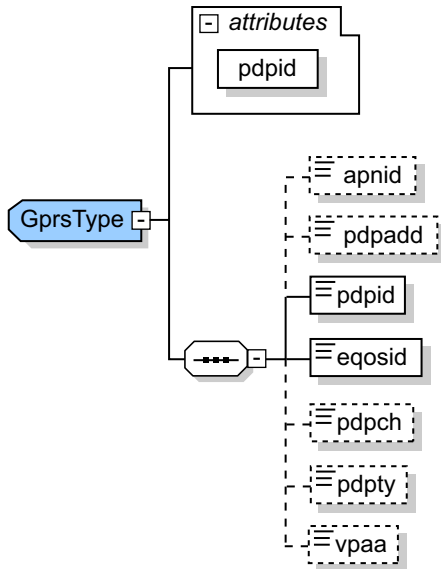


Figure 31 Create GPRS Subscription Data

Table 40 Create GPRS Subscription Data

Parameter	Type	Occurrence	Description
apnid	Integer 0-16383 or String: NS = Non-subscriber APN WILDCARD = Non-subscriber APN (the same as NS)	Optional	Access Point Name Identifier
pdpadd	String Possible values are IP Address or ERASE The format of IPv4 address is oc1.oc2.oc3.oc4 oc1: numeral 0-255; oc2: numeral 0-255; oc3: numeral 0-255; oc4: numeral 0-255) The format of IPv6 address is hex1:hex2:hex3:hex4:hex5:hex6:hex7:hex8 or other abbreviated styles. hex1: 0000-FFFF hex2: 0000-FFFF hex3: 0000-FFFF hex4: 0000-FFFF hex5: 0000-FFFF hex6: 0000-FFFF hex7: 0000-FFFF hex8: 0000-FFFF	Optional	Packet Data Protocol Address (IP address).
pdpid	String, 1-3 digits Values are 1-50.	Mandatory	Subscriber PDP context Identifier



Parameter	Type	Occurrence	Description
eqosid	unsignedShort Values are 0-4095.	Mandatory	Extended Quality of Service Identifier
pdpch	String The format is pdppi [-pdpgb]: pdppi = PDP context Profile Index (Integer 0-15) Optional value pdpgb = PDP context GSN Behavior index (Integer 0-4095).	Optional	PDP context Charging characteristics
pdpty	String Values are IPV4, IPV6, or PPP.	Optional	PDP Context Type
vpaa	unsignedByte Values are 0-1: 0 = not allowed 1 = allowed	Optional	Visited Public Land Mobile Network Address Allowed

Creating a subscriber with only GPRS Subscription data:

```

<ns:Create xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
  <ns:MOType xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
    Subscription@http://schemas.ericsson.com/ema/UserProvisioning/
    GsmHlr/</ns:MOType>
  <ns:MOId xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
    <msisdn xmlns="http://schemas.ericsson.com/ema/
    UserProvisioning/GsmHlr/">46455381234</msisdn>
    <imsi xmlns="http://schemas.ericsson.com/ema/
    UserProvisioning/GsmHlr/">12345678933333</imsi>
  </ns:MOId>
  <ns:MOAttributes xmlns:ns="http://schemas.ericsson.com/
  cai3g1.2/">
    <createSubscription xmlns="http://schemas.ericsson.com/
    ema/UserProvisioning/GsmHlr/" msisdn="46455381234" imsi=
    "12345678933333">
      <msisdn>46455381234</msisdn>
      <imsi>12345678933333</imsi>
      <gprs pdpid="1">
        <pdpid>1</pdpid>
        <apnid>1</apnid>
        <pdpadd>136.225.1.1</pdpadd>
        <eqosid>1</eqosid>
        <pdpch>1</pdpch>
        <pdpty>IPv4</pdpty>
      </gprs>
      <gprs pdpid="2">
        <apnid>2</apnid>
        <pdpid>2</pdpid>
        <eqosid>2</eqosid>
        <pdpch>2</pdpch>
        <pdpty>PPP</pdpty>
        <vpaa>0</vpaa>
      </gprs>
      <gprs pdpid="3">
        <apnid>2047</apnid>
        <pdpadd>136.225.1.2</pdpadd>
        <pdpid>3</pdpid>
        <eqosid>4095</eqosid>
        <pdpch>15</pdpch>
        <vpaa>1</vpaa>
      </gprs>
      <nam>2</nam>
      <tsmo>0</tsmo>
    </createSubscription>
  </ns:MOAttributes>
</ns:Create>

```

Creating a subscriber with both GPRS and non-GPRS Subscription data:



```

<ns:Create xmlns:ns="http://schemas.ericsson.com/cai3gl.2/">
  <ns:MOType xmlns:ns="http://schemas.ericsson.com/cai3gl.2/">
    Subscription@http://schemas.ericsson.com/ema/UserProvisioning/
    GsmHlr/</ns:MOType>
  <ns:MOId xmlns:ns="http://schemas.ericsson.com/cai3gl.2/">
    <msisdn xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">46455381234</msisdn>
    <imsi xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">12345678933333</imsi>
  </ns:MOId>
  <ns:MOAttributes xmlns:ns="http://schemas.ericsson.com/
    cai3gl.2/">
    <createSubscription xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/" msisdn="46455381234"
      imsi="12345678933333">
      <msisdn>46455381234</msisdn>
      <imsi>12345678933333</imsi>
      <amsisdn amsisdn="46455381235">
        <amsisdn>46455381235</amsisdn>
        <bc>0</bc>
      </amsisdn>
      <gprs pdpid="1">
        <pdpid>1</pdpid>
        <apnid>1</apnid>
        <pdpadd>136.225.1.1</pdpadd>
        <eqosid>1</eqosid>
        <pdpch>1</pdpch>
        <pdpty>IPV4</pdpty>
      </gprs>
      <gprs pdpid="2">
        <apnid>2</apnid>
        <pdpid>2</pdpid>
        <pdpch>2</pdpch>
        <pdpty>PPP</pdpty>
        <vpaa>0</vpaa>
      </gprs>
      <gprs pdpid="3">
        <apnid>2047</apnid>
        <pdpadd>136.225.1.2</pdpadd>
        <pdpid>3</pdpid>
        <eqosid>4095</eqosid>
        <pdpch>15</pdpch>
        <vpaa>1</vpaa>
      </gprs>
      <nam>0</nam>
      <caw>1</caw>
      <cat>10</cat>
      <tsmo>1</tsmo>
    </createSubscription>
  </ns:MOAttributes>
</ns:Create>

```

3.2.7.2 Set GPRS Subscription Data

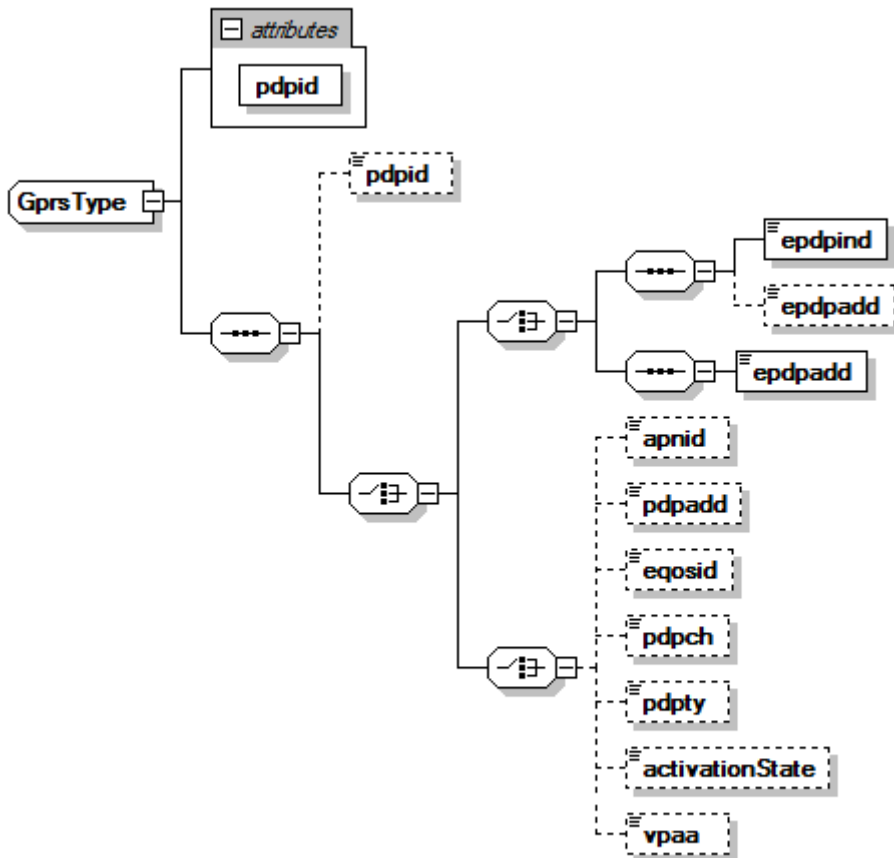


Figure 32 Setting GPRS Subscription Data

Table 41 Set GPRS Subscription Data

Parameter	Type	Occurrence	Description
pdpid	String, 1-3 digits Values are 1-50.	Mandatory in the attribute part, Optional in the Element part	Subscriber PDP context Identifier
apnid	Integer 0-16383 or String: NS = Non-subscriber APN WILDCARD = Non-subscriber APN (the same as NS)	Optional	Access Point Name Identifier



Parameter	Type	Occurrence	Description
pdpadd	String Possible values are IP Address or ERASE The format of IPv4 address is oc1.oc2.oc3.oc4 oc1: numeral 0–255; oc2: numeral 0–255; oc3: numeral 0–255; oc4: numeral 0–255) The format of IPv6 address is hex1:hex2:hex3:hex4:hex5:hex6:hex7:hex8 or other abbreviated styles. hex1: 0000-FFFF hex2: 0000-FFFF hex3: 0000-FFFF hex4: 0000-FFFF hex5: 0000-FFFF hex6: 0000-FFFF hex7: 0000-FFFF hex8: 0000-FFFF	Optional	Packet Data Protocol Address
eqosid	unsignedShort Values are 0–4095.	Optional	Extended Quality of Service Identifier (Integer 0–4095).
epdpind	unsignedByte Values are 0–1.	Optional	Extended PDP context Indicator
epdpadd	unsignedByte Possible values are IPv4, IPv6 address, or ERASE The format of IPv4 address is oc1.oc2.oc3.oc4 oc1: numeral 0–255; oc2: numeral 0–255; oc3: numeral 0–255; oc4: numeral 0–255) The format of IPv6 address is hex1:hex2:hex3:hex4:hex5:hex6:hex7:hex8 or other abbreviated styles.	Optional	Extended PDP context Address
pdpch	String The format is pdppi[-pdpgb]: pdppi = PDP context Profile Index (Integer 0–15) Optional value pdpgb = PDP context GSN Behavior index (Integer 0–4095). It can also be ERASE.	Optional	PDP context Charging characteristics
pdpty	String Values are IPV4, IPV6, or PPP.	Optional	PDP Context Type
vpaa	unsignedByte Values are 0–1: 0 = not allowed 1 = allowed	Optional	Visited Public Land Mobile Network Address Allowed

Note: At least one parameter in {apnid, eqosid, pdpty, pdpadd, pdpch, vpaa} is to be given in GPRS modify operation.

```
<ns:Set xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
  <ns:MOType xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
    Subscription@http://schemas.ericsson.com/ema/UserProvisioning/
    GsmHlr/</ns:MOType>
  <ns:MOId xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
    <msisdn xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">22220000</msisdn>
  </ns:MOId>
  <ns:MOAttributes xmlns:ns="http://schemas.ericsson.com/
    cai3g1.2/">
    <setSubscription xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/" msisdn="22220000">
      <gprs pdpid="1">
        <pdpid>1</pdpid>
        <apnid>1</apnid>
        <pdpadd>1.1.1.1</pdpadd>
        <eqosid>1</eqosid>
        <pdpch>1-1</pdpch>
        <pdpty>IPv4</pdpty>
        <vpaa>0</vpaa>
      </gprs>
    </setSubscription>
  </ns:MOAttributes>
</ns:Set>
```

Example 28 *Set GPRS Subscription Data, which results in a set-create operation.*

```
<ns:Set xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
  <ns:MOType xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
    Subscription@http://schemas.ericsson.com/ema/UserProvisioning/
    GsmHlr/</ns:MOType>
  <ns:MOId xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
    <msisdn xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">22220000</msisdn>
  </ns:MOId>
  <ns:MOAttributes xmlns:ns="http://schemas.ericsson.com/
    cai3g1.2/">
    <setSubscription xmlns="http://schemas.ericsson.com/
      ema/UserProvisioning/GsmHlr/" msisdn="22220000">
      <gprs pdpid="1">
        <apnid>WILDCARD</apnid>
        <pdpadd>ERASE</pdpadd>
        <pdpch>ERASE</pdpch>
      </gprs>
    </setSubscription>
  </ns:MOAttributes>
</ns:Set>
```

Example 29 *Set GPRS Subscription Data, which allows the mobile subscriber to request a non-subscribed APN. The PDP address and the PDP context-charging-characteristics are removed from the PDP context.*



```
<ns:Set xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
  <ns:MOType xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
    Subscription@http://schemas.ericsson.com/ema/UserProvisioning/
    GsmHlr/</ns:MOType>
  <ns:MOId xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
    <msisdn xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">22220000</msisdn>
  </ns:MOId>
  <ns:MOAttributes xmlns:ns="http://schemas.ericsson.com/
    cai3g1.2/">
    <setSubscription xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">
      <gprs pdpid="5">
        <epdpind>true</epdpind>
        <epdpadd>1A25:FFD2:23BC:121d:78ee:3EE0:1eee:652A</epdpadd>
      </gprs>
    </setSubscription>
  </ns:MOAttributes>
</ns:Set>
```

Example 30 Set GPRS Subscription Data, which sets an extended PDP context with an indicator and an address.

3.2.7.3 Delete GPRS Subscription Data

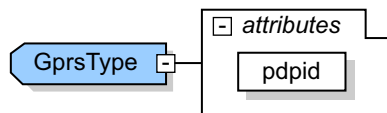


Figure 33 Delete GPRS Subscription Data

Table 42 Delete GPRS Subscription Data

Parameter	Type	Occurrence	Description
pdpid	String, 1-3 digits Values are 1-50 or ALL.	Mandatory	Subscriber PDP context Identifier

```
<ns:Set xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
  <ns:MOType xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
    Subscription@http://schemas.ericsson.com/ema/UserProvisioning/
    GsmHlr/</ns:MOType>
  <ns:MOId xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
    <msisdn xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">46455381234</msisdn>
  </ns:MOId>
  <ns:MOAttributes xmlns:ns="http://schemas.ericsson.com/
    cai3g1.2/">
    <setSubscription xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/" msisdn="46455381234">
      <gprs pdpid="1" xsi:nil="true">
      </gprs>
    </setSubscription>
  </ns:MOAttributes>
</ns:Set>
```

Example 31 Delete All GPRS Subscription Data for a Subscriber

3.2.7.4 Get GPRS Subscription Data

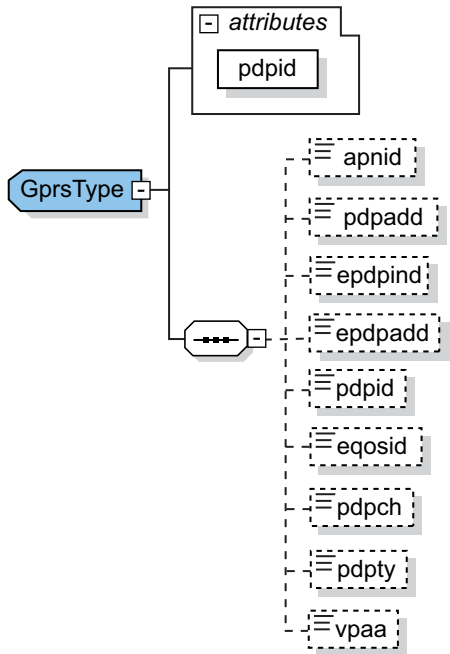


Figure 34 Get GPRS Subscription Data Response

Table 43 Get GPRS Subscription Data Response

Parameter	Type	Occurrence	Description
apnid	Integer 0-16383 or String: NS = Not Subscribed	Optional	Access Point Name Identifier
pdpadd	String Possible values are IP Address or ERASE The format of IPv4 address is oc1.oc2.oc3.oc4 oc1: numeral 0-255; oc2: numeral 0-255; oc3: numeral 0-255; oc4: numeral 0-255) The format of IPv6 address is hex1:hex2:hex3:hex4:hex5:hex6:hex7:hex8 or other abbreviated styles. hex1: 0000-FFFF hex2: 0000-FFFF hex3: 0000-FFFF hex4: 0000-FFFF hex5: 0000-FFFF hex6: 0000-FFFF hex7: 0000-FFFF hex8: 0000-FFFF	Optional	Packet Data Protocol Address (IP address)
epdpind	unsignedByte Values are 0-1.	Optional	Extended PDP context Indicator



Parameter	Type	Occurrence	Description
epdpadd	unsignedByte Possible values are IPv4, IPv6 address, or ERASE The format of IPv4 address is oc1.oc2.oc3.oc4 oc1: numeral 0–255; oc2: numeral 0–255; oc3: numeral 0–255; oc4: numeral 0–255) The format of IPv6 address is hex1:hex2:hex3:hex4:hex5:hex6:hex7:hex8 or other abbreviated styles.	Optional	Extended PDP context Address
pdpid	String, 1-3 digits Values are 1–50.	Mandatory	Subscriber PDP context Identifier
eqosid	unsignedShort Values are 0–4095.	Optional	Extended Quality of Service Identifier
pdpch	String The format is pdppi[-pdpgb]: pdppi = PDP context Profile Index (Integer 0–15) Optional value pdpgb = PDP context GSN Behavior index (Integer 0–4095).	Optional	PDP context Charging characteristics
pdpty	String Values are IPV4, IPV6, or PPP.	Optional	PDP Context Type
vpaa	unsignedByte Values are 0–1: 0 = not allowed 1 = allowed	Optional	Visited Public Land Mobile Network Address Allowed

3.2.8 Gateway Mobile Location Center (GMLC) Address

Gateway Mobile Location Center is the PLMN node that interfaces to location applications which request GSM Location Services (LCS) for a specific subscriber. The GMLC can perform location application authorizations to check the validity of the requesting application. There is wide range of location applications for the geographical positioning services. For example, positioning of vehicles for transport and taxi companies, positioning of emergency calls, positioning of stolen vehicles, and detection of hot spots for micro-cells.

