

# Layered M2M Subscription Provisioning over CAI3G

Ericsson Dynamic Activation 1

---

## SYSTEM INTERFACE

**Copyright**

© Ericsson AB 2017. All rights reserved. No part of this document may be reproduced in any form without the written permission of the copyright owner.

**Disclaimer**

The contents of this document are subject to revision without notice due to continued progress in methodology, design and manufacturing. Ericsson shall have no liability for any error or damage of any kind resulting from the use of this document.

**Trademark List**

All trademarks mentioned herein are the property of their respective owners. These are shown in the document Trademark Information.



# Contents

<b>1</b>	<b>Introduction</b>	<b>1</b>
1.1	Purpose and Scope	1
1.2	Target Group	1
1.3	Typographic Conventions	1
1.4	Namespaces	1
1.5	Legends	1
1.6	Operations	2
1.7	CAI3G Request and Response	2
1.8	Web Service Interface	3
1.9	MOType	3
1.10	MOId	3
1.11	CAI3G Extension	4
1.11.1	Parameters	4
1.11.2	Schemas	5
<b>2</b>	<b>Subscription</b>	<b>7</b>
2.1	Customer Service Orders	7
2.1.1	Create Subscription	7
2.1.2	Get Subscription	12
2.1.3	Set Subscription	18
2.1.4	Delete Subscription	21
2.2	Composite Parameter Definitions	23
2.2.1	Additional MSISDN	23
2.2.2	Mobility Management IN Triggering	27
2.2.3	Closed User Group	31
2.2.4	CUG BSG Options	37
2.2.5	Barring Supplementary Services	42
2.2.6	Call Forwarding Services	48
2.2.7	Single Personal Number	66
2.2.8	Call Waiting	70
2.2.9	Spatial Trigger	74
2.2.10	Message Waiting Service Type	78
<b>3</b>	<b>Multiple Subscription</b>	<b>81</b>
3.1	Create Multiple Subscription	81
3.1.1	Request Data	81
3.1.2	Examples	82
3.2	Get Multiple Subscription	83
3.2.1	Request Data	83



3.2.2	Response Data	83
3.2.3	Examples	85
3.3	Set Multiple Subscription	86
3.3.1	Request Data	87
3.3.2	Examples	88
3.4	Delete Multiple Subscription	89
3.4.1	Request Data	89
3.4.2	Examples	89
<b>4</b>	<b>Faults and Errors</b>	<b>91</b>
4.1	Subordinate M2M Subscription Error Codes	91
4.2	Subordinate M2M Multiple Subscription Error Codes	95
4.3	CAI3G Error Message Example	97
	<b>Reference List</b>	<b>99</b>



# 1 Introduction

This section is an introduction to this document. It contains information about the prerequisites, purpose, scope, and target group for the document. This section also contains information about typographic conventions used in this document.

## 1.1 Purpose and Scope

This document describes a subset of the Customer Administration Interface Third Generation (CAI3G) inbound interface towards Ericsson™ Dynamic Activation (EDA). It covers the Machine to Machine (M2M) subscription commands.

## 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 [3].

## 1.3 Typographic Conventions

Typographic conventions are described in the document *Library Overview*, Reference [3].

## 1.4 Namespaces

The following namespace is referred to in this document:

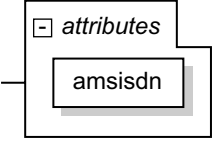
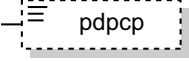

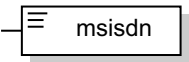
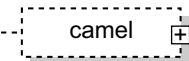
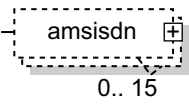
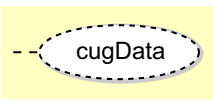
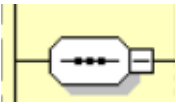
- M2M namespace:

`http://schemas.ericsson.com/ma/m2mhlr/`

## 1.5 Legends

The following table shows the legends used in XML schema figures in this specification.

**Table 1** *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.

## 1.6 Operations

See the following table for the commands, or Managed Objects (MOs), and valid operations covered in this document.

**Table 2** *M2M Provisioning MOs*

MO	Operation			
	Create	Get	Set	Delete
Subscription	x	x	x	x

## 1.7 CAI3G Request and Response

A CAI3G message consists of an MO name, an MOId, and MOAttributes. The MOId is always part of the request message. The MOAttributes can be part of either the request or the response.



For `Create` operations, the `MOAttributes` are parts of the request.

For `Get` operations, the `MOAttributes` are parts of the response.

For `Set` operations, the `MOAttributes` are parts of the request.

`Delete` operations do not have any `MOAttributes`.

## 1.8 Web Service Interface

The Web Services Definition Language (WSDL) and XML Schema Definition Language (XSD) files that describe the provisioning interface can be found in `/home/dveinstaller/ma/`. 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, [Dynamic Activation WSDL and XSD files.zip](#), to a local folder.
2. Unpack the zip file.

The schema files applicable for M2M CAI3G operations can be found in `webservice_provisioning_cai3g1.2\schemas\ma_hlr`.

The schema applicable for M2M subscription is `m2m_provisioning.xsd`.

The schema applicable for Multiple M2M subscription is `m2m_MultipleSubscription.xsd`.

## 1.9 MOType

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

Those two parts are connected with symbol `@`. The syntax of the `MOType` string is `MO_Name@MO_Namespace`. The name string of an `MOType` must follow the regular expression: `[A-Za-z][A-Za-z0-9]*`

The MO name together with the MO namespace must be globally unique.

## 1.10 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 `MOId` or multiple `MOId`. The following is an example of an `MOId`:



```
<xs:sequence>
  <xs:element name="msisdn" type="msisdnType" />
  <xs:choice>
    <xs:element name="ic" type="icType" />
    <xs:element name="index" type="indexType" />
  </xs:choice>
</xs:sequence>
```

### *Example 1 Example of MOld*

The MOld 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 MOld 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 is to define own logic relationship of MOld. It is also the CAI3GAgents responsibility to interpret this parameter correctly by either the hard-coded logic or the dynamic parsing of the schema.

## 1.11 CAI3G Extension

CAI3G extension is used to state the `PrimaryHLRID` parameter for the HLR-FE node working as backup of the N number of classic Home Location Registers (HLR), see Table 3.

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.

### 1.11.1 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 3 Extension*

Parameter	Type	Description
primaryHLRId	String  Expressed as <i>&lt;a&gt;-&lt;b&gt;</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

### 1.11.2

## Schemas

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

## Extension

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





## 2 Subscription

### 2.1 Customer Service Orders

#### 2.1.1 Create Subscription

This section covers the M2M Subscription command `createSubscription`, which creates an M2M subscription.

When creating an M2M Subscription, a set of data is associated to the subscription by an M2M Service Profile alias. The content of the M2M Service Profile is not copied as individual data for each subscription.

#### MOType

`Subscription@http://schemas.ericsson.com/ma/m2mhlr/`

##### 2.1.1.1 Request Data

#### MOld

Table 4 Create Subscription MOld

Parameter	Type	Description
imsi	Digit string 6-15 digits. Each digit is 0-9.	International Mobile Subscriber Identity
msisdn	Digit string 5-15 digits. Each digit is 0-9.	Mobile Subscriber ISDN Number (MSISDN)

#### MOAttributes

The parameters that are used in the operation are shown in Figure 1.

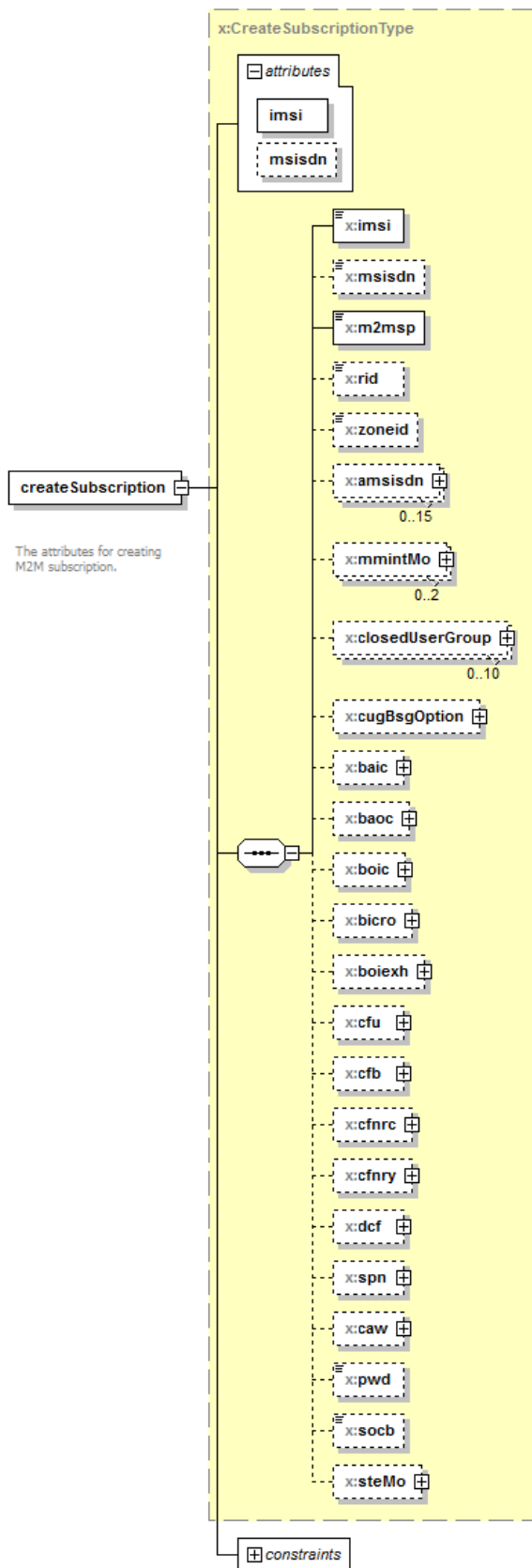


Figure 1 Parameters in a `createSubscription` Request



The following table covers the parameters that can be used in a `createSubscription` request.