3.2.8.1 Create Subscriber GMLC Address

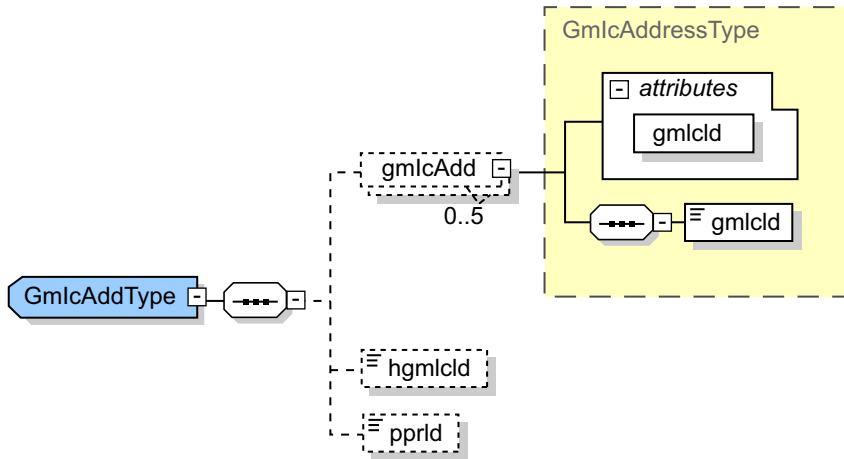


Figure 35 Create Subscriber GMLC Address

Table 44 Create Subscriber GMLC Address

Parameter	Type	Occurrence	Description
gmlcAdd	GmlcAddressType	Optional	GMLC Address Data
gmlcid	String Values are 0-255.	Mandatory	GMLC address Identifier
hgmlcid	String Values are 0-255.	Optional	Home GMLC address Identifier
pprid	String Values are 0-255.	Optional	Privacy Profile Register address Identifier

a A mobile subscriber in the HLR can be assigned GMLC address.

```

<ns:Create xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
  <ns:MOType xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
    Subscription@http://schemas.ericsson.com/ema/UserProvisioning/
    GsmHlr/</ns:MOType>
    <ns:MOId xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
      <msisdn xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">3417429013</msisdn>
      <imsi xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">12345678933333</imsi>
    </ns:MOId>
    <ns:MOAttributes xmlns:ns="http://schemas.ericsson.com/
    cai3g1.2/">
      <createSubscription xmlns="http://schemas.ericsson.com/
      ema/UserProvisioning/GsmHlr/" msisdn="3417429013"
      imsi="12345678933333">
        <msisdn>3417429013</msisdn>
        <imsi>12345678933333</imsi>
        <gmlca12>
          <gmlcAdd gmlcId="33">
            <gmlcId>33</gmlcId>
          </gmlcAdd>
        </gmlca12>
      </createSubscription>
    </ns:MOAttributes>
  </ns:Create>

```




GMLC address with identifier 33 is assigned to the mobile subscriber with MSISDN 3417429013.

Note: Up to five GMLC addresses can be assigned to a mobile subscriber.

3.2.8.2

Delete Subscriber GMLC Address

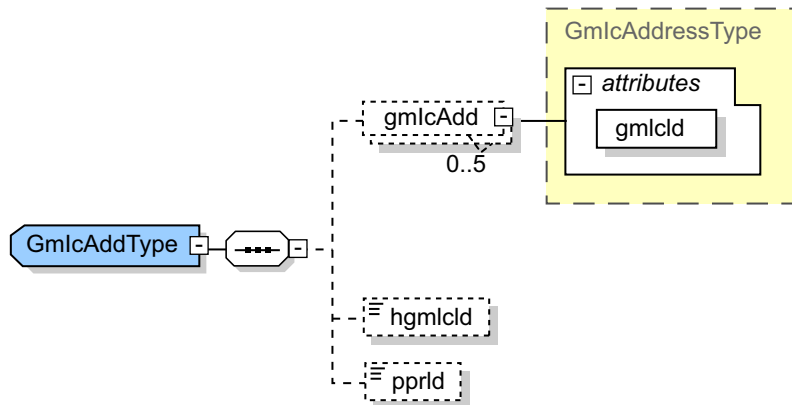


Figure 36 Delete Subscriber GMLC Address

Table 45 Delete Subscriber GMLC Address

Parameter	Type	Occurrence	Description
gmlcAdd	GmlcAddressType	Optional	GMLC Address Data
gmlcId	String Values are 0-255 or ALL.	Mandatory	GMLC address Identifier
hgmlcId	String Values are 0-255.	Optional	Home GMLC address Identifier
pprId	String Values are 0-255.	Optional	Privacy Profile Register address Identifier

- a A mobile subscribers GMLC address data previously defined can be removed in the HLR.

```

<ns:Set xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
  <ns:MOType xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
    Subscription@http://schemas.ericsson.com/ema/UserProvisioning/
    GsmHlr/</ns:MOType>
  <ns:MOId xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
    <msisdn xmlns="http://schemas.ericsson.com/ema/
    UserProvisioning/GsmHlr/">49513789000</msisdn>
  </ns:MOId>
  <ns:MOAttributes xmlns:ns="http://schemas.ericsson.com/
  cai3g1.2/">
    <setSubscription xmlns="http://schemas.ericsson.com/
    ema/UserProvisioning/GsmHlr/" msisdn="49513789000">
      <msisdn>49513789000</msisdn>
      <gmlcal2 xsi:nil="true">
        <pprId>ALL</pprId>
      </gmlcal2>
    </setSubscription>
  </ns:MOAttributes>
</ns:Set>

```

```
<ns:Set xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
  <ns:MOType xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
    Subscription@http://schemas.ericsson.com/ema/UserProvisioning/
    GsmHlr/</ns:MOType>
  <ns:MOId xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
    <msisdn xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">49513789000</msisdn>
  </ns:MOId>
  <ns:MOAttributes xmlns:ns="http://schemas.ericsson.com/
    cai3g1.2/">
    <setSubscription xmlns="http://schemas.ericsson.com/
      ema/UserProvisioning/GsmHlr/" msisdn="49513789000">
      <msisdn>49513789000</msisdn>
      <gmlca12 xsi:nil="true">
        <hgmlcId>125</hgmlcId>
      </gmlca12>
    </setSubscription>
  </ns:MOAttributes>
</ns:Set>
```

GMLC address with identifier 125 is removed from the GMLC addresses of the mobile subscriber with MSISDN 49513789000.

Note: It is possible to remove all GMLC addresses for a mobile subscriber when gmlcId takes a value ALL.

3.2.8.3

Get Subscriber GMLC Address Response

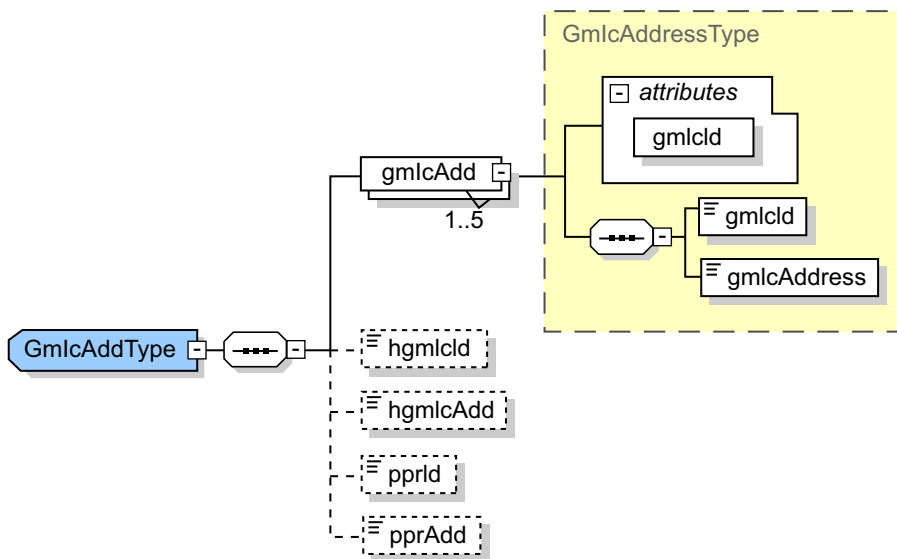


Figure 37 Get Subscriber GMLC Address Response

Table 46 Get Subscriber GMLC Address Response

Parameter	Type	Occurrence	Description
gmlcAdd	GmlcAddressType	Mandatory	GMLC Address data
gmlcId	String Values are 0-255.	Mandatory	GMLC address identifier
gmlcAddress	String 3-15 digits	Mandatory	GMLC address data



Parameter	Type	Occurrence	Description
hgmlcId	String Values are 0-255.	Optional	Home GMLC address Identifier
hgmlcAdd	String	Optional	Home GMLC Address
pprId	String Values are 0-255.	Optional	Privacy Profile Register address Identifier
pprAdd	String	Optional	Privacy Profile Register Address

3.2.9 Location Services (LOC SERVICES)

Location Services are services related to the location of subscribers in the PLMN. For example, universal type service, related call service, unrelated call service, and related operator privacy.

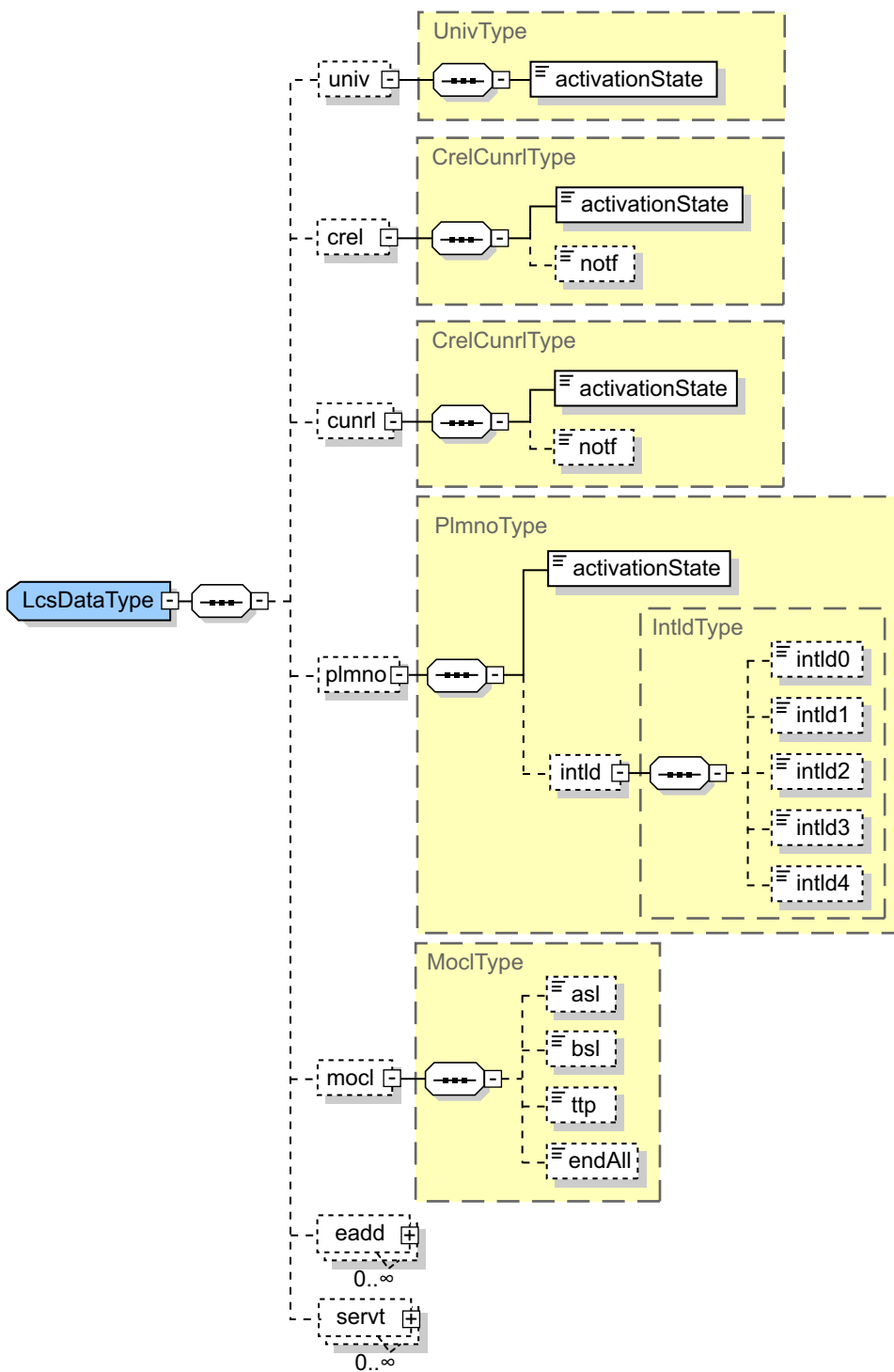


Figure 38 Set Subscriber Location Services Data

Operations for creating, setting, and deleting “eadd” and “servt” are shown in the following figures:

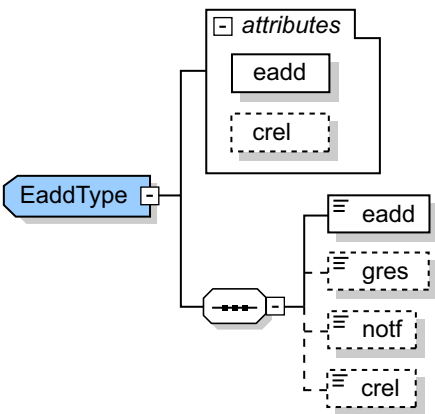


Figure 39 Create eadd

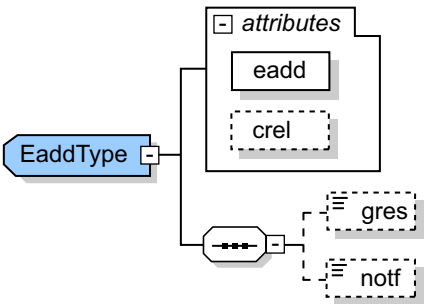


Figure 40 Set eadd

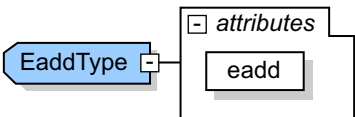


Figure 41 Delete eadd

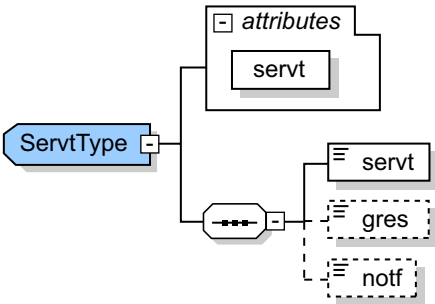


Figure 42 Create servt

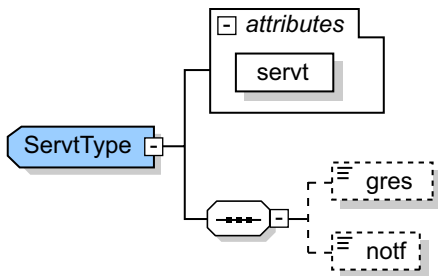


Figure 43 Set servt

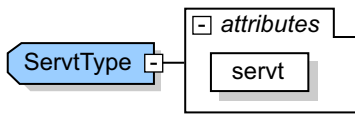


Figure 44 Delete servt

Table 47 Set Subscriber Location Services Data

Parameter	Type	Occurrence	Description
univ	UnivType	Optional	Universal location services
activationState	unsignedByte Values are 0-1: 0 = not activated 1 = activated.	Mandatory	
crel	CrelCunrlType	Optional	Call Related Location services
activationState	unsignedByte Values are 0-1: 0 = not activated 1 = activated.	Mandatory	
notf	unsignedByte Values are 0-4. Default is 0.	Optional	Location request restriction related to the Notification to the mobile subscriber
cunrl	CrelCunrlType	Optional	Call Unrelated Location services
activationState	unsignedByte Values are 0-1: 0 = not activated 1 = activated.	Mandatory	
notf	unsignedByte Values are 0-4. Default is 0.	Optional	Location request restriction related to the Notification to the mobile subscriber
plmno	PlmnoType	Optional	PLMN Operator location services



Parameter		Type	Occurrence	Description
	activationState	unsignedByte Values are 0-1: 0 = not activated 1 = activated.	Mandatory	
	intId	IntIdType Values are: <ul style="list-style-type: none"> • intId0 - Boolean {true, false}, optional • intId1 - Boolean {true, false}, optional • intId2 - Boolean {true, false}, optional • intId3 - Boolean {true, false}, optional • intId4 - Boolean {true, false}, optional 	Optional	Internal Identity list value. List of one or more types of LOCSERVICES clients that are allowed to locate the mobile subscriber.
mocl		MoclType The values are defined as sub elements.	Optional	LOCSERVICES Mobile Originating Class List
	asl	Boolean {true, false}	Optional	Autonomous Self Location
	bsl	Boolean {true, false}	Optional	Basic Self Location
	ttp	Boolean {true, false}	Optional	Transfer to Third Party
	endAll	unsignedByte Value is 1.	Optional	All LOCSERVICES mobile originating classes
eadd		EaddType	Optional	External LOCSEVICE S client Address



Parameter		Type	Occurrence	Description
	eadd	String, 3-15 digits	Mandatory	External LOC SERVICE S client Address If parameter eadd is entered, one external address is added either for Call/Session Unrelated LCS (CUNRL) privacy class or Call/Session Related LCS (CREL) privacy class. If parameter eadd is entered and both optional parameters CREL and CUNRL are omitted, then the external address is added to call/session unrelated LCS privacy class.
	gres	unsignedByte Values are 0 or 1.	Optional	Restriction on the Gateway Mobile Location Center
	notf	unsignedByte Values are 0-4. Default is 0.	Optional	Location request restriction related to the Notification to the mobile subscriber
	crel	Boolean {true, false}: 1 = CREL 0 = CUNRL (default)	Optional	
servt		ServtType	Optional	Service Type



Parameter		Type	Occurrence	Description
	servt	String, 0-3 digits Values are 0-20 or 64-127: 0 = Emergency services 1 = Emergency alert services 2 = Person tracking 3 = Fleet management 4 = Asset management 5 = Traffic congestion reporting 6 = Roadside assistance 7 = Routing to nearest commercial enterprise 8 = Navigation (reserved for use in prerelease) 9 = City sightseeing 10 = Localized advertising 11 = Mobile yellow pages 12 = Traffic and public transportation information 13 = Weather 14 = Asset and service finding 15 = Gaming 16 = Find your friend 17 = Dating 18 = Chatting 19 = Route finding 20 = Where-am-I 64-127 = Operator-specific service types ALL = All service (only used in Delete suboperation).	Mandatory	Service Type. List of one or more service types for which an LCS client is allowed to locate the mobile subscriber.
	gres	unsignedByte Values are 0 or 1.	Optional	Restriction on the Gateway Mobile Location Center
	notf	unsignedByte Values are 0-4. Default is 0.	Optional	Location request restriction related to the Notification to the mobile subscriber

3.2.9.1

Create Subscriber Location Services Data

External Location Services data for a mobile subscriber can be defined.

```
<ns:Create xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
  <ns:MOType xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
    Subscription@http://schemas.ericsson.com/ema/
    UserProvisioning/GsmHlr/</ns:MOType>
  <ns:MOId xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
    <msisdn xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">12345678</msisdn>
    <imsi xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">12345678933333</imsi>
  </ns:MOId>
  <ns:MOAttributes xmlns:ns="http://schemas.ericsson.com/
    cai3g1.2/">
    <createSubscription xmlns="http://schemas.ericsson.com/
      ema/UserProvisioning/GsmHlr/" msisdn="12345678" imsi=
        "12345678933333">
      <msisdn>12345678</msisdn>
      <imsi>12345678933333</imsi>
      <lcsd>
        <mocl>
          <asl>1</asl>
          <bsl>1</bsl>
          <ttp>0</ttp>
        </mocl>
        <eadd eadd="333" crel="0">
          <eadd>333</eadd>
        </eadd>
        <servt servt="1">
          <servt>1</servt>
          <gres>1</gres>
          <notf>1</notf>
        </servt>
      </lcsd>
    </createSubscription>
  </ns:MOAttributes>
</ns:Create>
```

The External LOC SERVICES client address 333 and the LOC SERVICES mobile originating classes asl and bsl for the mobile subscriber with MSISDN 12345678 are defined.

3.2.9.2 Set Subscriber Location Services Data

Location Services classes data for a mobile subscriber can be changed.

```
<ns:Set xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
  <ns:MOType xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
    Subscription@http://schemas.ericsson.com/ema/UserProvisioning/
    GsmHlr/</ns:MOType>
  <ns:MOId xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
    <msisdn xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">12345678</msisdn>
    <imsi xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">12345678933333</imsi>
  </ns:MOId>
  <ns:MOAttributes xmlns:ns="http://schemas.ericsson.com/
    cai3g1.2/">
    <setSubscription xmlns="http://schemas.ericsson.com/
      ema/UserProvisioning/GsmHlr/" msisdn="12345678" imsi=
        "12345678933333">
      <msisdn>12345678</msisdn>
      <imsi>12345678933333</imsi>
      <lcsd>
        <crel>
          <activationState>1</activationState>
          <notf>1</notf>
        </crel>
      </lcsd>
    </setSubscription>
  </ns:MOAttributes>
</ns:Set>
```



Location request restriction for the call-related privacy class already defined for the subscriber with MSISDN 12345678 is changed to location request allowed with notification.

3.2.9.3

Delete Subscriber Location Services Data

Location Services classes data for a mobile subscriber can be removed.

```
<ns:Set xmlns:ns="http://schemas.ericsson.com/cai3gl.2/">
  <ns:MOType xmlns:ns="http://schemas.ericsson.com/
    cai3gl.2/">Subscription@http://schemas.ericsson.com/
    ema/UserProvisioning/GsmHlr/</ns:MOType>
  <ns:MOId xmlns:ns="http://schemas.ericsson.com/
    cai3gl.2/">
    <msisdn xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">12345678</msisdn>
    <imsi xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">12345678933333</imsi>
  </ns:MOId>
  <ns:MOAttributes xmlns:ns="http://schemas.ericsson.com/
    cai3gl.2/">
    <setSubscription xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/" msisdn="12345678"
      imsi="12345678933333">
      <msisdn>12345678</msisdn>
      <imsi>12345678933333</imsi>
      <eadd eadd="333" crel="1" xsi:nil="true">
      </eadd>
    </setSubscription>
  </ns:MOAttributes>
</ns:Set>
```

Call related Location Services privacy class for the mobile subscriber with MSISDN 12345678 and external LOC SERVICES address 333 is ended.

3.2.9.4

Get Subscriber Location Services Data Response

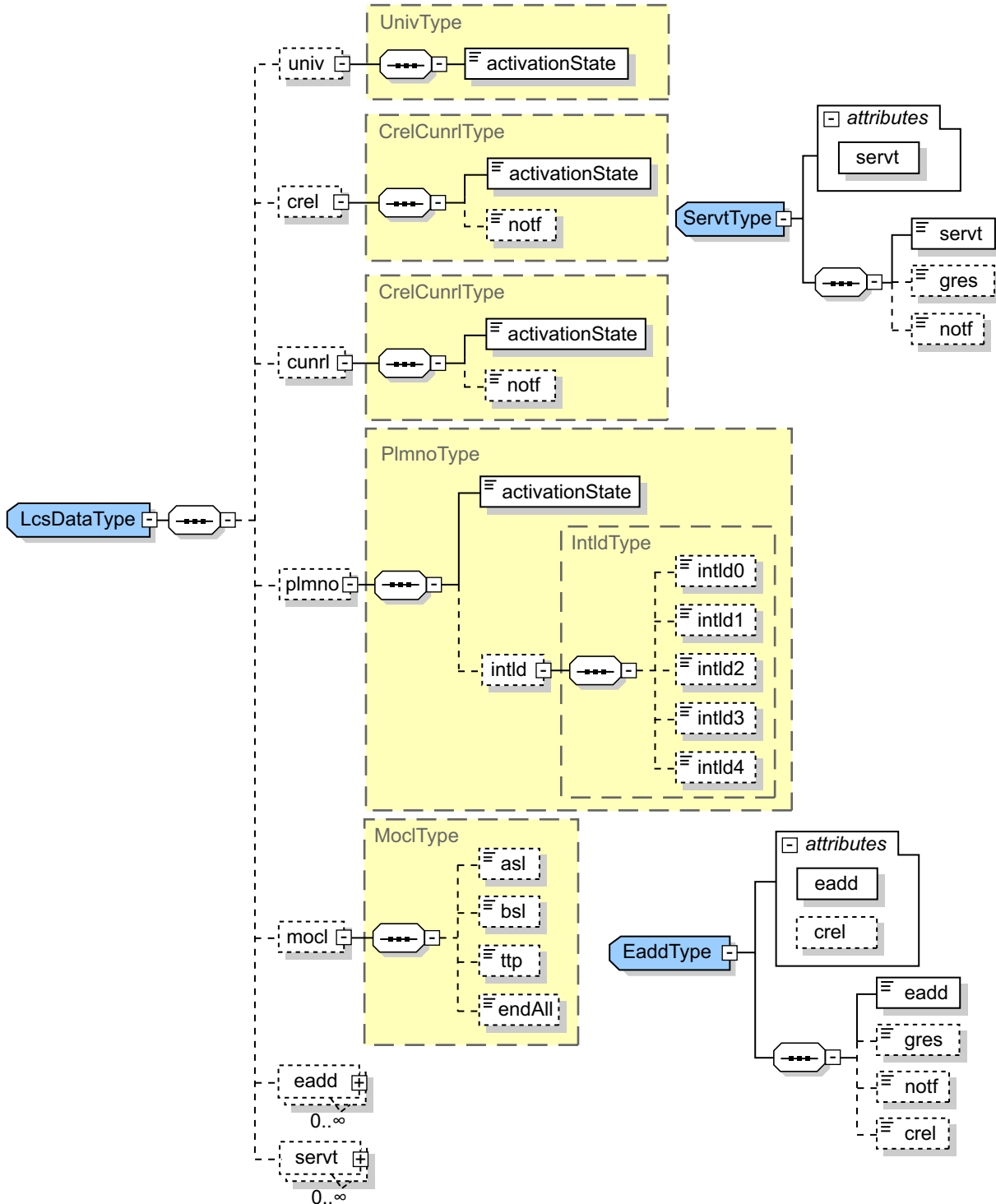


Figure 45 Displaying Subscriber LCOSERVICES Data Response



Table 48 *Create, Set, and Delete Subscriber Location Services Data*

Parameter		Type	Occurrence	Description
univ		UnivType	Optional	Universal location services
	activationState	unsignedByte Values are 0-1: 0 = not activated 1 = activated.	Mandatory	
crel		CreICunrlType	Optional	Call Related Location services
	activationState	unsignedByte Values are 0-1: 0 = not activated 1 = activated.	Mandatory	
	notf	unsignedByte Values are 0-4. Default is 0.	Optional	Location request restriction related to the Notification to the mobile subscriber
cunrl		CreICunrlType	Optional	Call Unrelated location services
	activationState	unsignedByte Values are 0-1: 0 = not activated 1 = activated.	Mandatory	
	notf	unsignedByte Values are 0-4. Default is 0.	Optional	Location request restriction related to the Notification to the mobile subscriber
plmno		PlmnoType	Optional	PLMN Operator location services
	activationState	unsignedByte Values are 0-1: 0 = not activated 1 = activated.	Mandatory	
	intId	IntIdType Value is: <ul style="list-style-type: none"> • intId0 - Boolean {true, false}, optional • intId1 - Boolean {true, false}, optional • intId2 - Boolean {true, false}, optional • intId3 - Boolean {true, false}, optional • intId4 - Boolean {true, false}, optional 	Optional	Internal Identity list



Parameter		Type	Occurrence	Description
mocl		MoclType Values are ASL, BSL, TTP.	Optional	LCS Mobile Originating Class List value
	asl	Boolean {true, false}	Optional	Autonomous Self Location
	bsl	Boolean {true, false}	Optional	Basic Self Location
	ttp	Boolean {true, false}	Optional	Transfer to Third Party
	endAll	unsignedByte Value is 1.	Optional	All LOC SERVICES mobile originating classes
eadd		EaddType	Optional	External LOC SERVICE S client Address
	eadd	String, 3-15 digits	Mandatory	External LOC SERVICE S client Address
	gres	unsignedByte Values are 0 or 1.	Optional	Restriction on the Gateway Mobile Location Center
	notf	unsignedByte Values are 0-4. Default is 0.	Optional	Location request restriction related to the Notification to the mobile subscriber
	crel	Boolean {true, false}: 1 = CREL 0 = CUNRL (default)	Optional	
servt		ServtType	Optional	Service Type



Parameter		Type	Occurrence	Description
	servt	String, 0-3 digits Values are 0-20 or 64-127: 0 = Emergency services 1 = Emergency alert services 2 = Person tracking 3 = Fleet management 4 = Asset management 5 = Traffic congestion reporting 6 = Roadside assistance 7 = Routing to nearest commercial enterprise 8 = Navigation (reserved for use in prerelease) 9 = City sightseeing 10 = Localized advertising 11 = Mobile yellow pages 12 = Traffic and public transportation information 13 = Weather 14 = Asset and service finding 15 = Gaming 16 = Find your friend 17 = Dating 18 = Chatting 19 = Route finding 20 = Where-am-I 64-127 = Operator-specific service types ALL = All service (only used in Delete suboperation).	Mandatory	Service Type. List of one or more service types for which an LCS client is allowed to locate the mobile subscriber.
	gres	unsignedByte Values are 0 or 1.	Optional	Restriction on the Gateway Mobile Location Center
	notf	unsignedByte Values are 0-4. Default is 0.	Optional	Location request restriction related to the Notification to the mobile subscriber (0-4, default is 0)

3.2.10 Spatial Trigger Support (SPATIALTRIGGER)

Spatial Trigger data defines spatial triggers event associated to a GMLC address identifier for a mobile subscriber in the Home Location Register (HLR).