**Table 5** *Create Subscription Parameters*

Parameter	Type	Description
<b>imsi</b>	<b>Digit String 6-15 Digits. Each Digit Is 0-9.</b>	<b>International Mobile Subscriber Identity</b>
<b>msisdn</b>	<b>Digit String 5-15 Digits. Each Digit Is 0-9.</b>	<b>Mobile Subscriber ISDN Number (MSISDN)</b>
<b>m2msp</b>	<b>Integer 1-65535</b>	<b>M2M Service Profile</b>
<b>rid</b>	<b>Integer 0-31</b>	<b>Region Identifier</b>
<b>zoneid</b>	<b>Integer 0-65535</b>	<b>Indicates the Geographical Area the MultiSC or the Association Belongs To.</b>
<b>amsisdn</b>	<b>AMSIType, See Section 2.2.1.1 on page 23.</b>	<b>Additional MSISDN</b>
<b>mmintMO</b>	<b>MobManINTriggeringType Section 2.2.2.1 on page 27.</b>	<b>Mobility Management IN Triggering Subscription Data and Activation</b>
<b>Closedusergroup</b>	<b>CreateClosedUserGroupType, See Section 2.2.3.1 on page 31.</b>	<b>M2M Closed User Group</b>
<b>cugBsgOption</b>	<b>CugBsgOptionType, See Section 2.2.4.1 on page 37.</b>	<b>Closed User Group Basic Service Group</b>
<b>baic</b>	<b>BarringSupplementaryServiceType, See Section 2.2.5.2 on page 43.</b>	<b>Barring of All Incoming Calls</b>
<b>baoc</b>	BarringSupplementaryServiceType, see Section 2.2.5.2 on page 43.	Barring of All Outgoing Calls
<b>boic</b>	BarringSupplementaryServiceType, see Section 2.2.5.2 on page 43.	Barring of all Outgoing International Calls. Excluded in GSM1900
<b>bicro</b>	BarringSupplementaryServiceType, see Section 2.2.5.2 on page 43.	Barring of all Incoming Calls when Roaming Outside the home PLMN country. Excluded in GSM1900
<b>boiexh</b>	BarringSupplementaryServiceType, see Section 2.2.5.2 on page 43.	Barring of all Outgoing International calls Except those directed to the Home. Excluded in GSM1900
<b>cfu</b>	CreateCfuCfbCfnrySupplementaryServiceType, see Section 2.2.6.1.2 on page 49.	Call Forwarding Unconditional
<b>cfb</b>	CreateCfuCfbCfnrySupplementaryServiceType, see Section 2.2.6.1.2 on page 49.	Call Forwarding on mobile subscriber Busy
<b>cfnc</b>	CreateCfuCfbCfnrySupplementaryServiceType, see Section 2.2.6.1.2 on page 49.	Call Forwarding on mobile subscriber Not Reachable
<b>cfny</b>	CreateCfnrySupplementaryServiceType, see Section 2.2.6.2.2 on page 55.	Call Forwarding on No Reply
<b>dcf</b>	CreateDcfSupplementaryServiceType, see Section 2.2.6.3.2 on page 61.	Default Call Forwarding
<b>spn</b>	CreateSpnSupplementaryServiceType, see Section 2.2.7.2 on page 67.	Single Personal Number
<b>caw</b>	CawSupplementaryServiceType, see Section 2.2.8.2 on page 71.	Call Waiting



Parameter	Type	Description
imsi	Digit String 6-15 Digits. Each Digit Is 0-9.	International Mobile Subscriber Identity
msisdn	Digit String 5-15 Digits. Each Digit Is 0-9.	Mobile Subscriber ISDN Number (MSISDN)
m2msp	Integer 1-65535	M2M Service Profile
rid	Integer 0-31	Region Identifier
zoneid	Integer 0-65535	Indicates the Geographical Area the MultiSC or the Association Belongs To.
amsisdn	AMSIType, See Section 2.2.1.1 on page 23.	Additional MSISDN
mmintMO	MobManINTriggeringType Section 2.2.2.1 on page 27.	Mobility Management IN Triggering Subscription Data and Activation
Closedusergroup	CreateClosedUserGroupType, See Section 2.2.3.1 on page 31.	M2M Closed User Group
cugBsgOption	CugBsgOptionType, See Section 2.2.4.1 on page 37.	Closed User Group Basic Service Group
baic	BarringSupplementaryServiceType, See Section 2.2.5.2 on page 43.	Barring of All Incoming Calls
pwd	Digit string, 4 digits Values are 0000-9999 Default value is set to 0000	Subscriber Password
socb	unsignedByte. Values are 0-1 Default value is set to 0	Control Of Barring services
steMo	SteType, see Section 2.2.9.1 on page 74.	Spatial Trigger Support

### 2.1.1.2

### Examples

Message Request to Create an M2M Subscription with the following properties:

**msisdn**                      46455381234  
**imsi**                         12345678933333  
**rid**                         13  
**m2msp**                      12



```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:cai3="http://schemas.ericsson.com/cai3g1.2/"
  xmlns:m2m="http://schemas.ericsson.com/ma/m2mhlr/">
  <soapenv:Header>
    <cai3:SessionId>bf33f3e5eb7149e9b57fa00e6a870dab</cai3:SessionId>
  </soapenv:Header>
  <soapenv:Body>
    <cai3:Create>
      <cai3:MOType>Subscription@http://schemas.ericsson.com/ma/m2mhlr/
    </cai3:MOType>
    <cai3:MOId>
      <m2m:imsi>12345678933333</m2m:imsi>
      <m2m:msisdn>46455381234</m2m:msisdn>
    </cai3:MOId>
    <cai3:MOAttributes>
      <m2m:createSubscription imsi="12345678933333" msisdn="46455381234" >
        <m2m:imsi>12345678933333</m2m:imsi>
        <m2m:msisdn>46455381234</m2m:msisdn>
        <m2m:m2msp>12</m2m:m2msp>
      </m2m:createSubscription>
    </cai3:MOAttributes>
  </cai3:Create>
</soapenv:Body>
</soapenv:Envelope>
```

### Example 2 Create Subscription Request Message

Following is an example of the error response when the IMSI format in the incoming command is correct.

```
<S:Envelope xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:cai3g="http://schemas.ericsson.com/cai3g1.2/">
  <S:Header>
    <cai3g:SessionId>efae04728c434decb3d9ff1a3b93331c</cai3g:SessionId>
  </S:Header>
  <S:Body>
    <ns2:CreateResponse xmlns:ns2="http://schemas.ericsson.com/cai3g1.2/">
      <ns2:MOId>
        <m2m:imsi xmlns:m2m="http://schemas.ericsson.com/
          ma/m2mhlr/">12345678933333</m2m:imsi>
        <m2m:msisdn xmlns:m2m="http://schemas.ericsson.com/
          ma/m2mhlr/">46455381234</m2m:msisdn>
      </ns2:MOId>
    </ns2:CreateResponse>
  </S:Body>
</S:Envelope>
```

### Example 3 Successful Message Response

Error can occur during the provisioning process because of various reasons. Following is an example of the error response when the IMSI format in the incoming command is incorrect.



```

<S:Envelope xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:cai3g="http://schemas.ericsson.com/cai3g1.2/">
  <S:Header>
    <cai3g:SessionId>efae04728c434decb3d9ff1a3b93331c</cai3g:SessionId>
  </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:Client</faultcode>
      <faultstring>This is a client fault</faultstring>
      <detail>
        <Cai3gFault:Cai3gFault xmlns="http://schemas.ericsson.com/cai3g1.2/"
          xmlns:Cai3gFault="http://schemas.ericsson.com/cai3g1.2/">
          <faultcode>3013</faultcode>
          <faultreason>
            <reasonText>Invalid parameter.</reasonText>
          </faultreason>
          <faultrole>MF</faultrole>
          <details>
            <FaultDetails:FaultDetails xmlns="http://schemas.ericsson.com/ma/"
              xmlns:FaultDetails="http://schemas.ericsson.com/ma/">
              <errorcode>1006</errorcode>
              <errormessage>Invalid parameter.</errormessage>
              <errordetails>The XML data is not valid. cvc-pattern-valid:
                Value '70082' is not facet-valid with respect to pattern '[0-9]
                {6,15}' for type 'IMSIType'.</errordetails>
            </FaultDetails:FaultDetails>
          </details>
        </Cai3gFault:Cai3gFault>
      </detail>
    </ns2:Fault>
  </S:Body>
</S:Envelope>

```

#### Example 4 Unsuccessful Message Response

## 2.1.2 Get Subscription

This section covers the M2M Subscription command `getSubscription`.

### MOType

Subscription@http://schemas.ericsson.com/ma/m2mhlr/

### 2.1.2.1 Request Data

#### MOId

The following table covers the parameters that can be received in a `getSubscription` request.





**Table 6** *Get Subscription Request MOld*

Parameter	Type	Description
msisdn	Digit string 5-15 digits. Each digit is 0-9.	Mobile Subscriber ISDN Number (MSISDN) Mandatory <sup>(1)</sup>
imsi	Digit string 6-15 digits. Each digit is 0-9.	International Mobile Subscriber Identity Mandatory <sup>(1)</sup>

(1) Either the *imsi* parameter or the *msisdn* parameter must be used. If both MSISDN and IMSI number are used in a provisioning operation, IMSI is used as identifier to locate the subscription. No check is performed whether the MSISDN and the IMSI belong to the same subscription.

### MOAttributes

N/A

## 2.1.2.2

### Response Data

### MOld

**Table 7** *Get Subscription Response MOld*

Parameter	Type	Description
msisdn	Digit string 5-15 digits. Each digit is 0-9.	Mobile Subscriber ISDN Number (MSISDN)
imsi	Digit string 6-15 digits. Each digit is 0-9.	International Mobile Subscriber Identity

### MOAttributes

The parameters that are used in the operation are shown in Figure 2.

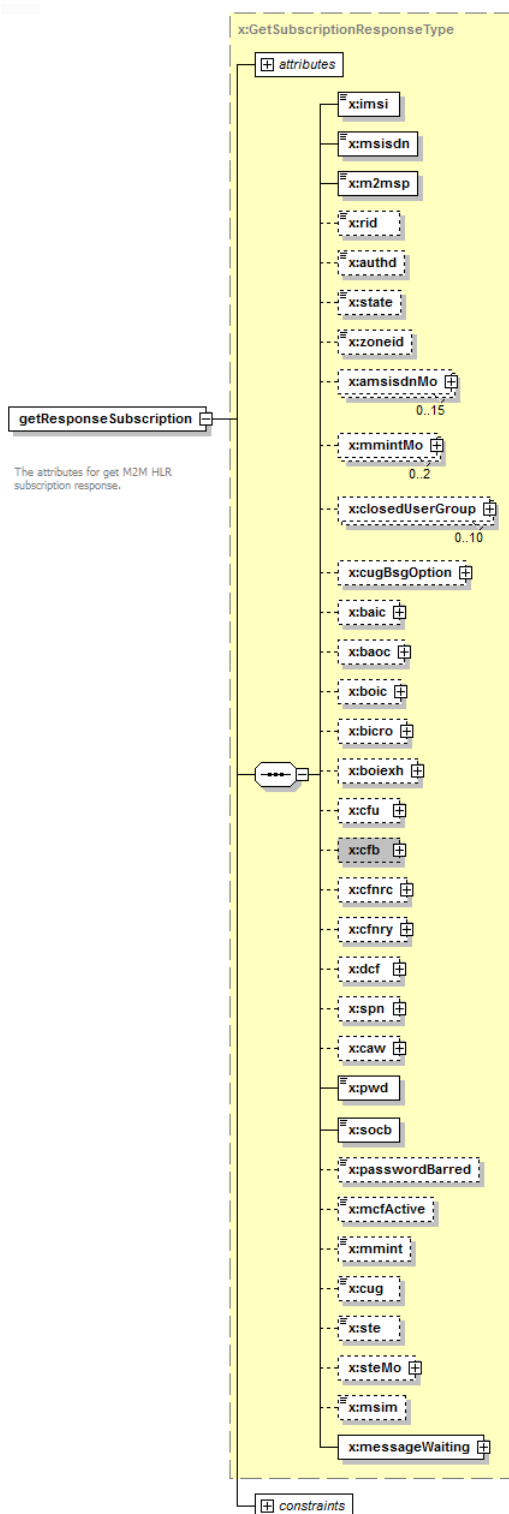


Figure 2 Parameters in a Get Subscription Response



The following table covers the parameters that can be received in a `getSubscription` response.

**Table 8** *Get Subscription Response Parameters*

Parameter	Type	Description
imsi	Digit string, 6-15 digits. Each digit is 0-9.	International Mobile Subscriber Identity
mmint	unsignByte Value is 1 when at least one detection point is activated.	Mobility Management IN Triggering Subscription Data and Activation
msisdn	Digit string, 5-15 digits. Each digit is 0-9.	Mobile Subscriber ISDN Number (MSISDN)
m2msp	Integer 1-65535	M2M Service Profile
rid	Integer 0-31	Region Identifier
authd	One of the following strings: <ul style="list-style-type: none"> <li>• AVAILABLE</li> <li>• NO IMSI IN AUC</li> <li>• NO ACCESS TO AUC</li> <li>• STORAGE SHORTAGE</li> </ul>	Authentication data <sup>(1)</sup>
state	One of the following strings: <ul style="list-style-type: none"> <li>• NOT CONNECTED</li> <li>• CONNECTED</li> <li>• ADDITIONAL</li> </ul>	State corresponding to the subscription or number
zoneid	Integer 0-65535	Indicates the geographical area the MultiSC or the association belongs to.
amsisdn	AMSIType, see Section 2.2.1.2 on page 26.	Additional MSISDN
mmintMO	Type, see Section 2.2.2 on page 27.	Mobility Management IN Triggering Subscription Data and Activation
cug	unsignByte Value is 1 when at least one cugindex is defined	Closed User Group
closedUserGroup	ClosedUserGroupResponseType, see Section 2.2.3.3 on page 36.	M2M Closed User Group
cugBsgOption	CugBsgOptionResponseType, Section 2.2.4.2 on page 40.	Closed User Group Basic Service Group
baic	BarringSupplementaryServiceResponseType, see Section 2.2.5.3 on page 46.	Barring of All Incoming Calls
baoc	BarringSupplementaryServiceResponseType, see Section 2.2.5.3 on page 46.	Barring of All Outgoing Calls
boic	BarringSupplementaryServiceResponseType, see Section 2.2.5.3 on page 46.	Barring of all Outgoing International Calls. Excluded in GSM1900
bicro	BarringSupplementaryServiceResponseType, see Section 2.2.5.3 on page 46.	Barring of all Incoming Calls when Roaming Outside the home PLMN country. Excluded in GSM1900



Parameter	Type	Description
boiexh	BarringSupplementaryServiceResponseType, see Section 2.2.5.3 on page 46.	Barring of all Outgoing International calls Except those directed to the Home. Excluded in GSM1900
cfu	CfuCfbCfnrcSupplementaryServiceResponseType, see Section 2.2.6.1.4 on page 53.	Call Forwarding Unconditional
cfb	CfuCfbCfnrcSupplementaryServiceResponseType, see Section 2.2.6.1.4 on page 53.	Call Forwarding on mobile subscriber Busy
cfnrc	CfuCfbCfnrcSupplementaryServiceResponseType, see Section 2.2.6.1.4 on page 53.	Call Forwarding on mobile subscriber Not Reachable
cfnry	CfnrySupplementaryServiceResponseType, see Section 2.2.6.2.4 on page 59.	Call Forwarding on No Reply
dcf	DcfSupplementaryServiceResponseType, see Section 2.2.6.3.4 on page 65.	Default Call Forwarding
spn	SpnSupplementaryServiceResponseType, see Section 2.2.7.4 on page 69.	Single Personal Number
caw	CawSupplementaryServiceResponseType, see Section 2.2.8.3 on page 72.	Call Waiting
pwd	Digit string, 4 digits Values are 0000-9999	Subscriber Password
socb	unsignedByte Values are 0-1.	Control Of Barring services
passwordBarred	Boolean {true, false}	The mobile subscriber is barred from using password controlled procedures because of password misuse.
mcfActive	Boolean {true, false}	The call forwarding registrations initiated by the mobile subscriber are being monitored
ste	unsignByte Value is 1 when spatial trigger is defined	Spatial Triggers Event
steMo	SteResponseType, see Section 2.2.9.4 on page 77.	Spatial Trigger Support
msim	unsignedByte. Values are 0-1	Multiple SIM active  If value is 1, multiple subscription can be retrieved by Get MultipleSubscription operation, see Section 3.2 on page 83.
messageWaiting	MessageWaitingServiceType, see Section 2.2.10.1 on page 78.	Message Waiting data

(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).

### 2.1.2.3

### Examples

To display all data of a subscriber with MSISDN 491900005010:



```
<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/ma/m2mhlr/
  </ns:MOType>
  <ns:MOId xmlns:ns="http://schemas.ericsson.com/cai3g1.2/" msisdn="491900005010">
    <msisdn xmlns="http://schemas.ericsson.com/ma/m2mhlr/">491900005010</msisdn>
  </ns:MOId>
</ns:Get>
```

### Example 5 Get 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/ma/m2mhlr"
      xmlns:getResponseSubscription="http://schemas.ericsson.com/ma/m2mhlr">
      <msisdn>491900005010</msisdn>
      <imsi>26400000005010</imsi>
      <m2msp>17</m2msp>
      <authd>AVAILABLE</authd>
      <pwd>0000</pwd>
      <socb>0</socb>
      <messageWaiting>
        <mce>0</mce>
        <mnrf>1</mnrf>
        <mnrgr>1</mnrgr>
      </messageWaiting>
    </getResponseSubscription:getResponseSubscription>
  </ns2:MOAttributes>
</ns2:GetResponse>
```

### Example 6 Successful Message Response

Unsuccessful message response, no subscription with this MSISDN is defined:

```
<S:Envelope xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:cai3g="http://schemas.ericsson.com/cai3g1.2/">
  <S:Header>
    <cai3g:SessionId>b9d2fb8417b4409789658605cd435b58</cai3g:SessionId>
  </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>MF</faultrole>
          <details>
            <FaultDetails:FaultDetails xmlns="http://schemas.ericsson.com/ma/"
              xmlns:FaultDetails="http://schemas.ericsson.com/ma/">
              <errorcode>13</errorcode>
              <errormessage>IMSI is not defined</errormessage>
              <errordetails>Main ID does not exist.</errordetails>
            </FaultDetails:FaultDetails>
          </details>
        </Cai3gFault:Cai3gFault>
      </detail>
    </ns2:Fault>
  </S:Body>
```

### Example 7 Unsuccessful Message Response



## 2.1.3 Set Subscription

This section covers the M2M Subscription command `setSubscription`, which modifies an M2M subscription.

### MOType

`Subscription@http://schemas.ericsson.com/ma/m2mhlr/`

### 2.1.3.1 Request Data

#### 2.1.3.1.1 Parameters

### MOId

*Table 9 Set Subscription MOId*

Parameter	Type	Description
<code>msisdn</code>	Digit string 5-15 digits Each digit is 0-9	Mobile Subscriber ISDN Number (MSISDN) Mandatory <sup>(1)</sup>
<code>imsi</code>	Digit string 6-15 digits. Each digit is 0-9.	International Mobile Subscriber Identity Mandatory <sup>(1)</sup>

*(1) Either the `imsi` parameter or the `msisdn` parameter must be used. If both MSISDN and IMSI number are used in a provisioning operation, IMSI is used as identifier to locate the subscription. No check is performed whether the MSISDN and the IMSI belong to the same subscription.*

### MOAttributes

The parameters that are used in the operation are shown in Figure 3.

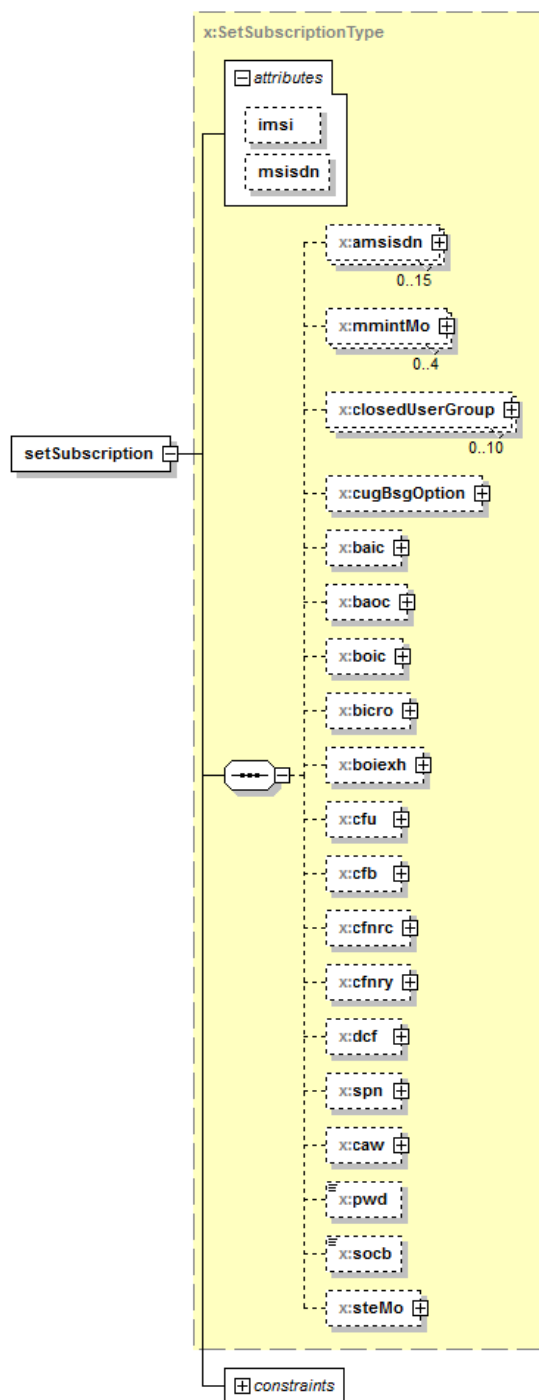


Figure 3 Parameters in a `setSubscription` Request

The following table covers the parameters that can be used in a `setSubscription` request.

**Table 10 Set Subscription Parameters**

Parameter	Type	Description
imsi	Digit string, 6-15 digits. Each digit is 0-9	International Mobile Subscriber Identity Mandatory <sup>(1)</sup>
msisdn	Digit string, 5-15 digits. Each digit is 0-9	Mobile Subscriber ISDN Number (MSISDN) Mandatory <sup>(1)</sup>
amsisdn	AMSISDNType, see Section 2.2.1.1 on page 23.	Additional MSISDN
mmintMO	SetMobManInTriggeringType, see Section 2.2.2.2 on page 29.	Set MobilityManagement IN Triggering Subscription and Activation
Closedusergroup	SetClosedUserGroupType, see Section 2.2.3.2 on page 33.	M2M Closed User Group
cugBsgOption	CugBsgOptionType, see Section 2.2.4.1 on page 37.	Closed User Group Basic Service Group
baic	BarringSupplementaryServiceType, see Section 2.2.5.2 on page 43.	Barring of All Incoming Calls
baoc	BarringSupplementaryServiceType, see Section 2.2.5.2 on page 43.	Barring of All Outgoing Calls
boic	BarringSupplementaryServiceType, see Section 2.2.5.2 on page 43.	Barring of all Outgoing International Calls. Excluded in GSM1900
bicro	BarringSupplementaryServiceType, see Section 2.2.5.2 on page 43.	Barring of all Incoming Calls when Roaming Outside the home PLMN country. Excluded in GSM1900
boiexh	BarringSupplementaryServiceType, see Section 2.2.5.2 on page 43.	Barring of all Outgoing International calls Except those directed to the Home. Excluded in GSM1900
cfu	SetCfuCfbCfnrcSupplementaryServiceType, see Section 2.2.6.1.3 on page 51.	Call Forwarding Unconditional
cfb	SetCfuCfbCfnrcSupplementaryServiceType, see Section 2.2.6.1.3 on page 51.	Call Forwarding on mobile subscriber Busy
cfnc	SetCfuCfbCfnrcSupplementaryServiceType, see Section 2.2.6.1.3 on page 51.	Call Forwarding on mobile subscriber Not Reachable
cfnry	SetCfnrySupplementaryServiceType, see Section 2.2.6.2.3 on page 57.	Call Forwarding on No Reply
dcf	SetDcfSupplementaryServiceType, see Section 2.2.6.3.3 on page 63.	Default Call Forwarding
spn	SetSpnSupplementaryServiceType, see Section 2.2.7.3 on page 68.	Single Personal Number
caw	CawSupplementaryServiceType, see Section 2.2.8.2 on page 71.	Call Waiting
pwd	Digit string, 4 digits Values are 0000-9999	Subscriber Password





Parameter	Type	Description
socb	unsignedByte. Values are 0-1	Control Of Barring services
steMo	SetSteType, see Section 2.2.9.3 on page 75.	Spatial Trigger Support

(1) Either the *imsi* parameter or the *msisdn* parameter must be used. If both *MSISDN* and *IMSI* number are used in a provisioning operation, *IMSI* is used as identifier to locate the subscription. No check is performed whether the *MSISDN* and the *IMSI* belong to the same subscription.

### 2.1.3.2

## Examples

Message request to modify an M2M Subscription.

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:cai3="http://schemas.ericsson.com/cai3g1.2/"
xmlns:m2m="http://schemas.ericsson.com/ma/m2mhlr/">
  <soapenv:Header>
    <cai3:SessionId?></cai3:SessionId>
  </soapenv:Header>
  <soapenv:Body>
    <cai3:Set>
      <cai3:MOType>Subscription@http://schemas.ericsson.com/ma/m2mhlr/</cai3:MOType>
      <cai3:MOId>
        <m2m:imsi>12345678933333</m2m:imsi>
        <m2m:msisdn>46455381234</m2m:msisdn>
      </cai3:MOId>
      <cai3:MOAttributes>
        <m2m:setSubscription imsi="12345678933333" msisdn="46455381234">
          <m2m:baoc>
            <m2m:ts10>
              <m2m:activationState>0</m2m:activationState>
            </m2m:ts10>
          </m2m:baoc>
          <m2m:cfu>
            <m2m:ts10>
              <m2m:activationState>0</m2m:activationState>
              <m2m:fnum>0241930203</m2m:fnum>
            </m2m:ts10>
          </m2m:cfu>
          <m2m:cfnrc>
            <m2m:ts10>
              <m2m:activationState>0</m2m:activationState>
              <m2m:keep>1</m2m:keep>
            </m2m:ts10>
          </m2m:cfnrc>
          <m2m:cfnry>
            <m2m:ts10>
              <m2m:activationState>1</m2m:activationState>
              <m2m:fnum>0241930203</m2m:fnum>
            </m2m:ts10>
          </m2m:cfnry>
        </m2m:setSubscription>
      </cai3:MOAttributes>
    </cai3:Set>
  </soapenv:Body>
</soapenv:Envelope>
```

*Example 8 Set Subscription Request Message*

### 2.1.4

## Delete Subscription

This section covers the M2M Subscription command `deleteSubscription`.



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

### MOType

Subscription@http://schemas.ericsson.com/ma/m2mhlr/

#### 2.1.4.1 Request Data

##### 2.1.4.1.1 Parameters

### MOId

*Table 11 Delete Subscription Request MOId*

Parameter	Type	Description
msisdn	Digit string 5-15 digits. Each digit is 0-9.	Mobile Subscriber ISDN Number (MSISDN) Mandatory <sup>(1)</sup>
imsi	Digit string 6-15 digits. Each digit is 0-9.	International Mobile Subscriber Identity Mandatory <sup>(1)</sup>

(1) Either *imsi* or *msisdn* must be used. If both *MSISDN* and *IMSI* number are used in a provisioning operation, *IMSI* is used as identifier to locate the subscription. No check is performed whether the *MSISDN* and the *IMSI* belong to the same subscription.