3.2.10.1 Create/Set/Delete Subscriber Spatial Trigger Data

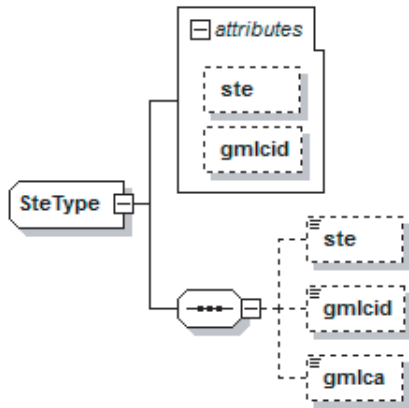


Figure 46 Create/Set/Delete Subscriber Spatial Trigger Data

Table 49 Create/Set/Delete Subscriber Spatial Trigger Data

Parameter	Type	Occurrence	Description
ste	String Numeral 0-15.	Mandatory	Spatial Triggers Event
gmlcid	String Numeral 0-255.	Mandatory Invalid for Delete operation	Gateway Mobile Location Center (GMLC) address Identifier

```

<ns:Create xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
  <ns:MOType xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
    Subscription@http://schemas.ericsson.com/ema/UserProvisioning/
    GsmHlr/</ns:MOType>
  <ns:MOId xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
    <msisdn xmlns="http://schemas.ericsson.com/ema/
    UserProvisioning/GsmHlr/">12345678</msisdn>
    <imsi xmlns="http://schemas.ericsson.com/ema/
    UserProvisioning/GsmHlr/">12345678933333</imsi>
  </ns:MOId>
  <ns:MOAttributes xmlns:ns="http://schemas.ericsson.com/
  cai3g1.2/">
    <createSubscription xmlns="http://schemas.ericsson.com/ema/
    UserProvisioning/GsmHlr/" msisdn="12345678"
    imsi="12345678933333">
      <msisdn>12345678</msisdn>
      <imsi>12345678933333</imsi>
      <steMo ste="0">
        <ste>0</ste>
        <gmlcid>200</gmlcid>
      </steMo>
    </createSubscription>
  </ns:MOAttributes>
</ns:Create>
  
```

Example 32 Create Subscriber Spatial Trigger Data


```
<ns:Set xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
  <ns:MOType xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
    Subscription@http://schemas.ericsson.com/ema/UserProvisioning/
    GsmHlr/</ns:MOType>
  <ns:MOId xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
    <msisdn xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">12345678</msisdn>
  </ns:MOId>
  <ns:MOAttributes xmlns:ns="http://schemas.ericsson.com/
    cai3g1.2/">
    <setSubscription xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/" msisdn="12345678" >
      <steMo ste="0">
        <gmlcid>201</gmlcid>
      </steMo>
    </setSubscription>
  </ns:MOAttributes>
</ns:Set>
```

Example 33 Set Subscriber Spatial Trigger Data

3.2.10.2 Get Subscriber Spatial Trigger Data Response

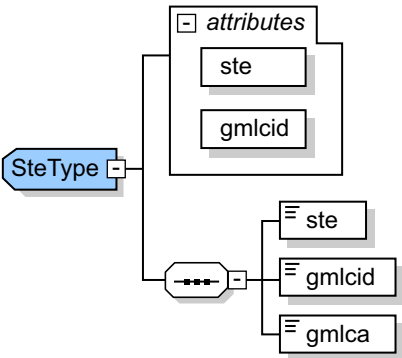


Figure 47 Get Subscriber Spatial Trigger Data Response

Table 50 Get Subscriber Spatial Trigger Data Response

Parameter	Type	Occurrence	Description
ste	String Numeral 0-15.	Mandatory	Spatial Triggers Event
gmlcid	String Numeral 0-255.	Mandatory	Gateway Mobile Location Center (GMLC) address Identifier
gmlca	String	Mandatory	Gateway Mobile Location Center (GMLC) Address

```
<GetResponse>
  <MOAttributes>
    <steMo ste="0">
      <ste>0</ste>
      <gmlcid>200</gmlcid>
      <gmlca>49101924113</gmlca>
    </steMo>
  </MOAttributes>
</GetResponse>
```

Example 34 Get Subscriber Spatial Trigger Data Response

3.2.11 Multiple SIM

Multiple SIM defines multiple subscription data in the HLR.

3.2.11.1 Create Subscriber Multiple SIM Data

Creation of Multiple SIM only can be executed on the master MSISDN as MOld.

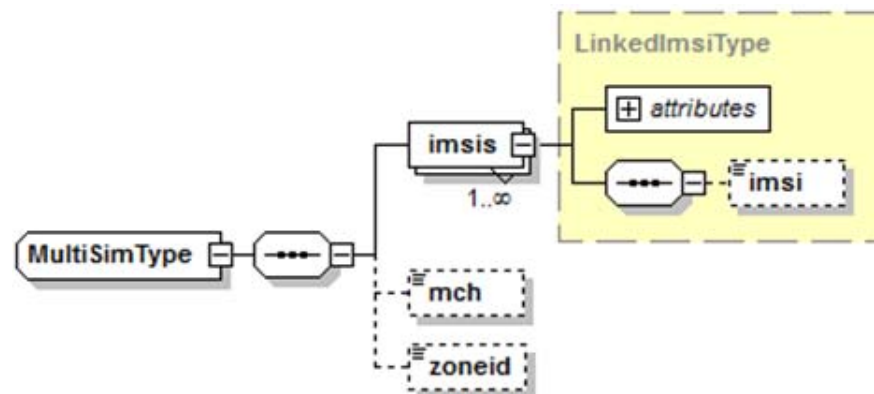


Figure 48 Create Subscriber Multiple SIM Data

Note: Definition of MCH in Create result in MSIM initialization.

Table 51 Create Subscriber Multiple SIM Data

Parameter	Type	Occurrence	Description
imsi	String, 6-15 digits	Mandatory	The IMSI number of the subscription to be defined
mch	Enumeration value <ul style="list-style-type: none"> • LOC • USSD 	Mandatory	Multiple subscription activation mechanism
zoneid	Integer 0-65535	Optional	This attribute indicates to what geographical area the MultiSC or the association belongs

```
<createSubscription xmlns="http://schemas.ericsson.com/ema/\
UserProvisioning/GsmHlr/" msisdn="MSISDN-1" imsi="IMSI-1">
  <msisdn>MSISDN-1</msisdn>
  <imsi>IMSI-1</imsi>
  <profile>1</profile>
  <multiSim>
    <imsis imsi="IMSI-2">
      <imsi>IMSI-2</imsi>
    </imsis>
    <imsis imsi="IMSI-3">
      <imsi>IMSI-3</imsi>
    </imsis>
    <mch>USSD</mch>
  </multiSim>
</createSubscription>
```

Example 35 Create Subscriber Multiple SIM Data



3.2.11.2 Set Subscriber Multiple SIM Data

Setting Multiple SIM only can be executed on the master MSISDN as MOId.

Note: Set Subscriber Multiple SIM Data only supports one IMSI to be linked or unlinked per request.

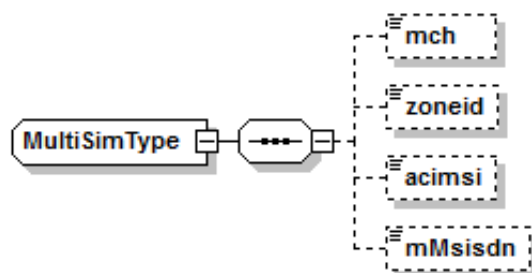


Figure 49 Set Subscriber Multiple SIM Data

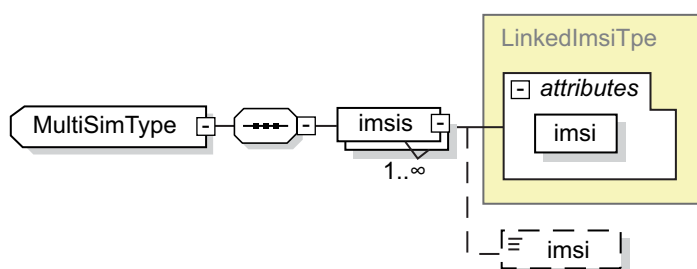


Figure 50 Link/Unlink Subscriber Multiple SIM Data

Table 52 Set and Link/Unlink Subscriber Multiple SIM Data

Parameter	Type	Occurrence	Description
imsi	String, 6-15 digits	Mandatory	The IMSI number of the subscription to be defined
mch	Enumeration value <ul style="list-style-type: none"> • LOC • USSD 	Optional	Multiple subscription activation mechanism
zoneid	Integer 0-65535	Optional	This attribute indicates to what geographical area the MultiSC or the association belongs
acimsi	String, 6-15 digits, each digit 0-9.	Optional	Active IMSI
mMsisdn	String, 6-15 digits, each digit 0-9.	Optional	Master MSISDN

In Example 36, the sub-MO will set IMSI-3 to active IMSI for the MSIM subscription.

```
<setSubscription xmlns="http://schemas.ericsson.com/
ema/UserProvisioning/GsmHlr/" msisdn="MSISDN-1">
  <multiSim>
    <acimsi>IMSI-3</acimsi>
  </multiSim>
</setSubscription>
```

Example 36 Set Active IMSI for MSIM

In Example 37, the sub-MO will link IMSI-4 to the MOId used in the CAI3G request.

```
<setSubscription xmlns="http://schemas.ericsson.com/
ema/UserProvisioning/GsmHlr/" msisdn="MSISDN-1">
  <multiSim>
    <imsi imsi="IMSI-4">
      <imsi>IMSI-4</imsi>
    </imsi>
  </multiSim>
</setSubscription>
```

Example 37 Link Subscription to MSIM

In Example 38, the sub-MO will unlink IMSI-4 from the MOId used in the CAI3G request.

```
<setSubscription xmlns="http://schemas.ericsson.com/
ema/UserProvisioning/GsmHlr/" msisdn="MSISDN-1">
  <multiSim>
    <imsi imsi="IMSI-4" xsi:nil="true"></imsi>
  </multiSim>
</setSubscription>
```

Example 38 Unlink Subscription from MSIM

3.2.11.3

Delete Subscriber Multiple SIM Data

Note: Delete Subscriber Multiple SIM Data only supports Multiple Subscriptions with one linked subscription. If there is more than one linked subscriptions, unlink the extra subscriptions before using this command.

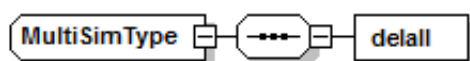


Figure 51 Delete Subscriber Multiple SIM Data

Table 53 Delete Subscriber Multiple SIM Data

Parameter	Type	Occurrence	Description
delall	UnsignedByte 1 = Delete MSIM subscription	Optional	This attribute indicates to delete the Multiple Subscription. The Multiple Subscription is allowed to have only one linked subscription.

In Example 39, the sub-MO will delete the Multiple Subscription for MOId used in the CAI3G request.

```
<setSubscription xmlns="http://schemas.ericsson.com/
ema/UserProvisioning/GsmHlr/" msisdn="MSISDN-1">
  <multiSim>
    <delall>1</delall>
  </multiSim>
</setSubscription>
```

Example 39 Delete Subscriber Multiple SIM Data

3.2.11.4 Get Subscriber Multiple SIM Data Response

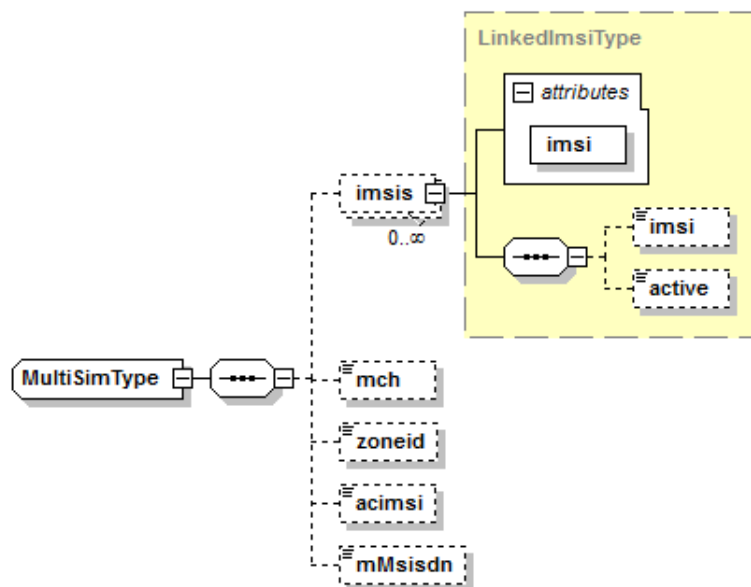


Figure 52 Get Subscriber Multiple SIM Data

Table 54 Get Subscriber Multiple SIM Data

Parameter	Type	Occurrence	Description
imsi	String, 6-15 digits	Mandatory	The IMSI number of the subscription to be defined.
active	String	Mandatory	Active Status
mch	Enumeration value: <ul style="list-style-type: none"> • LOC • USSD 	Optional	Multiple subscription activation mechanism
zoneid	Integer 0-65535	Optional	This attribute indicates to what geographical area the MultiSC or the association belongs
acimsi	String, 6-15 digits, each digit 0-9.	Optional	Active IMSI
mMsisdn	String, 6-15 digits, each digit 0-9.	Optional	Master MSISDN

3.2.12 SpamSMS

SpamSMS prevents undesirable SMS from reaching the subscriber.

3.2.12.1 Interface Diagram

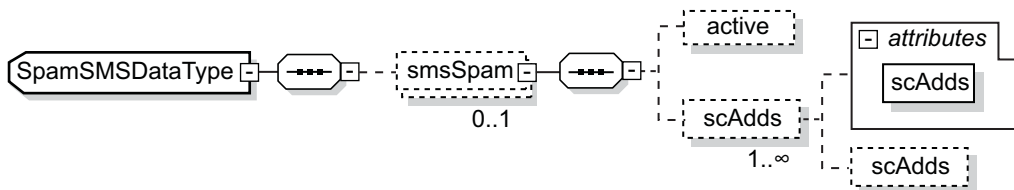


Figure 53 SpamSMSData Interface Diagram

3.2.12.2 Parameters

The following table covers the parameters that can be used in SpamSMSData.

Table 55 SpamSMSData Parameters

Parameter	Type and Value	Occurrence	Operations	Description
scAdds	Digit string, 1–15 digits Each digit is 0–9.	Mandatory	C/G	Short Message Service Center (SMSC) Address Series
active	String value <ul style="list-style-type: none"> ACTIVE NACTIVE = Inactive 	Optional	G	Indicating whether the SMS Spam Service is activated.

```

<smsSpam>
  <active>ACTIVE</active>
  <scAdds scAdds="0">
    <scAdds>0</scAdds>
  </scAdds>
  <scAdds scAdds="1020" xsi:nil="true"/>
</smsSpam>

```

Example 40 SpamSMSData

4 IMSI Changeover

This interface is used for the purpose of backward compatible with monolithic AUC and HLR. In layered data architecture, if the subscriber has services other than AUC, HLR or EPS, execute IMSI changeover according to *Layered Identity Changeover Provisioning over CAI3G*, Reference [5].

4.1 Customer Service Orders

An IMSI Changeover procedure is used to replace the subscribers SIM-card which has the IMSI burned in. A Changeover procedure comes across some different states before being considered executed with no reference to the old IMSI, see Figure 54.

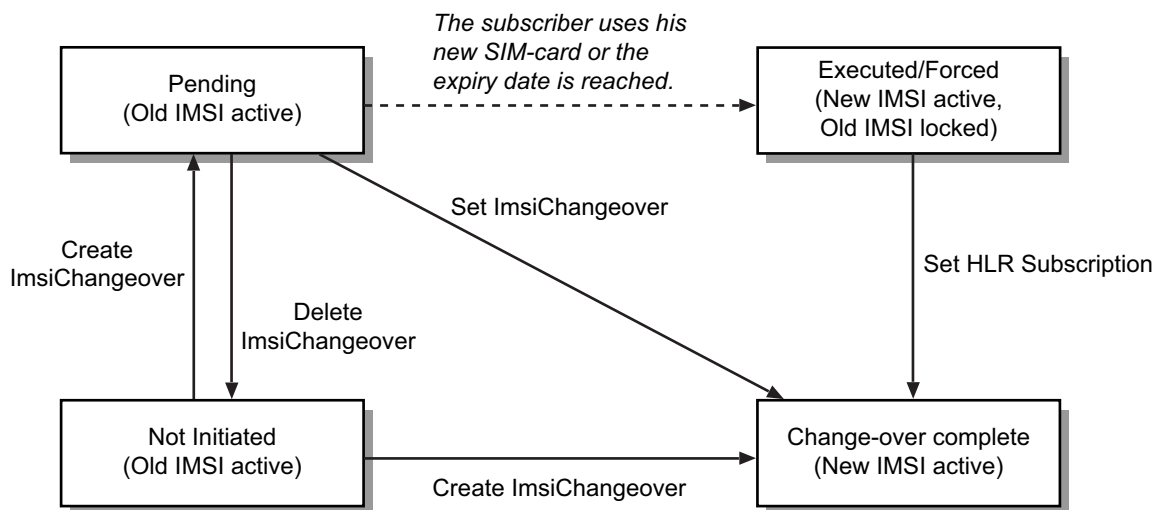


Figure 54 Flowchart of the IMSI Changeover Process

The following interfaces for IMSI changeover are provided for backwards compatibility. Though, they are phased out in a later release of the product. For more information, see *Function Specification Identity Changeover for Layered Applications*, Reference [3]

Note:

- The AUC, HLR, and EPS services are supported by both immediate or delayed IMSI Changeover procedure.
- The IMS is only supported by immediate IMSI Changeover procedure.
- In case if EPS services are available for the subscriber, the `deleteOldRef` must be omitted or set to `false` for forced IMSI Changeover.

MOType for IMSI Changeover:

```
ImsiChangeover@http://schemas.ericsson.com/ema/UserProvisioning/GsmHlr/
```

4.1.1**Create IMSI Changeover**

The changeover procedure can be initiated with an activation date (State: "Pending"). If no date is set, the changeover takes place immediately and Dynamic Activation also takes care of deleting associated old IMSI automatically.

Note:

- If MNP is used in the network, it is recommended that IMSI is used in the create request for performance reasons.
- If both MSISDN and IMSI numbers is used in a provisioning operation from CAS, only IMSI is used in the provisioning operations that are sent to the NE. No check is performed if the MSISDN and IMSI belong to the same subscription.

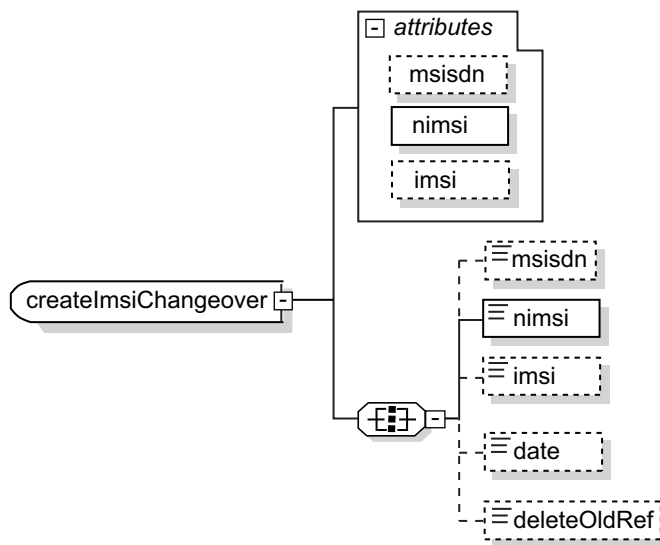


Figure 55 Create IMSI Changeover

Table 56 Create IMSI Changeover

Parameter	Type	Occurrence	Description
msisdn	Digit string 5-15 digits. Each digit is 0-9.	Optional It is mandatory if imsi is not defined.	Mobile Subscriber ISDN Number (MSISDN)
nimsi	Digit string 6-15 digits. Each digit is 0-9.	Mandatory	International Mobile Subscriber Identity
imsi	Digit string 6-15 digits. Each digit is 0-9.	Optional It is mandatory if msisdn is not defined.	The IMSI number of the subscription the IMSI Changeover belongs to.
date	String Format: <i>yyymmdd</i> where <i>yy</i> (year) is a numeral 00 - 99 <i>mm</i> (month) is a numeral 01 - 12 <i>dd</i> (day) is a numeral 01 - 31	Optional	Activation date for the new IMSI. The date is not to be earlier than today and not later than a year from today date.
deleteOldRef ⁽¹⁾	Boolean {true, false}	Optional	Shows whether delete the old IMSI

(1) Only available for forced IMSI Changeover.

4.1.1.1

Examples

Message request to initiate an IMSI Changeover for the subscription with MSISDN 46455381234. The Changeover leads to the new IMSI 12345678944444 and will be performed latest 1st of March 2003.

```
<ns:Create xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
  <ns:MOTYPE>ImsiChangeover@http://schemas.ericsson.com/
    ema/UserProvisioning/GsmHlr/</ns:MOTYPE>
  <ns:MOId>
    <msisdn xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">46455381234</msisdn>
    <nimsi xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">12345678944444</nimsi>
  </ns:MOId>
  <ns:MOAttributes>
    <createImsiChangeover xmlns="http://schemas.ericsson.com/
      ema/UserProvisioning/GsmHlr/" xmlns:cai3g=
        "http://schemas.ericsson.com/cai3g1.2/" xmlns:xsi=
        "http://www.w3.org/2001/XMLSchema-instance" msisdn=
        "46455381234" nimsi="12345678944444">
      <msisdn>46455381234</msisdn>
      <nimsi>12345678944444</nimsi>
      <date>030301</date>
    </createImsiChangeover>
  </ns:MOAttributes>
</ns:Create>
```

Example 41 Create IMSI Changeover

```
<ns:Create xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
  <ns:MOTYPE>ImsiChangeover@http://schemas.ericsson.com/
    ema/UserProvisioning/GsmHlr/</ns:MOTYPE>
  <ns:MOId>
    <msisdn xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">46455381234</msisdn>
    <nimsi xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">12345678944444</nimsi>
  </ns:MOId>
  <ns:MOAttributes>
    <createImsiChangeover xmlns="http://schemas.ericsson.com/
      ema/UserProvisioning/GsmHlr/" xmlns:cai3g=
        "http://schemas.ericsson.com/cai3g1.2/" xmlns:xsi=
        "http://www.w3.org/2001/XMLSchema-instance" msisdn=
        "46455381234" nimsi="12345678944444">
      <msisdn>46455381234</msisdn>
      <nimsi>12345678944444</nimsi>
    </createImsiChangeover>
  </ns:MOAttributes>
</ns:Create>
```

Example 42 Message Request to Initiate the Same IMSI Changeover Immediately

```
<ns4:CreateResponse>
  <MOId xmlns="http://schemas.ericsson.com/cai3g1.2/">
    <msisdn xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">46455381234</msisdn>
    <nimsi xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">12345678944444</nimsi>
  </MOId>
</ns4:CreateResponse>
```

Example 43 Successful Message Response

4.1.2

Set IMSI Changeover

If the Changeover procedure is in the state 'Pending', the expiry date can be changed. In all other states, this request fails. If no date is given, this forces the Changeover procedure to be executed immediately.



Note:

- If MNP is used in the network, it is recommended that NIMSI is used in the change request for performance reason.
- If both MSISDN and NIMSI number are used in a provisioning operation from CAS, only NIMSI is used in the provisioning operations that are sent to the NE. No check is performed if the MSISDN and IMSI belong to the same subscription.

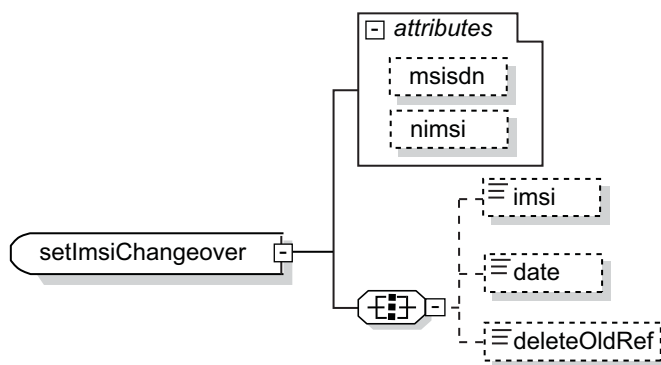


Figure 56 Set IMSI Changeover

Table 57 Set IMSI Changeover

Parameter	Type	Occurrence	Description
msisdn	Digit string 5-15 digits. Each digit is 0-9.	Optional It is mandatory, if NIMSI is not defined.	Mobile Subscriber ISDN Number (MSISDN)
nimsi	Digit string 6-15 digits. Each digit is 0-9.	Optional It is mandatory, if MSISDN is not defined.	The IMSI number which is associated to the subscription when the Changeover is performed
date	String Format: <i>yyymmdd</i> where <i>yy</i> (year) is a numeral 00 - 99 <i>mm</i> (month) is a numeral 01 - 12 <i>dd</i> (day) is a numeral 01 - 31	Optional	Activation date for the new IMSI. The date is not to be earlier than today and not later than a year from today date.
deleteOldRef ⁽¹⁾	Boolean {true, false}	Optional	Shows whether delete the old IMSI

(1) Only available for forced IMSI Changeover.

4.1.2.1

Examples

Message request to change the activation date of an IMSI Changeover for the subscription with MSISDN 46455381234. Now the Changeover will be performed latest 1st of April 2001.

```
<ns:Set xmlns:ns="http://schemas.ericsson.com/cai3gl.2/">
  <ns:MOType>ImsiChangeover@http://schemas.ericsson.com/ema/
    UserProvisioning/GsmHlr/</ns:MOType>
  <ns:MOId>
    <msisdn xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">46455381234</msisdn>
  </ns:MOId>
  <ns:MOAttributes>
    <setImsiChangeover xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/" xmlns:cai3g=
        "http://schemas.ericsson.com/cai3gl.2/" xmlns:xsi=
          "http://www.w3.org/2001/XMLSchema-instance" msisdn="46455381234">
      <date>010401</date>
    </setImsiChangeover>
  </ns:MOAttributes>
</ns:Set>
```

Example 44 Set IMSI Changeover

```
<ns:Set xmlns:ns="http://schemas.ericsson.com/cai3gl.2/">
  <ns:MOType>ImsiChangeover@http://schemas.ericsson.com/ema/
    UserProvisioning/GsmHlr/</ns:MOType>
  <ns:MOId>
    <msisdn xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">46455381234</msisdn>
  </ns:MOId>
  <ns:MOAttributes>
    <setImsiChangeover xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/" xmlns:cai3g=
        "http://schemas.ericsson.com/cai3gl.2/" xmlns:xsi=
          "http://www.w3.org/2001/XMLSchema-instance" msisdn="46455381234">
      </setImsiChangeover>
    </ns:MOAttributes>
</ns:Set>
```

Example 45 Message Request to Force the Execution of the Still Pending Changeover Procedure

4.1.3

Delete IMSI Changeover

Delete IMSI Changeover can be used when a delayed IMSI changeover has been ordered but date has not yet passed (IMSI changeover has not been executed). The result is that the old IMSI is kept for the subscriber. The new IMSI is released to be used again or deleted.

Note:

- If MNP is used in the network, it is recommended that NIMSI is used in the deletion request for performance reason.
- If both MSISDN and NIMSI number are used in a provisioning operation from CAS, only NIMSI is used in the provisioning operations that are sent to the NE. No check is performed if the MSISDN and NIMSI belong to the same subscription.



Table 58 Delete IMSI Changeover Data MOld

Parameter	Type	Occurrence	Description
msisdn	Digit string 5-15 digits. Each digit is 0-9.	Optional It is mandatory, if nimsi is not defined.	Mobile Subscriber ISDN Number (MSISDN)
nimsi	Digit string 6-15 digits. Each digit is 0-9.	Optional It is mandatory, if msisdn is not defined.	The IMSI number which has been associated to the subscription when the Changeover was ordered.

4.1.3.1

Examples

Message request to delete the pending IMSI Changeover for the subscription with MSISDN 46455381234:

```
<ns:Delete xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
  <ns:MOType>ImsiChangeover@http://schemas.ericsson.com/
    ema/UserProvisioning/GsmHlr/</ns:MOType>
  <ns:MOId>
    <msisdn xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">46455381234</msisdn>
    </ns:MOId>
    <ns:MOAttributes/>
  </ns:Delete>
```

Example 46 Delete IMSI Changeover

4.1.4

Get IMSI Changeover

Note:

- Handle the display request so that CAS is not affected by new HLR releases. This can be done by sending only used services in the display request. If a full response syntax is used, the results differently depend on which release of the HLR the request has been sent to.
- If MNP is used in the network, it is recommended that NIMSI is used in the display request for performance reason.

To display Changeover data the procedure must be in state Pending, Forced or Executed.

4.1.4.1 Get IMSI Changeover Data Request

Table 59 Get IMSI Changeover Data Request MOld

Parameter	Type	Occurrence	Description
msisdn	Digit string 5-15 digits. Each digit is 0-9.	Optional It is mandatory, if nimsi is not defined.	Mobile Subscriber ISDN Number (MSISDN)
nimsi	Digit string 6-15 digits. Each digit is 0-9.	Optional It is mandatory, if msisdn is not defined.	The IMSI number which is associated to the subscription when the Changeover is performed

4.1.4.2 Get IMSI Changeover Data Response

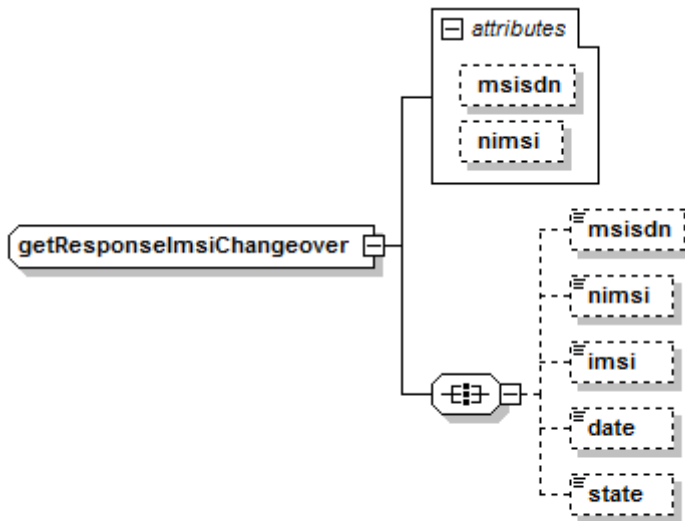


Figure 57 Get IMSI Changeover Data Response

Table 60 Get IMSI Changeover Data Response

Parameter	Type	Occurrence	Description
msisdn	Digit string 5-15 digits. Each digit is 0-9.	Optional It is mandatory, if nimsi is not defined.	Mobile Subscriber ISDN Number (MSISDN)
nimsi	Digit string 6-15 digits. Each digit is 0-9.	Optional It is mandatory, if msisdn is not defined.	The IMSI number which is associated to the subscription when the Changeover is performed
imsi	Digit string 6-15 digits. Each digit is 0-9.	Optional	International Mobile Subscriber Identity



Parameter	Type	Occurrence	Description
date	String Format: <i>yyymmdd</i> where <i>yy</i> (year) is a numeral 00 - 99 <i>mm</i> (month) is a numeral 01 - 12 <i>dd</i> (day) is a numeral 01 - 31	Optional	Activation date for the new IMSI.
state	unsignedByte Values are 0 - 2: <ul style="list-style-type: none"> 0 indicates that Changeover is "pending" 1 indicates that Changeover is "executed" 2 indicates that Changeover is "forced" (1)	Optional	State of the IMSI changeover

(1) For information about the different states possible to receive, see *Function Specification Identity Changeover for Layered Applications, Reference [3]*

4.1.4.3

Examples

Request to display the ongoing IMSI Changeover of the subscription with the MSISDN 46455381234:

```
<ns:Get xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
  <ns:MOType>ImsiChangeover@http://schemas.ericsson.com/
    ema/UserProvisioning/GsmHlr/</ns:MOType>
  <ns:MOId>
    <msisdn xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">46455381234</msisdn>
    </ns:MOId>
  </ns:Get>
```

Example 47 Get IMSI Changeover

```
<ns4:GetResponse>
  <MOAttributes xmlns="http://schemas.ericsson.com/cai3g1.2/">
    <getResponseImsiChangeover msisdn="46455381234" nimsi=
      "12345678955555" xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/" xmlns:xsi="http://www.w3.org/
      2001/XMLSchema-instance">
      <msisdn>46455381234</msisdn>
      <nimsi>12345678955555</nimsi>
      <imsi>123456789012</imsi>
      <date>010301</date>
      <state>0</state>
    </getResponseImsiChangeover>
  </MOAttributes>
</ns4:GetResponse>
```

Example 48 *The Changeover Leading to the New IMSI 12345678955555 Is Pending to the 1st of March 2001.*

4.2 Remove References of IMSI Changeover

If the Changeover procedure is in the state “Executed” or “Forced”, the new IMSI is being in operation but the reference to the old IMSI is still being kept. This reference can be removed to complete the whole procedure and to free the old IMSI for further use. If the Changeover procedure is not in the state “Executed” or “Forced” this request fails.