### MOAttributes

N/A

#### 2.1.4.2 Examples

Below is an example of a request to delete the M2M subscription with the MSISDN 123456789:

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:cai3="http://schemas.ericsson.com/cai3gl.2/"
xmlns:m2m="http://schemas.ericsson.com/ma/m2mhlr/">
  <soapenv:Header>
    <cai3:SessionId>efae04728c434decb3d9ff1a3b93331c</cai3:SessionId>
  </soapenv:Header>
  <soapenv:Body>
    <cai3:Delete>
      <cai3:MOType>Subscription@http://schemas.ericsson.com/ma/m2mhlr/</cai3:MOType>
      <cai3:MOId>
        <m2m:msisdn>123456789</m2m:msisdn>
      </cai3:MOId>
    </cai3:Delete>
  </soapenv:Body>
</soapenv:Envelope>
```

#### *Example 9 Delete Subscription Request*

Below is an example of a successful message response of a request to delete the M2M subscription with the MSISDN 123456789:



```
<S:Envelope xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:cai3g="http://schemas.ericsson.com/cai3g1.2/">
  <S:Header>
    <cai3g:SessionId>efae04728c434decb3d9ff1a3b93331c</cai3g:SessionId>
  </S:Header>
  <S:Body>
    <ns2:DeleteResponse xmlns:ns2="http://schemas.ericsson.com/cai3g1.2/">
      <ns2:MOId>
        <m2m:msisdn xmlns:m2m="http://schemas.ericsson.com/ma/m2mhlr/">
          123456789</m2m:msisdn>
        </ns2:MOId>
      </ns2:DeleteResponse>
    </S:Body>
  </S:Envelope>
```

### *Example 10 Successful Message Response*

Below is an example of an unsuccessful message response of a request to delete the M2M subscription with the MSISDN 123456789. No subscription with this MSISDN defined:

```
<S:Envelope xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:cai3g="http://schemas.ericsson.com/cai3g1.2/">
  <S:Header>
    <cai3g:SessionId>efae04728c434decb3d9ff1a3b93331c</cai3g:SessionId>
  </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>MF</faultrole>
          <details>
            <ma:FaultDetails xmlns="http://schemas.ericsson.com/ma/"
xmlns:ma="http://schemas.ericsson.com/ma/">
              <errorcode>13</errorcode>
              <errormessage>IMSI is not defined</errormessage>
              <errordetails>Main ID does not exist.</errordetails>
            </ma:FaultDetails>
          </details>
        </Cai3gFault:Cai3gFault>
      </detail>
    </ns2:Fault>
  </S:Body>
</S:Envelope>
```

### *Example 11 Unsuccessful Message Response*

## 2.2 Composite Parameter Definitions

### 2.2.1 Additional MSISDN

HLR uses several MSISDNs called Additional MSISDNs (AMSIDN) per subscription and each one of these is uniquely associated with a specific Bearer Capability (BC). These AMSIDNs are used for mobile terminated calls. One dual MSISDN and up to 15 Additional MSISDN can be defined per subscription.

### 2.2.1.1 Additional MSISDN in Create and Set Subscription

In `create subscription` operation, it is possible to:

- Add AMSISDN to the subscription

In `set subscription` operation, it is possible to:

- Add AMSISDN to the subscription
- Remove AMSISDNs from the subscription

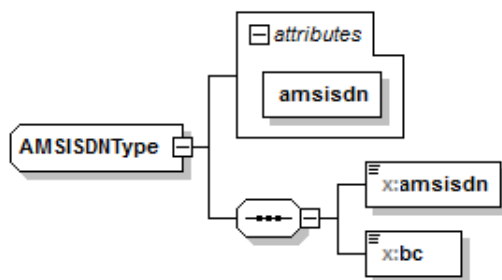


Figure 4 Create M2M Additional MSISDNs

Table 12 Parameters for Creating M2M Additional MSISDNs

Parameter	Type	Description
amsisdn	Digit string. 5-15 digits. Each digit is 0-9.	The Additional Mobile Subscriber ISDN Number (AMSISDN) that is assigned to the subscription.
bc	Unsigned Short	Bearer Capability number

In Example 12, a subscriber is created, defining AMSISDN 264000000175132 associated with Bearer Capability number 65531 and the AMSISDN 264000000275132 associated with Bearer Capability number 65532 for the new subscriber.



```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:cai3="http://schemas.ericsson.com/cai3gl.2/"
  xmlns:m2m="http://schemas.ericsson.com/ma/m2mhlr/">
  <soapenv:Header>
    <cai3:SessionId>2fc5c2acc1724a548d8f050eb27968e4</cai3:SessionId>
  </soapenv:Header>
  <soapenv:Body>
    <cai3:Create xmlns="http://schemas.ericsson.com/ma/m2mhlr/">
      <cai3:MOTType>Subscription@http://schemas.ericsson.com/ma/m2mhlr/</cai3:MOTType>
      <cai3:MOId>
        <m2m:imsi>264000000075132</m2m:imsi>
        <m2m:msisdn>75132</m2m:msisdn>
      </cai3:MOId>
      <cai3:MOAttributes>
        <m2m:createSubscription imsi="264000000075132" msisdn="75132">
          <m2m:imsi>264000000075132</m2m:imsi>
          <m2m:msisdn>75132</m2m:msisdn>
          <m2m:m2msp>7132</m2m:m2msp>
          <m2m:amsisdn amsisdn="264000000175132">
            <m2m:amsisdn>264000000175132</m2m:amsisdn>
            <m2m:bc>65531</m2m:bc>
          </m2m:amsisdn>
          <m2m:amsisdn amsisdn="264000000275132">
            <m2m:amsisdn>264000000275132</m2m:amsisdn>
            <m2m:bc>65532</m2m:bc>
          </m2m:amsisdn>
        </m2m:createSubscription>
      </cai3:MOAttributes>
    </cai3:Create>
  </soapenv:Body>
</soapenv:Envelope>
```

### Example 12 Create Subscription with M2M Additional MSISDN Request

Example 13 shows the removal of two AMSISDNs from a subscription and the creation of two new AMSISDNs using the same request.

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:cai3="http://schemas.ericsson.com/cai3gl.2/"
  xmlns:m2m="http://schemas.ericsson.com/ma/m2mhlr/">
  <soapenv:Header>
    <cai3:SessionId>2fc5c2acc1724a548d8f050eb27968e4</cai3:SessionId>
  </soapenv:Header>
  <soapenv:Body>
    <cai3:Set xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
      <cai3:MOTType>Subscription@http://schemas.ericsson.com/ma/m2mhlr/</cai3:MOTType>
      <cai3:MOId>
        <m2m:imsi>264000000075132</m2m:imsi>
      </cai3:MOId>
      <cai3:MOAttributes>
        <m2m:setSubscription imsi="264000000075132">
          <m2m:amsisdn amsisdn="264000000175132" xsi:nil="true"></m2m:amsisdn>
          <m2m:amsisdn amsisdn="264000000275132" xsi:nil="true"></m2m:amsisdn>
          <m2m:amsisdn amsisdn="264000000175132">
            <m2m:amsisdn>264000000175132</m2m:amsisdn>
            <m2m:bc>65531</m2m:bc>
          </m2m:amsisdn>
          <m2m:amsisdn amsisdn="264000000275132">
            <m2m:amsisdn>264000000275132</m2m:amsisdn>
            <m2m:bc>65532</m2m:bc>
          </m2m:amsisdn>
        </m2m:setSubscription>
      </cai3:MOAttributes>
    </cai3:Set>
  </soapenv:Body>
</soapenv:Envelope>
```

### Example 13 Remove AMSISDNs from Subscription and Add New AMSISDNs

**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' and 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.

### 2.2.1.2

### Additional MSISDN in Get Subscription Response

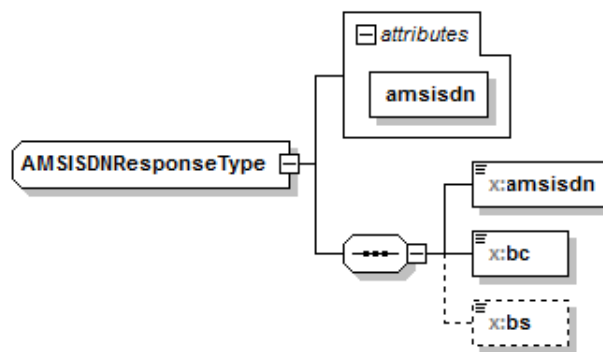


Figure 5 Get M2M Additional MSISDN

Table 13 Parameter for Get M2M Additional MSISDN

Parameter	Type	Description
amsisdn	Digit string. 5-15 digits. Each digit is 0-9.	The AMSISDN to remove.
bc	Unsigned Short	Bearer Capability number
bs	One of the following strings:  TS11, TS61, TS62, TSD1, BS21, BS22, BS23, BS24, BS25, BS2G, BS31, BS32, BS33, BS34, BS3G, ALL	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.

Example 14 shows an example of a response for Get of AMSISDN.



```

<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>
      <pwd>0000</pwd>
      <soch>0</soch>
      <messageWaiting>
        <mce>0</mce>
        <mnrf>1</mnrf>
        <mnrq>1</mnrq>
      </messageWaiting>
    </getResponseSubscription>
  </MOAttributes>
</GetResponse>

```

*Example 14 AMSISDN in Get Subscription Response*

## 2.2.2 Mobility Management IN Triggering

Mobility Management IN Triggering (MMINT) Subscription Data is used for transferring the service logic to GSM service control function where sophisticated Intelligent Network (IN) services can be triggered. Up to two detection points can be defined per subscription.

### 2.2.2.1 MMINT in Create Subscription and Get Subscription Response

In create subscription operation, it is possible to:

- Define detection point for the subscription
- Define detection point and activate it at the same time

The argument for MMINT in Create Subscription and Get Subscription Response is illustrated in the following picture.