Note: When the date of IMSI Changeover is reached, the old IMSI reference can still be removed even if the status of the Changeover procedure is “Pending”.

Table 61 *Remove References of IMSI Changeover*

Parameter	Type	Occurrence	Description
msisdn	Digit string 5-15 digits. Each digit is 0-9.	Mandatory	Mobile Subscriber ISDN Number (MSISDN)
removeReferences	Boolean {true, false}	Mandatory	Indicates whether reference of IMSI Changeover is to be removed. Activated only if it is true.

```
<ns:Set xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
  <ns:MOType xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
    Subscription@http://schemas.ericsson.com/ema/UserProvisioning/
    GsmHlr/</ns:MOType>
    <ns:MOId xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
      <msisdn xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/">31491000200</msisdn>
    </ns:MOId>
    <ns:MOAttributes xmlns:ns="http://schemas.ericsson.com/
    cai3g1.2/">
      <setSubscription xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmHlr/" msisdn="31491000200">
        <msisdn>31491000200</msisdn>
        <removeReferences>true</removeReferences>
      </setSubscription>
    </ns:MOAttributes>
  </ns:Set>
```

Example 49 *Removing References of IMSI Changeover*

5AUC Subscription

5.1Customer Service Orders

MOType for AUC Subscription:

```
Subscription@http://schemas.ericsson.com/ema/UserProvisio
ning/GsmAuc/
```

5.1.1Create AUC Subscription

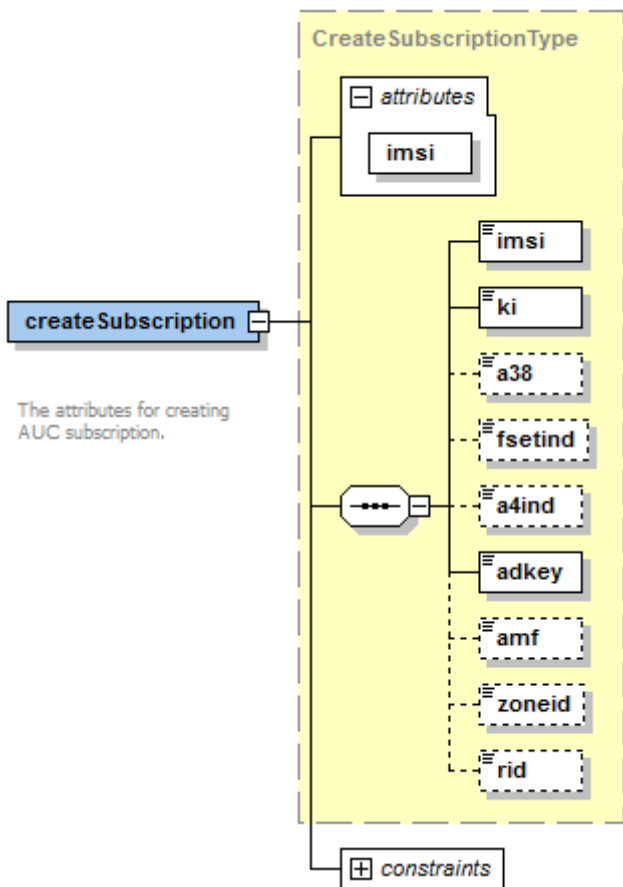


Figure 58 Create AUC Subscription

Table 62 Create AUC Subscription

Parameter	Type	Occurrence	Description
imsi *	Digit string 6-15 digits. Each digit is 0-9.	Mandatory	The IMSI number of the subscriber to be defined.

Parameter	Type	Occurrence	Description
ki	String, 32 hexadecimal digits	Mandatory	Encrypted Subscriber Authentication key
a38	unsignedByte Values are 0-15.	Optional (1)	A38 algorithm version number
fsetind	unsignedByte Values are 0-31.	Optional ⁽¹⁾	Function Set Indicator (only for WCDMA)
a4ind	unsignedByte Values are 0-7.	Optional	A4 algorithm version number
adkey	unsignedShort Values are 0-511.	Mandatory	A4 key indicator to use for the A4 algorithm.
amf	String Values are 0-65535	Optional	Authentication Management Field
zoneid	Integer Values are 0-65535	Optional	This attribute indicates to what geographical area the MultiSC or the association belongs
rid	unsignedByte Values are 0-31.	Optional	Region Identifier

(1) At least one of the parameters a38 or fsetind must be provided.

5.1.1.1

Examples

Message request to create an AUC subscription with the following properties:

imsi 123456789012345

ki 12345678901234567890123456789012

adkey 1

a38 2

```

<ns:Create xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
  <ns:MOType xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
    Subscription@http://schemas.ericsson.com/ema/UserProvisioning/
    GsmAuc/</ns:MOType>
  <ns:MOId xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
    <imsi xmlns="http://schemas.ericsson.com/
    ema/UserProvisioning/GsmAuc/">123456789012345</imsi>
  </ns:MOId>
  <ns:MOAttributes xmlns:ns="http://schemas.ericsson.com/
  cai3g1.2/">
    <createSubscription xmlns="http://schemas.ericsson.com/
    ema/UserProvisioning/GsmAuc/" imsi="123456789012345">
      <imsi>123456789012345</imsi>
      <ki>12345678901234567890123456789012</ki>
      <a38>2</a38>
      <adkey>1</adkey>
    </createSubscription>
  </ns:MOAttributes>
</ns:Create>

```

Example 50 Creating AUC Subscription

```
<ns4:CreateResponse>
  <MOId xmlns="http://schemas.ericsson.com/cai3g1.2/">
    <imsi xmlns="http://schemas.ericsson.com/
      ema/UserProvisioning/GsmAuc/">123456789012345
    </imsi>
  </MOId>
</ns4:CreateResponse>
```

Example 51 Successful Message Response

5.1.2 Set AUC Subscription

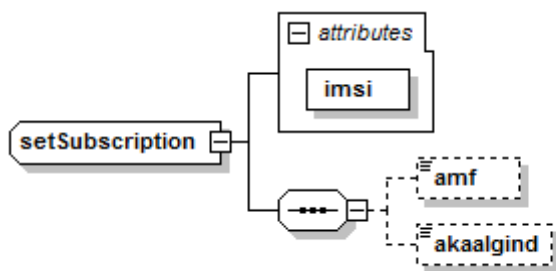


Figure 59 Set AUC Subscription

Table 63 Set AUC Subscription

Parameter	Type	Occurrence	Description
imsi *	Digit string 6-15 digits. Each digit is 0-9.	Mandatory	The IMSI number of the subscriber to be defined.
amf	String Values are 0-65535	Optional ⁽¹⁾	Authentication Management Field.
akaalgind	String Values are 1-2.	Optional ⁽¹⁾	Authentication and Key Agreement (AKA) Algorithm Indicator

(1) At least one of the parameters *amf* or *akaalgind* must be provided.

5.1.2.1 Examples

Message request to change the Authentication Management Field of an AUC for the subscriber with IMSI 123456789012345.



```
<ns:Set xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
  <ns:MOType xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
    Subscription@http://schemas.ericsson.com/ema/UserProvisioning/
    GsmAuc/</ns:MOType>
  <ns:MOId xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
    <imsi xmlns="http://schemas.ericsson.com/
    ema/UserProvisioning/GsmAuc/">123456789012345</imsi>
  </ns:MOId>
  <ns:MOAttributes xmlns:ns="http://schemas.ericsson.com/
  cai3g1.2/">
    <setSubscription xmlns="http://schemas.ericsson.com/ema/
    UserProvisioning/GsmAuc/" imsi="123456789012345">
      <imsi>123456789012345</imsi>
      <amf>34741</amf>
    </setSubscription>
  </ns:MOAttributes>
</ns:Set>
```

Example 52 *Change the Authentication Management Field*

Successful message response:

```
<ns:SetResponse xmlns:ns="http://schemas.ericsson.com/
cai3g1.2/">
</ns:SetResponse>
```

Example 53 *Successful Message Response*

5.1.3

Delete AUC Subscription

Table 64 *MOId for Deleting AUC Subscription Data*

Parameter	Type	Occurrence	Description
imsi	Digit string 6-15 digits. Each digit is 0-9.	Mandatory	The IMSI number of the subscriber to be defined.

5.1.3.1

Examples

Message request to delete an AUC subscription with the IMSI 123456789012345:

```
<ns>Delete xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
  <ns:MOType xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
    Subscription@http://schemas.ericsson.com/ema/UserProvisioning/
    GsmAuc/</ns:MOType>
  <ns:MOId xmlns:ns="http://schemas.ericsson.com/
  cai3g1.2/">
    <imsi xmlns="http://schemas.ericsson.com/
    ema/UserProvisioning/GsmAuc/">123456789012345</imsi>
  </ns:MOId>
</ns>Delete>
```

Example 54 *Delete AUC Subscription*

```
<ns>DeleteResponse xmlns:ns="http://schemas.ericsson.com/
cai3g1.2/"></ns>DeleteResponse>
```

Example 55 *Successful Message Response*

5.1.4 Get AUC Subscription

5.1.4.1 Get AUC Subscription Data Request

Table 65 Get AUC Subscription Data Request MOld

Parameter	Type	Occurrence	Description
imsi	Digit string 6-15 digits. Each digit is 0-9.	Mandatory	The exact IMSI number of a subscriber.

5.1.4.2 Get AUC Subscription Data Response

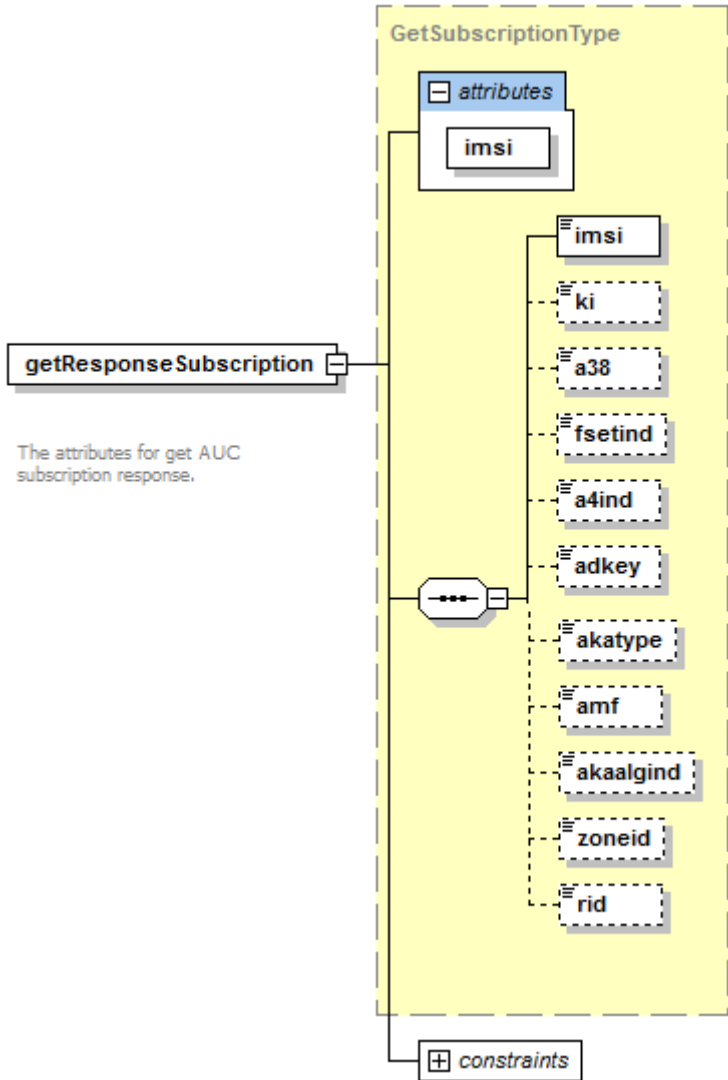


Figure 60 Get AUC Subscription Data Response

Table 66 *Get AUC Subscription Data Response*

Parameter	Type	Occurrence	Description
imsi	Digit string 6-15 digits. Each digit is 0-9.	Mandatory	The exact IMSI number of a subscriber.
ki	String, 32 hexadecimal digits	Optional	Encrypted Subscriber Authentication key
a38	unsignedByte Values are 0-15.	Optional	A38 algorithm version number.
fsetind	unsignedByte Values are 0-31.	Optional	Function Set Indicator (only for WCDMA)
a4ind	unsignedByte Values are 0-7.	Optional	A4 algorithm version number
adkey	unsignedShort Values are 0-511.	Optional	A4 key indicator to use for the A4 algorithm.
akatype	Integer Values are 0-1: <ul style="list-style-type: none"> 0 = GSM if only GSM AKA type is supported by the exchange 1 = WCDMA if only WCDMA AKA type supported by the exchange Default value is determined by an AXE parameter if both GSM and WCDMA AKA types are supported by the exchange.	Optional	Authentication and Key Agreement (AKA) Type
amf	String Values are 0-65535	Optional	Authentication Management Field
akaalgind	String Values are 1-2, N/A.	Optional	Authentication and Key Agreement (AKA) Algorithm Indicator
zoneid	Integer Values are 0-65535	optional	This attribute indicates to what geographical area the MultiSC or the association belongs
rid	unsignedByte Values are 0-31.	Optional	Region Identifier

5.1.4.3

Examples

Message request to get an AUC subscription with the following properties:

imsi 123456789012345



```
<ns:Get xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
  <ns:MOType xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
    Subscription@http://schemas.ericsson.com/ema/UserProvisioning/
    GsmAuc/</ns:MOType>
  <ns:MOId xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
    <imsi xmlns="http://schemas.ericsson.com/
    ema/UserProvisioning/GsmAuc/">123456789012345</imsi>
  </ns:MOId>
</ns:Get>
```

Example 56 *Get AUC Subscription*

```
<GetResponse>
  <MOAttributes>
    <getResponseSubscription xmlns="http://schemas.ericsson.com/
    ema/UserProvisioning/GsmAuc/" imsi="123456789012345">
      <imsi>123456789012345</imsi>
      <a38>1</a38>
      <adkey>1</adkey>
    </getResponseSubscription>
  </MOAttributes>
</GetResponse>
```

Example 57 *Successful Message Response*



6 Mobile Number Portability

The MNP feature enables mobile subscribers to keep the MSISDN number when changing network operators.

MNP requires a high-level communication between the operators. Subscribers that are moving from one network to another must be reported to the network the MSISDN belongs to (the network where the subscriber was created).

A subscriber with FAM functionality holds the necessary porting data for a mechanism that allows operators to administer relationships between MSISDNs and addresses of nodes in an HLR system.

6.1 Customer Service Orders

MOType for MNP:

NumberPortability@<http://schemas.ericsson.com/ema/UserProvisioning/GsmFnr/>

6.1.1 Create Mobile Number Portability

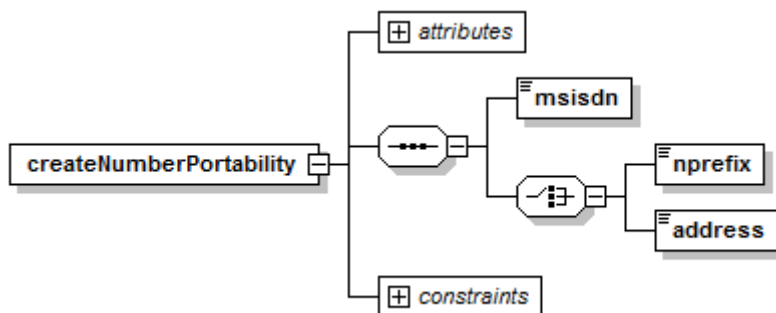


Figure 61 Create NumberPortability

Table 67 Create NumberPortability

Parameter	Type	Occurrence	Description
msisdn	Digit string 5-15 digits. Each digit is 0-9.	Mandatory	Mobile Subscriber ISDN Number (MSISDN)
nprefix ⁽¹⁾	String 1-10 characters Numbers 0-9, or #10-#14	Optional	Network Prefix of the subscription to be defined.
address ⁽¹⁾	String 5-28 characters Numbers 0-9, or #10-#14	Optional	Network address.

(1) Either *nprefix* or *address* must be included in the request.

6.1.1.1 Examples

Message Request to Create a Mobile Number Portability with the following properties:

MSISDN 12310002

nprefix 290#10

```
<ns:Create xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
  <ns:MOType>NumberPortability@http://schemas.ericsson.com/ema
    /UserProvisioning/GsmFnr/</ns:MOType>
  <ns:MOId>
    <msisdn xmlns="http://schemas.ericsson.com/ema
      /UserProvisioning/GsmFnr/">12310002</msisdn>
    </ns:MOId>
  <ns:MOAttributes>
    <createNumberPortability msisdn="12310002"
      xmlns="http://schemas.ericsson.com/ema
        /UserProvisioning/GsmFnr/">
      <msisdn>12310002</msisdn>
      <nprefix>290#10</nprefix>
    </createNumberPortability>
  </ns:MOAttributes>
</ns:Create>
```

Example 58 Request to Create a Mobile Number Portability

```
<CreateResponse xmlns="http://schemas.ericsson.com/cai3g1.2/">
  <MOId>
    <MNP:msisdn xmlns:MNP="http://schemas.ericsson.com/ema/UserProvisioning/GsmFnr/"
      xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
      xmlns:cai3g="http://schemas.ericsson.com/cai3g1.2/"
      xmlns:tq0002="http://schemas.ericsson.com/ema/UserProvisioning/GsmFnr/"
      xmlns:tq0019="http://schemas.ericsson.com/ema/UserProvisioning/GsmFnr/">
      12310002
    </MNP:msisdn>
  </MOId>
</CreateResponse>
```

Example 59 Successful Response

6.1.2 Set Mobile Number Portability

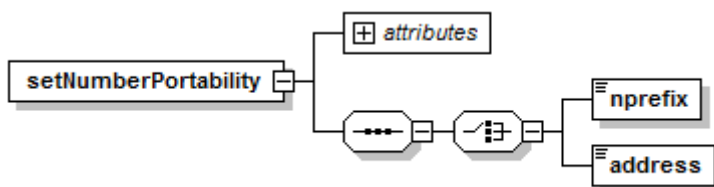


Figure 62 Set NumberPortability

Table 68 Set NumberPortability

Parameter	Type	Occurrence	Description
msisdn	Digit string 5-15 digits. Each digit is 0-9.	Mandatory	Mobile Subscriber ISDN Number (MSISDN)



Parameter	Type	Occurrence	Description
nprefix ⁽¹⁾	String 1–10 characters Numbers 0–9, or #10–#14	Optional	Network Prefix of the subscription to be defined.
address ⁽¹⁾	String 5-28 characters Numbers 0–9, or #10–#14	Optional	Network address.

(1) Either *nprefix* or *address* must be included in the request.

6.1.2.1

Examples

Message request to change a Mobile Number Portability with the following properties:

MSISDN 12310002

nprefix 1904

```
<ns:Set xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
  <ns:MOType>NumberPortability@http://schemas.ericsson.com/ema/
    UserProvisioning/GsmFnr/</ns:MOType>
  <ns:MOId>
    <msisdn xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmFnr/">12310002</msisdn>
    </ns:MOId>
  <ns:MOAttributes>
    <setNumberPortability msisdn="12310002"
      xmlns="http://schemas.ericsson.com/ema/
        UserProvisioning/GsmFnr/">
      <nprefix>1904</nprefix>
    </setNumberPortability>
  </ns:MOAttributes>
</ns:Set>
```

Example 60 Request to Change a Mobile Number Portability

```
<ns:SetResponse xmlns:ns="http://schemas.ericsson.com/
cai3g1.2/">
</ns:SetResponse>
```

Example 61 Successful Response

6.1.3

Delete Mobile Number Portability

Table 69 Delete NumberPortability

Parameter	Type	Occurrence	Description
msisdn	Digit string 5-15 digits. Each digit is 0–9.	Mandatory	Mobile Subscriber ISDN Number (MSISDN)

6.1.3.1

Examples

Message request to delete a Mobile Number Portability with the following properties:

MSISDN 49810000402

```
<ns:Delete xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
  <ns:MOType>NumberPortability@http://schemas.ericsson.com/ema/
    UserProvisioning/GsmFnr/</ns:MOType>
  <ns:MOId>
    <msisdn xmlns="http://schemas.ericsson.com/ema/
      UserProvisioning/GsmFnr/">49810000402</msisdn>
  </ns:MOId>
</ns:Delete>
```

Example 62 Request to Delete Mobile Number Portability

```
<DeleteResponse xmlns="http://schemas.ericsson.com/cai3g1.2/">
  <MOId>
    <MNP:msisdn
      xmlns:MNP="http://schemas.ericsson.com/ema/UserProvisioning/GsmFnr/"
      xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
      xmlns:cai3g="http://schemas.ericsson.com/cai3g1.2/">
        49810000402
    </MNP:msisdn>
  </MOId>
</DeleteResponse>
```

Example 63 Successful Response

6.1.4 Get Mobile Number Portability

6.1.4.1 Get NumberPortability Request

Table 70 Get NumberPortability Request

Parameter	Type	Occurrence	Description
msisdn	Digit string 5-15 digits. Each digit is 0-9.	Mandatory	Mobile Subscriber ISDN Number (MSISDN)

6.1.4.2 Get NumberPortability Response

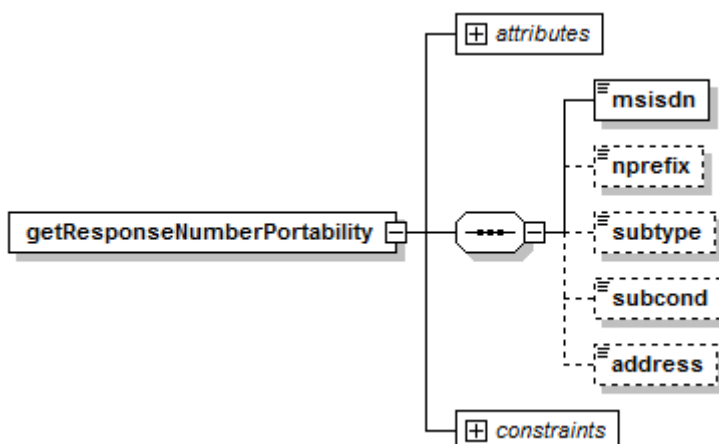


Figure 63 Get NumberPortability Response



Table 71 *Get NumberPortability Response*

Parameter	Type	Occurrence	Description
msisdn	Digit string 5-15 digits. Each digit is 0-9.	Mandatory	Mobile Subscriber ISDN Number (MSISDN)
nprefix	String 1-10 characters Numbers 0-9, or #10-#14.	Optional	Network Prefix of the subscription to be defined.
subtype	Enumeration value: <ul style="list-style-type: none"> HOME⁽¹⁾ IMPORTED EXPORTED OTHER 	Optional	Subscriber Type of the subscription to be displayed
subcond	Enumeration value: <ul style="list-style-type: none"> GSM/WCDMA PSTN/ISDN 	Optional	Subscriber Condition
address	String 5-28 characters Numbers 0-9, or #10-#14	Optional	Network address.

(1) Only possible if MSISDN belongs to a FAM subscription.

6.1.4.3

Examples

Message request to get a Mobile Number Portability with the following properties:

MSISDN 12310002

address 11122255

subtype IMPORTED

subcond GSM/WCDMA

```
<ns:Get xmlns:ns="http://schemas.ericsson.com/cai3g1.2/">
  <ns:MOType>NumberPortability@http://schemas.ericsson.com
    /ema/UserProvisioning/GsmFnr/</ns:MOType>
  <ns:MOId>
    <msisdn>12310002</msisdn>
  </ns:MOId>
</ns:Get>
```

Example 64 *Request to Get Mobile Number Portability*



```
<GetResponse xmlns="http://schemas.ericsson.com/cai3g1.2/">
  <MOAttributes>
    <ns:getResponseNumberPortability xmlns:ns="http://
schemas.ericsson.com/ema/UserProvisioning/GsmFnr/
" msisdn="12310002">
      <ns:msisdn>12310002</ns:msisdn>
      <ns:subtype>IMPORTED</ns:subtype>
      <ns:subcond>GSM/WCDMA</ns:subcond>
      <ns:address>11122255</ns:address>
    </ns:getResponseNumberPortability>
  </MOAttributes>
</GetResponse>
```

Example 65 *Successful Response*



7 Faults and Errors

The generic structure for fault responses is covered in *Generic CAI3G Interface 1.2*, Reference [2]. That document also covers the generic fault codes, which are applicable to all CAI3G operations.

This section covers the subordinate CAI3G errors. They can appear in the `errorCode` element in the error message.

Only HLR, AUC, MNP and IMSI Changeover error codes are described in this section. These error codes are included in the Fault type `UserProvisioningFault`.

For generic error codes, and information about the different Fault types, see *CAI3G Implementation*, Reference [4].

7.1 Subordinate Errors Codes

The CAI3G elements `respCode` and `respDescription` are described in the tables in following sections. The `respDescription` element will also append dynamic information to the error message descriptions. For example, the runtime node information which processed the request.

The Type column indicates the seriousness/category of each response. This column can be used as a guideline for error management.

Available categories are:

- Syntax error (S)
- Temporary error (T)
- Faulty data (D)
- Fatal error (F)

7.1.1 HLR Subscription Response Codes

Note: For HLR provisioning with MNP, response codes of MNP are also supported. See Table 75 for additional response codes.

Table 72 HLR Subscription Response Codes

Descriptions	Response Code	Type	Create	Set	Delete	Get
NE ANSWERS (1-200, 10201-10999, 12001-12014)						



Descriptions	Response Code	Type	Create	Set	Delete	Get
IMSI already defined	1	D	x			
MSISDN already defined	2	D	x			
Subscriber authentication data not found	6	F	x			
IMSI is not defined	13	D	x	x	x	x
MSISDN is not defined	14	D	x	x	x	x
Subscriber data not recognized	15	S		x		
Supplementary service not recognized	16	S	x		x	
Supplementary service not applicable	17	S	x		x	
Supplementary service not provided	18	S	x		x	
Forwarded-to number restricted	19	D/S	x			
Parameter not applicable	25	S	x		x	
Forwarded-to number missing	26	D/S	x			
Operation not allowed because of interaction	27	S	x			
Subscriber data included more than once	31	S		x		
Subscriber data not applicable	32	S	x	x		
Operation not allowed because of current location	33	T	x	x	x	
No BS subscribed within specified BSG	41	S	x	x	x	
Date not acceptable	42	S/D	x	x		
BSG not recognized	43	S	x	x	x	
SS not applicable to specified BSG	44	S	x		x	
No pending changeover	46	D			x	
Subscription limit of numbers reached	47	F	x			
MSISDN is not an additional MSISDN	48	D/S			x	
IMSI type incorrect	52	S/D	x	x	x	
MSISDN type incorrect	53	S/D	x	x	x	x
BC not defined	55	D/S	x			
BS not supported	56	S/D	x		x	
BC out of range	57	S	x			
SS not applicable to any subscribed BSG	61	D/S	x		x	
Supplementary service not registered	62	S/D	x			



Descriptions	Response Code	Type	Create	Set	Delete	Get
Changeover already initiated	63	D	x			
Changeover not initiated	64	D/S	x	x	x	
Changeover already executed	65	T		x	x	
Changeover still pending	66	T/S	x			
BC represents a BS not supported	68	S	x			
Functionality not supported by this exchange	75	S	x	x	x	
Closed user group not applicable to BSG	76	S	x	x		
Index already defined	77	S/D	x			
Interlock code already defined	78	S/D	x			
Basic service group included more than once	79	S	x	x		
Closed user group not applicable to any bsg	81	S	x			
Maximum number of closed user groups reached	82	S	x			
Basic service group erasure not allowed	83	S		x		
Index not defined	84	S/D		x	x	
MSISDN not defined as closed user group member	85	S/D		x	x	x
BSG not defined within any closed user group	86	S/D		x		
BSG not defined within a given PCUG	87	S/D		x		
PCUG not defined as index	88	S/D		x		
PCUG not allowed	89	S		x		
ZONE code set not defined	96	S/D		x		
Odd number of characters in subaddress	102	D/S	x			
Restriction not allowed	115	S		x		
Index erasure not allowed	116	S			x	
Collective basic service group not allowed	117	S	x	x	x	
PICI-IXC Relation does not exist	122	D		x		
No translation defined for the IMSI /Storage shortage in GPRS data file	149	S/T		x		
Storage shortage in MSISDN analysis file for flexible numbering/Storage shortage in PDP context data file	150	F	x			



Descriptions	Response Code	Type	Create	Set	Delete	Get
Storage shortage in routing data file for flexible numbering /Storage shortage in facsimile transmission data file	151	T		x		
Storage shortage in data circuit asynchronous data file	153	T		x		
Storage shortage in data circuit synchronous data file	154	T		x		
Bearer Capability number is not permitted	159	S/D	x			
Detection point already defined	168	S/D	x			
Detection point not defined	169	S/D	x	x	x	
The Detection point is activated for the subscriber	170	S/D	x	x	x	
The Detection point is not activated for the subscriber	171	S/D			x	
Detection point value not allowed	172	S/D	x	x	x	
Maximum number of Detection points has been reached for the subscriber	173	D	x			
Too many detection points specified	174	S/D	x		x	
GSM Service Control Function address is not defined	175	D	x	x		
New subscriber data value incompatible	176	S		x		
General bearer service not subscribed	182	F		x		
Parameter not supported by this exchange	183	D	x	x	x	
Updating CAMEL subscription data in progress for the subscriber	187	T	x	x	x	
CAMEL subscription data not defined	188	S/D		x	x	
Parameter value not supported by this exchange	189	S/D	x	x	x	
MSISDN is defined as an additional MSISDN /TCTDP not defined	190	S/D	x	x	x	
OCTDP not defined	191	S/D		x	x	
Too many TCTDP specified	192	S/D			x	
TCTDP value not allowed	193	S/D	x	x	x	
OCTDP value not allowed	194	S/D	x	x	x	
IMSI does not belong to an operator /TCTDP already defined	195	S/D	x			
OCTDP already defined	196	S/D	x			



Descriptions	Response Code	Type	Create	Set	Delete	Get
MSISDN not connected to an IMSI in the FNR, probably exported or other number/Maximum number of TCTDP reached	197	T/S/D	x			
Maximum number of OCTDP reached	198	S/D	x			
Too many OCTDP specified	10202	S/D			x	
No originating CAMEL subscription defined	10203	S/D		x		
No terminating CAMEL subscription defined	10204	S/D		x		
BS2G for BS2F not defined in the profile	10207	D		x		
BS3G for BS3F not defined in the profile	10208	D		x		
APN not defined	10211	S/D	x	x		
Maximum number of subscriber PDP contexts reached	10215	S/D	x			
Subscriber PDP context already defined	10216	S/D	x	x		
Subscriber PDP context with non-subscribed APN already defined	10217	S/D	x	x		
Updating of subscriber PDP context in progress	10218	T	x	x		
PDP context identifier included more than once	10219	S/D		x		
SubscriberNAM already has that value	10220	S/D		x		
Subscriber data incompatible with stored subscriber data	10221	D		x		
Subscriber PDP context not defined	10222	D		x	x	
GMLC address not defined	10240	S/D	x	x		
Storage shortage in subaddress data file for speech	10242	T	x			
Storage shortage in subaddress data file for data circuit asynchronous	10243	T	x			
Storage shortage in subaddress data file for data circuit synchronous	10244	T	x			
Storage shortage in subaddress data file for facsimile	10245	T	x			
Storage shortage in subaddress data file for auxiliary speech	10246	T	x			