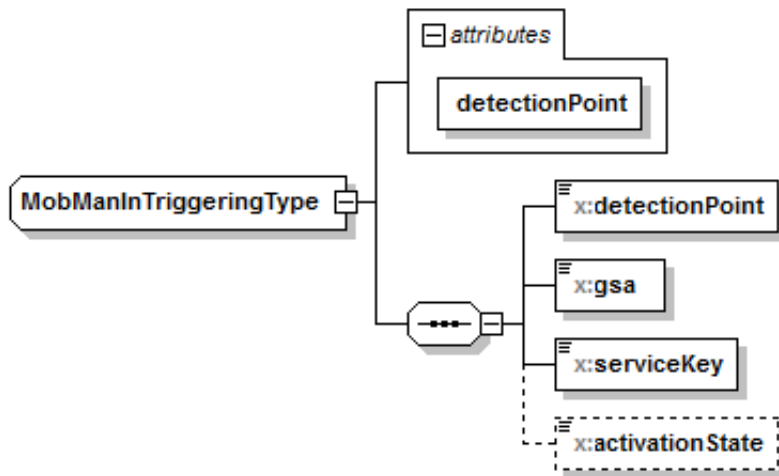


Figure 6 MMINT Type

Table 14 MMINT Type

Parameter	Type	Description
detectionPoint	unsignedInt Values are 0-1	The detection point that is to be triggered
gsa	String 3-15 digits	The GSM communication service control function address which points out the SCF node
serviceKey	unsignedInt Values are 0-2147483647	The service key value which points out the IN service in the SCF node
activationState	binaryType Values are 0-1	Activate/deactivate the Mobility Management related IN Triggering data for a specific Detection Point





```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:cai3="http://schemas.ericsson.com/cai3gl.2/">
  <soapenv:Header>
    <cai3:SequenceId>1</cai3:SequenceId>
    <cai3:TransactionId>11</cai3:TransactionId>
    <cai3:SessionId>645fb53b22964a0d955f0e1c66e0a578</cai3:SessionId>
  </soapenv:Header>
  <soapenv:Body>
    <cai3:Create xmlns="http://schemas.ericsson.com/ma/m2mhlr/">
      <cai3:MOType>Subscription@http://schemas.ericsson.com/ma/m2mhlr/</cai3:MOType>
      <cai3:MOId>
        <imsi>26400000075093</imsi>
        <msisdn>491900075093</msisdn>
      </cai3:MOId>
      <cai3:MOAttributes>
        <createSubscription msisdn="491900075093" imsi="26400000075093">
          <imsi>26400000075093</imsi>
          <msisdn>491900075093</msisdn>
          <m2msp>5093</m2msp>
          <mmintMo detectionPoint="0">
            <detectionPoint>0</detectionPoint>
            <gsa>491019750931</gsa>
            <serviceKey>1</serviceKey>
            <activationState>1</activationState>
          </mmintMo>
          <mmintMo detectionPoint="1">
            <detectionPoint>1</detectionPoint>
            <gsa>491019750932</gsa>
            <serviceKey>2</serviceKey>
          </mmintMo>
        </createSubscription>
      </cai3:MOAttributes>
    </cai3:Create>
  </soapenv:Body>
</soapenv:Envelope>
```

### Example 15 MMINT in Create Subscription

```
<S:Envelope xmlns:S="http://schemas.xmlsoap.org/soap/envelope/" xmlns:cai3g="
http://schemas.ericsson.com/cai3gl.2/">
  <S:Header>
    <cai3g:SessionId>4198fa276bdb4250b5640cc09463e0cb</cai3g:SessionId>
  </S:Header>
  <S:Body>
    <ns2:GetResponse xmlns:ns2="http://schemas.ericsson.com/cai3gl.2/">
      <ns2:MOAttributes>
        <getResponseSubscription:getResponseSubscription
          imsi="26400000075236" msisdn="75236" xmlns="http://schemas.
          ericsson.com/ma/m2mhlr/" xmlns:getResponseSubscription="http://schemas.
          ericsson.com/ma/m2mhlr/">
          <imsi>26400000075236</imsi>
          <msisdn>75236</msisdn>
          <m2msp>7091</m2msp>
          <state>CONNECTED</state>
          <mmintMo detectionPoint="1">
            <detectionPoint>1</detectionPoint>
            <gsa>491000000</gsa>
            <serviceKey>12345</serviceKey>
          </mmintMo>
          <pwd>0000</pwd>
          <socb>0</socb>
          <messageWaiting>
            <mce>0</mce>
            <mnrf>1</mnrf>
            <mnrq>1</mnrq>
          </messageWaiting>
        </getResponseSubscription:getResponseSubscription>
      </ns2:MOAttributes>
    </ns2:GetResponse>
  </S:Body>
</S:Envelope>
```

### Example 16 MMINT in Get Subscription Response

### 2.2.2.2 MMINT in Set Subscription

In set subscription operation, it is possible to:

- Define detection points for the subscription
- Define detection point and activate it at the same time
- Activate existing detection point
- Modify existing detection point (a detection point can only be modified if it is deactivated)
- Remove detection point
- Combination of the previous tasks

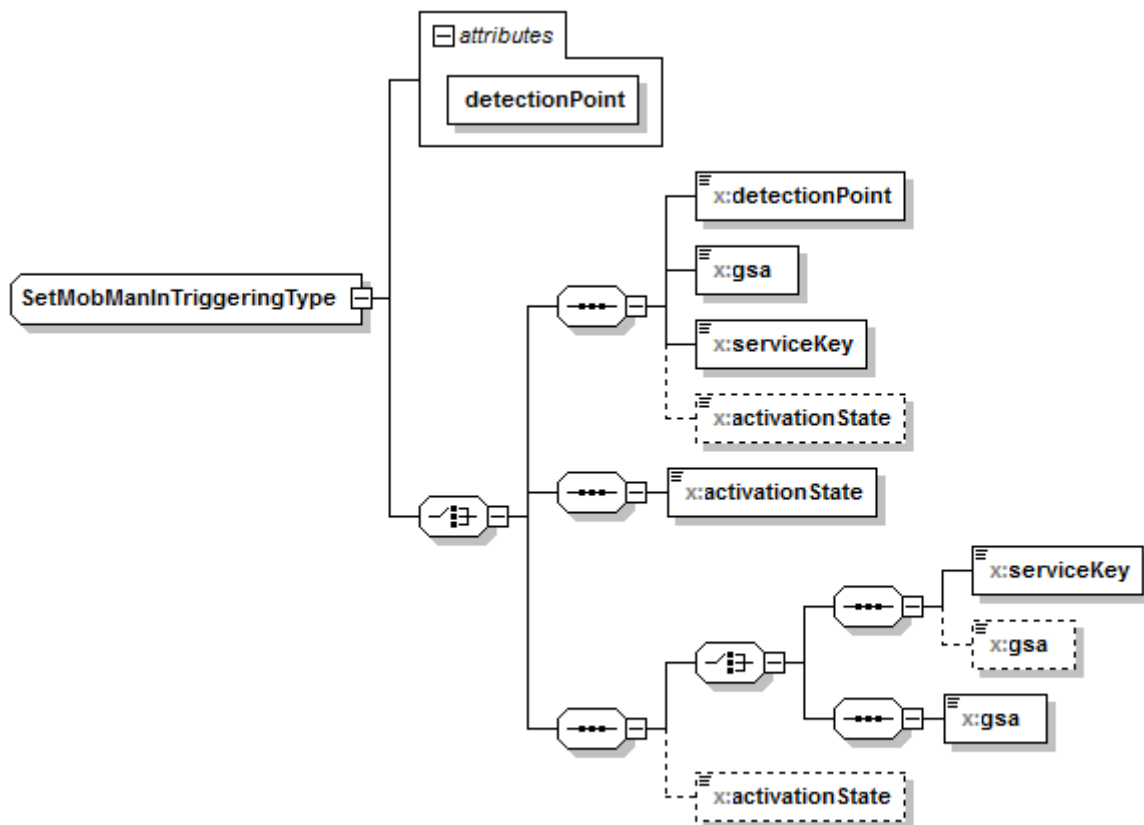


Figure 7 MMINT in Set Subscription

Table 15 Set MMINT Type

Parameter	Type	Description
detectionPoint	unsignedInt Values are 0-1	The detection point that is to be triggered



Parameter	Type	Description
gsa	String 3-15 digits	The GSM communication service control function address which points out the SCF node
serviceKey	unsignedInt Values are 0-2147483647	The service key value which points out the IN service in the SCF node
activationState	binaryType Values are 0-1	Activate/deactivate the Mobility Management related IN Triggering data for a specific Detection Point

```

<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:cai3="http://schemas.
  ericsson.com/cai3gl.2/" xmlns="http://schemas.ericsson.com/ema/UserProvisioning/GsmHlr/">
  <soapenv:Header>
    <cai3:SequenceId>1</cai3:SequenceId>
    <cai3:TransactionId>1</cai3:TransactionId>
    <cai3:SessionId>645fb53b22964a0d955f0e1c66e0a578</cai3:SessionId>
  </soapenv:Header>
  <soapenv:Body>
    <cai3:Set xmlns="http://schemas.ericsson.com/ma/m2mhlr/">
      <cai3:MOType>Subscription@http://schemas.ericsson.com/ma/m2mhlr/</cai3:MOType>
      <cai3:MOId>
        <msisdn>491900075093</msisdn>
        <imsi>26400000075093</imsi>
      </cai3:MOId>
      <cai3:MOAttributes>
        <setSubscription msisdn="491900075093">
          <mmintMo detectionPoint="1">
            <activationState>1</activationState>
          </mmintMo>
        </setSubscription>
      </cai3:MOAttributes>
    </cai3:Set>
  </soapenv:Body>
</soapenv:Envelope>

```

### Example 17 MMINT in Set Subscription

## 2.2.3 Closed User Group

Closed User Group (CUG) enables subscribers, connected to the PLMN/ISDN and possibly also other networks, to form closed user groups (CUGs) to and from which the access is restricted. A subscription can be a member of up to 10 CUGs.

### 2.2.3.1 CUG in Create Subscription

In create subscription operation, it is possible to:

- Define CUG

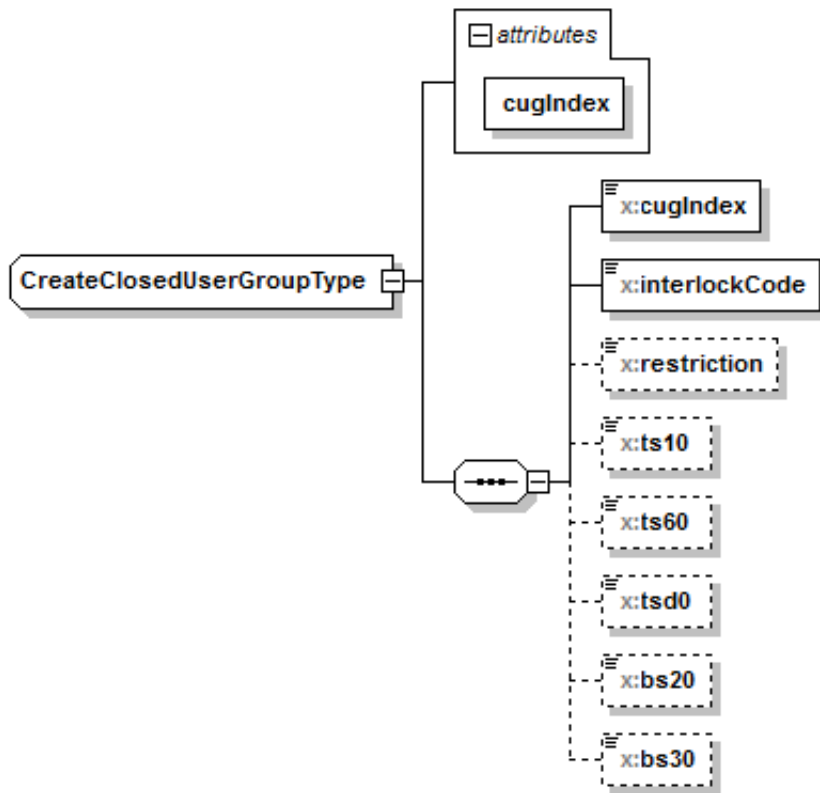


Figure 8 CUG Syntax

Table 16 Create CUG Type

Parameter	Type	Description
cugIndex	Unsigned short 0 – 32767	Closed user group index
interlockCode	String	Interlock Code
restriction	UnsignedByte Values are 0-2147483647	CUG restriction
ts10	Binary	Basic Service Group: All speech transmission services
ts60	Binary	Basic Service Group: Facsimile Basic Service Group
tsd0	Binary	Basic Service Group: Auxiliary speech services
bs20	Binary	Basic Service Group: All data circuit asynchronous
bs30	Binary	Basic Service Group: All data circuit synchronous



```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:cai3="http://schemas.ericsson.com/cai3gl.2/"
  xmlns:m2m="http://schemas.ericsson.com/ma/m2mhlr/">
  <soapenv:Header>
    <cai3:SessionId>2fc5c2acc1724a548d8f050eb27968e4</cai3:SessionId>
  </soapenv:Header>
  <soapenv:Body>
    <cai3:Create>
      <cai3:MOType>Subscription@http://schemas.ericsson.com/ma/m2mhlr/</cai3:MOType>
      <cai3:MOId>
        <m2m:imsi>264000000075132</m2m:imsi>
        <m2m:msisdn>75132</m2m:msisdn>
      </cai3:MOId>
      <cai3:MOAttributes>
        <m2m:createSubscription imsi="264000000075132" msisdn="75132" >
          <m2m:imsi>264000000075132</m2m:imsi>
          <m2m:msisdn>75132</m2m:msisdn>
          <m2m:m2msp>7132</m2m:m2msp>
          <m2m:rid>13</m2m:rid>
          <m2m:zoneid>200</m2m:zoneid>
          <m2m:closedUserGroup cugIndex="32767">
            <m2m:cugIndex>32767</m2m:cugIndex>
            <m2m:interlockCode>0109-65535</m2m:interlockCode>
            <m2m:restriction>1</m2m:restriction>
            <m2m:ts10>1</m2m:ts10>
            <m2m:ts60>1</m2m:ts60>
            <m2m:tsd0>1</m2m:tsd0>
            <m2m:bs20>1</m2m:bs20>
            <m2m:bs30>1</m2m:bs30>
          </m2m:closedUserGroup>
        </m2m:createSubscription>
      </cai3:MOAttributes>
    </cai3:Create>
  </soapenv:Body>
</soapenv:Envelope>
```

### *Example 18 CUG in Create Subscription*

#### **2.2.3.2**

#### **CUG in Set Subscription**

In set subscription operation, it is possible to:

- Define CUG
- Modify restriction for existing CUG
- Remove BSG from existing CUG
- Remove CUG
- Combine the previous tasks

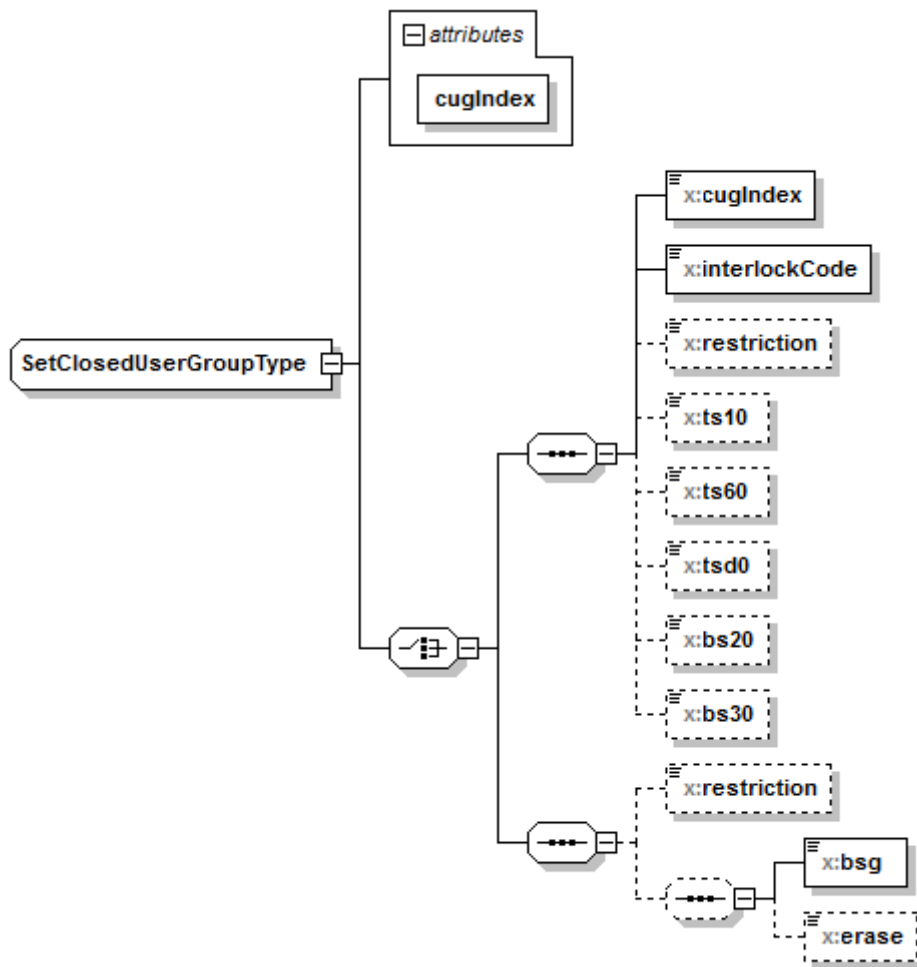


Figure 9 CUG in Set Subscription

Table 17 Set CUG Type

Parameter	Type	Description
cugIndex	Unsigned short 0 – 32767	Closed user group index
interlockCode	String	Interlock Code
restriction	UnsignedByte	CUG restriction
ts10	Binary	Basic Service Group: All speech transmission services
ts60	Binary	Basic Service Group: Facsimile Basic Service Group
tsd0	Binary	Basic Service Group: Auxiliary speech services
bs20	Binary	Basic Service Group: All data circuit asynchronous
bs30	Binary	Basic Service Group: All data circuit synchronous



Parameter	Type	Description
bsg	String	Basic Service Group
erase	Boolean {true, false}	Erases elements named in bsg.