Descriptions	Response Code	Type	Create	Set	Delete	Get
OFA value not allowed	10259	D	x			
Storage shortage in originating CAMEL phase 2 data file	10260	T	x			
Storage shortage in terminating CAMEL phase 2 data file	10261	T	x			
Last OCTDP phase 2 removal not allowed	10263	S			x	
Storage shortage in BSG for auxiliary speech service data file	10265	T	x			
Storage shortage in originating CAMEL phase 1 data file	10267	T	x			
Storage shortage in terminating CAMEL phase 1 data file	10268	T	x			
Storage shortage in GPRS CAMEL phase 3 data file	10271	T	x			
GPRS TDP already defined	10272	S/D	x			
Maximum number of GPRSTDP reached	10273	T	x			
I not applicable for this type of TDP	10274	S/D		x		
CCH VALUE not allowed for this type of TDP	10275	S/D	x	x	x	
GPRSTDP value not allowed	10276	S/D	x	x	x	
GPRSTDP not defined	10277	S/D		x	x	
Too many GPRSTDP specified	10278	S/D			x	
Operation not applicable to an LMU subscriber	10279	S/D	x			
Storage shortage in LCS data file	10280	T	x			
No subscriber LCS data defined	10283	S/D			x	
No subscriber LCS privacy classes defined	10284	S/D			x	
No subscriber LCS MO classes defined	10285	S/D			x	
Subscriber LCS data not defined	10286	S/D		x		
No subscriber GMLC addresses defined	10287				x	
Subscriber LCS privacy class already defined	10291	S/D	x			
Subscriber LCS MO class already defined	10292	S/D	x			
Subscriber internal identity already defined	10293	S/D	x			



Descriptions	Response Code	Type	Create	Set	Delete	Get
Call unrelated LCS class not defined	10295	S/D	x	x	x	
Subscriber LCS privacy class not defined	10296	S/D			x	
Subscriber LCS MO class not defined	10297	S/D			x	
Internal identity not defined	10299	S/D			x	
Maximum number of subscriber GMLC addresses exceeded	10301	T	x			
Subscriber GMLC address already defined	10302	S/D	x			
Subscriber GMLC address not defined	10303	S/D			x	
Storage shortage in originating SMS CAMEL data file	10304	T	x			
OSMSTDP already defined	10305	S/D	x			
Maximum number of OSMSTDP reached	10306	S/D	x			
OSMSTDP value not allowed	10307	S/D	x	x	x	
OSMSTDP not defined	10308	D		x	x	
Too many OSMSTDP specified	10309	S/D			x	
Extended QOS not defined	10314	S/D	x	x		
PDP type incompatible with extended QOS	10315	D	x	x		
Static addressing not allowed for PDP context type	10316	D	x	x		
Call related LCS class not defined	10324	D	x	x	x	
TSMSTDP value not allowed	10325	S/D	x	x	x	
TSMSTDP already defined	10326	D	x			
Maximum number of TSMSTDP reached	10327	D	x			
Storage shortage in terminating SMS CAMEL data file	10328	T	x			
Too many TSMSTDP specified	10329	S/D			x	
TSMSTDP not defined	10330	S/D		x	x	
Service key already defined	10331	D	x			
MMTDP value not allowed	10332	S/D	x		x	
MMTDP already defined	10333	D	x			
Maximum number of MMTDP reached	10334	D	x			
Storage shortage in mobility management CAMEL data file	10335	T	x			



Descriptions	Response Code	Type	Create	Set	Delete	Get
GSA not specified	10336	S/D	x			
Service key not specified	10337	S/D	x			
GSA already defined	10338	D	x			
MMTDP not defined	10339	S/D			x	
DIALNUM already defined	10340	D	x			
Too many MMTDPs specified	10341	S/D	x		x	
DSTDP already defined	10342	D	x			
Storage shortage in dialled services CAMEL data file	10344	T	x			
DSTDP not defined	10345	S/D		x	x	
Match type not defined	10349	S/D	x			
Match type already defined	10350	D	x			
Too many destination numbers given in command	10351	S/D	x			
Destination number already given in command	10352	D	x			
Destination number already defined	10353	D	x			
Maximum number of destination numbers reached	10354	D	x			
Too many destination number lengths given in command	10355	D	x			
Destination number length already given in command	10356	D	x			
Destination number length already defined	10357	D	x			
Maximum number of destination number lengths reached	10358	D	x			
Too many triggering basic services given in command	10359	S/D	x			
Triggering basic service already given in command	10360	D	x			
Triggering basic service already defined	10361	D	x			
Triggering basic service not allowed	10362	D	x		x	
Maximum number of triggering basic services reached	10363	D	x			
Storage shortage in CAMEL TCTDP12 criteria data file	10364	D	x			
Storage shortage in CAMEL OCTDP2 criteria data file	10365	D	x			
Forwarding triggering criteria already defined	10366	D	x			



Descriptions	Response Code	Type	Create	Set	Delete	Get
DEH not applicable for this type of TDP	10367	D		x		
Triggering criteria data not defined	10368	D			x	
Destination number not defined	10369	D			x	
Destination number length not defined	10370	D			x	
Forwarding triggering criteria not defined	10371	D			x	
No triggering basic service defined	10372	D			x	
BS not defined as triggering basic service	10373	D			x	
BSG not defined as triggering basic service	10374	D			x	
Maximum numbers of subscriber call related external identities reached	10375	D	x			
Maximum numbers of subscriber call unrelated external identities reached	10376	D	x			
Call related external address not defined	10377	D		x	x	
Call unrelated external address not defined	10378	D		x	x	
Call related external address already defined	10379	D	x			
Call unrelated external address already defined	10380	D	x			
Call related GMLC restriction not defined	10381	D		x	x	
Call unrelated GMLC restriction not defined	10382	D		x	x	
NAM value not allowed because of functionality not supported	10383	D	x	x		
Storage shortage in call unrelated external address data file	10385	D	x			
Storage shortage in call related external address data file	10386	D	x			
Internal identity already given in command	10387	D	x		x	
Subscriber LCS MO class already given in command	10388	D	x		x	
Storage shortage in IPv6 address data file	10389	D	x	x		
Storage shortage in external address data file	10390	D	x			



Descriptions	Response Code	Type	Create	Set	Delete	Get
CCH value not allowed for this TDP value	10391	D	x	x	x	
VTTDP already defined	10392	D	x			
VTTDP value not allowed	10393	S/D	x	x	x	
Storage shortage in originating CAMEL phase 3 data file	10394	D	x			
Storage shortage in terminating CAMEL phase 3 data file	10395	D	x			
Storage shortage in VMSC terminating CAMEL phase 3 data file	10396	D	x			
VTTDP not defined	10397	D		x	x	
Too many VTTDP specified	10398	D			x	
Maximum number of VTTDP reached	10399	D	x			
Trigger detection point included more than once	10400	D	x		x	
No MMTDP defined	10411	S/D		x		
No valid originating CAMEL subscription defined	10413	S/D		x		
Subscriber GMLC address already given	10415	D	x		x	
No destination number defined	10417	D			x	
No destination number length defined	10418	D			x	
Storage shortage in external address analysis file	10419	D	x			
Spatial triggers data is already defined	10420	S/D	x			
Storage shortage in spatial triggers data file	10421	T	x			
Subscriber spatial trigger data not defined	10422	S/D		x	x	
Subscriber service type already defined	10424	S/D	x			
Too many service types specified for the subscriber	10426	S/D	x			
Subscriber service type already given in command	10427	S/D	x			
No subscriber service type defined	10428	S/D			x	
Subscriber service type not defined	10429	S/D		x	x	
Service type GMLC restriction not defined	10430	S/D		x	x	
NO subscriber internal identities defined	10436	D			x	



Descriptions	Response Code	Type	Create	Set	Delete	Get
PDP context identifier in use	10437	S/D	x			
PDP address incompatible with PDP type	10438	S/D		x		
Last PDP context removal not allowed	10439	S/D		x		
Updating of PDP context profile in progress	10441	S/D		x		x
Extended QOS not specified	10442	S/D		x		
Charging characteristics erasure not allowed	10443	S/D		x		
Spatial trigger event value not allowed	10444	S/D	x	x	x	
FNUM value not allowed	10446	S/D	x			
Subscription belongs to a multiple subscription	10456	F	x	x	x	
IMSI corresponds to master subscription	10457	F	x	x		
Storage shortage in multiple subscription data file	10461	F	x			
Subscription is not a master subscription	10462	F		x	x	
Subscription does not belong to the multiple subscription	10463	F		x		
Maximum number of subscriptions in multiple subscription exceeded	10464	F		x		
Minimum number of subscriptions in multiple subscription exceeded	10465	F		x		
Change of active subscription not allowed	10466	F		x		
Subscriber SMSC address series already defined	10469	D	x			
Series is prefix of existing series	10470	D	x			
There is a series prefix of the given series	10471	D	x			
Maximum number of subscriber SMSC addresses series reached	10473	D	x			
Storage shortage in subscriber SPAM SMS data file	10474	D	x			
Storage shortage in SPAM SMSC address series data file	10475	D	x			
No SPAM SMS data defined	10476	D			x	
Subscriber SMSC address series not defined	10477	D			x	
LCS address not defined	10478	D	x			



Descriptions	Response Code	Type	Create	Set	Delete	Get
Subscriber has an HGMLC address already defined	10479	D	x			
Subscriber has a PPR address already defined	10480	D	x			
No subscriber HGMLC address defined	10481	D			x	
No subscriber PPR address defined	10482	D			x	
Storage shortage in originating CAMEL phase 4 data file	10485	D	x			
Storage shortage in terminating CAMEL phase 4 data file	10486	D	x			
Storage shortage in VMSC terminating CAMEL phase 4 data file	10487	D	x			
FNUM value incompatible with OFA value	10489	S/D	x			
IMSI belongs to a different home PLMN	10504	D	x	x		
Illegal combination of parameter values	10520	F	x	x		
Centralized user database not reachable	10534	D	x	x	x	
Resource limitation	10535	D	x	x	x	
Storage shortage in additional MSISDN data files	10537	D	x			
Storage shortage in detection point data file	10538	D	x			
Storage shortage in closed user group data files	10539	D	x			
Old IMSI exists	10541	D	x			
Profile does not exist in centralized user database	10542	D	x			
IP address incompatible with IP type	10585	D	x	x		
URL not valid	10586	D	x	x		
Too many subscriptions within multiple IMSI subscription	10589	D			x	
Incompatible PDPTY and EPDPIND values	10597	F	x	x		
Incompatible PDPADD and EPDPADD values	10598	F	x	x		
Incompatible EPDPADD and EPDPIND values	10599	F	x	x		
Subscriber not defined in the region	10600	F	x	x		
Changeover not allowed	10804	D	x			



Descriptions	Response Code	Type	Create	Set	Delete	Get
gsmSCF profile not defined	10806	D	x	x		
Identifier not defined	12001			x	x	
Subscriber not defined	12002				x	
Identifier in use	12003				x	
Identifier already exists	12004		x			
Database locked for backup	12006	D	x		x	
Subscriber used by application	12007				x	
Operation failed, rollback has been performed successfully	12013	T	x			
Operation failed, rollback was unsuccessful	12014	T	x			

7.1.2

IMSI Changeover Response Codes

Table 73 IMSI Changeover Response Codes

Description	Response Code	Type	Create	Set	Delete	Get
NE ANSWERS (1 - 199, 10000 - 12006)						
IMSI already defined	1	D	x			
Subscriber authentication data not found	6	F	x			
IMSI is not defined	13	D	x	x	x	x
MSISDN is not defined	14	D	x	x	x	x
Date not acceptable	42	D	x	x		
No pending changeover	46	D/S		x	x	
IMSI type incorrect	52	D/S	x	x	x	
MSISDN type incorrect	53	D/S	x	x	x	
Changeover already initiated	63	D/S	x			
Changeover not initiated	64	D/S		x	x	x
Changeover already executed	65	D/S		x	x	
Centralized user database not reachable	10534	D	x	x	x	
Resource limitation	10535	D	x	x	x	
Changeover not allowed	10804	D	x			
Database locked for backup	12006	D	x		x	



7.1.3 AUC Subscription Response Codes

Table 74 AUC Subscription Response Codes

Descriptions	Response Code	Type	Create	Set	Del	Get
NE ANSWERS (301-356, 12001-12014)						
Data already exist for key	301	D	x			
Subscriber does not exist	302	D				x
Unknown algorithm version number	303	S/D	x			
Command Restricted During Dump	307	F	x	x	x	x
Adkey not defined	308	D	x			
Key data operation in progress	312	S/D	x		x	
Subscription operation in progress	313	D	x	x		
A4IND not supported	315	D	x			
Key data change in progress	316	T			x	
Key data change pending	317	T			x	
Customer key operation in progress	320	T			x	
The subscriber defined is not WCDMA	321	D				x
Centralized user database not reachable	323	D	x	x		
Functionality not supported by this exchange	324	D	x	x		
Parameter not supported by this exchange	325	D	x			
Parameter value not supported by this exchange	326	D	x			
FSETIND only supported for AUC WCDMA	327	T/F				x
OP change in process	330	T	x			
AKA Algorithm change in progress	332	D	x	x		
AKA Algorithm changes pending	333	D	x	x		
No WCDMA subscribers defined	336	D	x	x		



Descriptions	Response Code	Type	Create	Set	Del	Get
No WCDMA subscribers defined for specified FSET	337	D	x	x		
Subscription data change in progress	339	T		x		
Subscription data change pending	340	D	x	x		
No subscription data change pending	341	D	x	x		
BOP change in progress	345	T	x	x		
Database locked for backup	346	D	x		x	
The WCDMA subscriber defined has not the specified FSET	356	D		x		
Operation failed, rollback has been performed successfully	12013	T	x			
Operation failed, rollback was unsuccessful	12014	T	x			

7.1.4

Mobile Number Portability Subscription Response Codes

Table 75 MNP Message Response Codes

Descriptions	Response Code	Type	Create	Set	Delete	Get
NE ANSWERS (1-200)						
MSISDN already defined	2	D	x			
MSISDN is not defined	14	T	x	x	x	x
Functionality not supported by this exchange	75	S	x	x		
MSISDN does not belong to own country	194	D	x	x	x	x
NPREFIX has not got the proper length	196	D	x	x		
Illegal combination of parameter values	520	S/D	x	x		

7.2

CAI3G Error Message Example

The following, shown in Example 66, is an example of a CAI3G error message.

```

<ns2:Fault xmlns:ns2="http://schemas.xmlsoap.org/soap/envelope/" xmlns:ns3=
"http://www.w3.org/2003/05/soap-envelope">
  <faultcode>ns2:Server</faultcode>
  <faultstring>This is a server fault</faultstring>
  <detail>
    <Cai3gFault:Cai3gFault xmlns="http://schemas.ericsson.com/cai3g1.2/"
xmlns:Cai3gFault="http://schemas.ericsson.com/cai3g1.2/">
      <faultcode>4006</faultcode>
      <faultreason>
        <reasonText>External error.</reasonText>
      </faultreason>
      <faultrole>NEF</faultrole>
      <details>
        <UserProvisioningFault:UserProvisioningFault xmlns="http://
schemas.ericsson.com/ema/UserProvisioning/" xmlns:UserProvisioningFault=
"http://schemas.ericsson.com/ema/UserProvisioning/">
          <respCode>13</respCode>
          <respDescription>IMSI is not defined Main ID does not exist. -
[Processed by PG Node: CL25-2-PL-3]</respDescription>
        </UserProvisioningFault:UserProvisioningFault>
      </details>
    </Cai3gFault:Cai3gFault>
  </detail>
</ns2:Fault>

```

Example 66 CAI3G Error Message



Reference List

Ericsson Documents

- [1] *Library Overview*, 18/1553-CSH 109 628 Uen
- [2] *Generic CAI3G Interface 1.2*, 2/155 19-FAY 302 0003 Uen
- [3] *Function Specification Identity Changeover for Layered Applications*, 14/155 17-CSH 109 628 Uen
- [4] *CAI3G Implementation*, 26/155 19-CSH 109 628 Uen
- [5] *Layered Identity Changeover Provisioning over CAI3G*, 27/155 19-CSH 109 628 Uen