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:cai3="http://schemas.ericsson.com/cai3g1.2/"
  xmlns:m2m="http://schemas.ericsson.com/ma/m2mhlr/">
  <soapenv:Header>
    <cai3:SessionId>2fc5c2acc1724a548d8f050eb27968e4</cai3:SessionId>
  </soapenv:Header>
  <soapenv:Body>
    <cai3:Set>
      <cai3:MOType>Subscription@http://schemas.ericsson.com/ma/m2mhlr/</cai3:MOType>
      <cai3:MOId>
        <m2m:msisdn>75132</m2m:msisdn>
      </cai3:MOId>
      <cai3:MOAttributes>
        <m2m:setSubscription msisdn="75132" >
          <m2m:closedUserGroup cugIndex="1">
            <m2m:cugIndex>1</m2m:cugIndex>
            <m2m:interlockCode>0109-65535</m2m:interlockCode>
            <m2m:ts60>1</m2m:ts60>
          </m2m:closedUserGroup>
        </m2m:setSubscription>
      </cai3:MOAttributes>
    </cai3:Set>
  </soapenv:Body>
</soapenv:Envelope>
```

### Example 19 Request for Add CUG in Set Subscription

Following is an example of removal of BSG ts60 from CUG1.

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:cai3="http://schemas.ericsson.com/cai3g1.2/"
  xmlns:m2m="http://schemas.ericsson.com/ma/m2mhlr/">
  <soapenv:Header>
    <cai3:SessionId>2fc5c2acc1724a548d8f050eb27968e4</cai3:SessionId>
  </soapenv:Header>
  <soapenv:Body>
    <cai3:Set>
      <cai3:MOType>Subscription@http://schemas.ericsson.com/ma/m2mhlr/</cai3:MOType>
      <cai3:MOId>
        <m2m:msisdn>75132</m2m:msisdn>
      </cai3:MOId>
      <cai3:MOAttributes>
        <m2m:setSubscription msisdn="75132" >
          <m2m:closedUserGroup cugIndex="1">
            <m2m:bsg>ts60</m2m:bsg>
            <m2m:erase>1</m2m:erase>
          </m2m:closedUserGroup>
        </m2m:setSubscription>
      </cai3:MOAttributes>
    </cai3:Set>
  </soapenv:Body>
</soapenv:Envelope>
```

### Example 20 Request for Remove ts60 from CUG1

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:cai3="http://schemas.ericsson.com/cai3g1.2/"
  xmlns:m2m="http://schemas.ericsson.com/ma/m2mhlr/"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <soapenv:Header>
    <cai3:SessionId>2fc5c2acc1724a548d8f050eb27968e4</cai3:SessionId>
  </soapenv:Header>
  <soapenv:Body>
    <cai3:Set>
      <cai3:MOType>Subscription@http://schemas.ericsson.com/ma/m2mhlr/</cai3:MOType>
      <cai3:MOId>
        <m2m:imsi>264000000075132</m2m:imsi>
      </cai3:MOId>
      <cai3:MOAttributes>
        <m2m:setSubscription imsi="264000000075132">
          <m2m:closedUserGroup cugIndex="1" xsi:nil="true"/>
        </m2m:setSubscription>
      </cai3:MOAttributes>
    </cai3:Set>
  </soapenv:Body>
</soapenv:Envelope>
```

Example 21 Request for Remove CUG1

### 2.2.3.3 CUG in Get Subscription Response

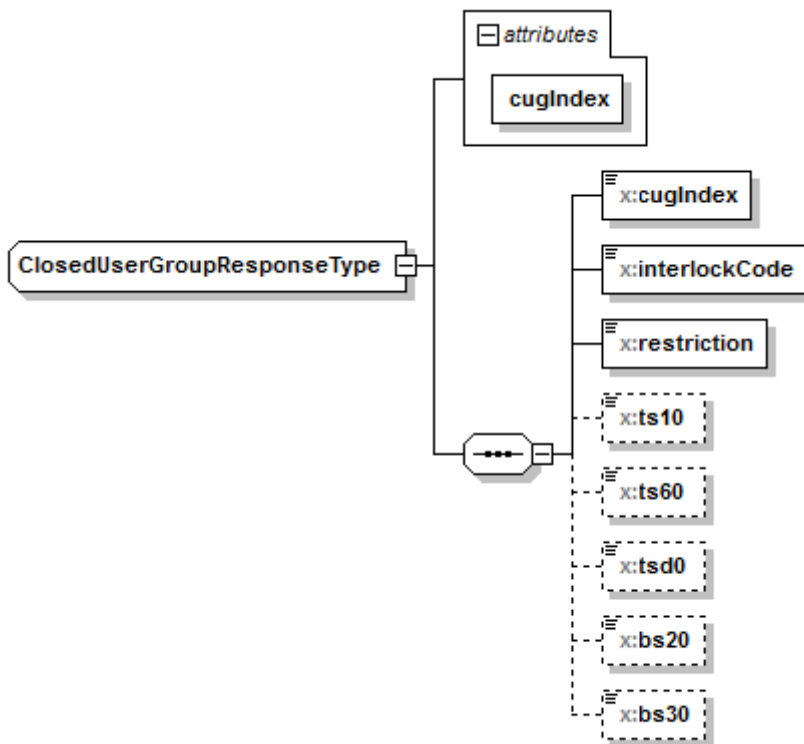


Figure 10 CUG in Get Subscription

Table 18 Get CUG

Parameter	Type	Description
cugIndex	Unsigned short 0 – 32767	Closed user group index





Parameter	Type	Description
interlockCode	String	Interlock Code
restriction	UnsignedByte	CUG restriction
ts10	Binary	Basic Service Group: All speech transmission services
ts60	Binary	Basic Service Group: Facsimile Basic Service Group
tsd0	Binary	Basic Service Group: Auxiliary speech services
bs20	Binary	Basic Service Group: All data circuit asynchronous
bs30	Binary	Basic Service Group: All data circuit synchronous

```

<S:Envelope xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:cai3g="http://schemas.ericsson.com/cai3g1.2/">
  <S:Header>
    <cai3g:SessionId>9754ce15951345e084233f9b940fd407</cai3g:SessionId>
  </S:Header>
  <S:Body>
    <ns2:GetResponse xmlns:ns2="http://schemas.ericsson.com/cai3g1.2/">
      <ns2:MOAttributes>
        <getResponseSubscription:getResponseSubscription imsi="264000000075053"
msisdn="75053" xmlns="http://schemas.ericsson.com/ma/m2mhlr/"
xmlns:getResponseSubscription="http://schemas.ericsson.com/ma/m2mhlr/">
          <imsi>264000000075053</imsi>
          <msisdn>75053</msisdn>
          <m2msp>7081</m2msp>
          <state>CONNECTED</state>
          <zoneid>81</zoneid>
          <closedUserGroup cugIndex="1">
            <cugIndex>1</cugIndex>
            <interlockCode>9400-1</interlockCode>
            <restriction>0</restriction>
            <ts10>1</ts10>
            <ts60>1</ts60>
            <tsd0>1</tsd0>
            <bs20>1</bs20>
            <bs30>1</bs30>
          </closedUserGroup>
          <pwd>0000</pwd>
          <soch>0</soch>
          <cug>1</cug>
          <messageWaiting>
            <mce>0</mce>
            <mnrf>1</mnrf>
            <mnrg>1</mnrg>
          </messageWaiting>
        </getResponseSubscription:getResponseSubscription>
      </ns2:MOAttributes>
    </ns2:GetResponse>
  </S:Body>
</S:Envelope>

```

*Example 22 Request for Get Subscription Response*

## 2.2.4 CUG BSG Options

### 2.2.4.1 CUG BSG Option in Create and Set Subscription

In create subscription operation, it is possible to:

- Define CUG options for all BSGs
- Define CUG options for one or more BSGs

In set subscription operation, it is possible to:

- Define CUG options for all BSGs
- Define CUG options for one or more BSGs
- Modify CUG options for one or more BSGs

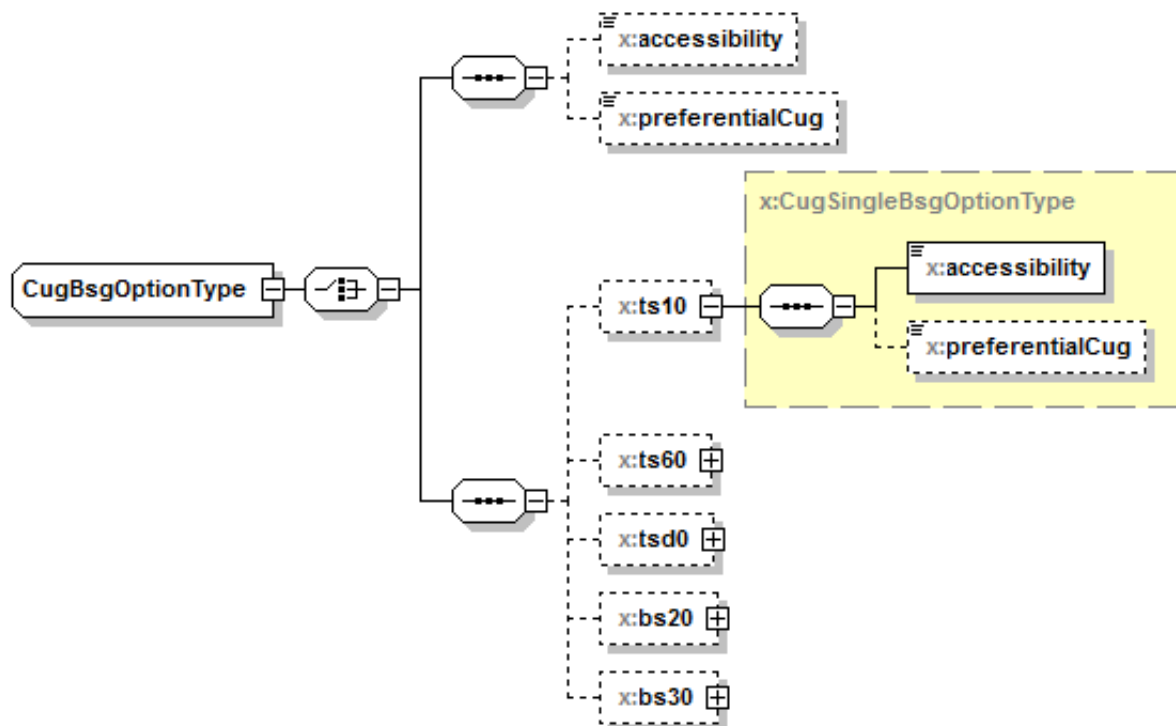


Figure 11 CUG BSG Options

For every HLR subscriber, the parameters `accessibility` or `preferentialCug` of the CUG BSG options is to be defined.

If there are no values defined for `accessibility` or `preferentialCug`, these values are to be set in the BSG.

Even if values are defined for `accessibility` or `preferentialCug`, BSG-specific values can also be set for these parameters.



Table 19 CUG BSG Options

Parameter	Type	Description
accessibility	unsignedByte Values are 0-3. <ul style="list-style-type: none"><li>0 = NONE</li><li>1 = OA</li><li>2 = IA</li><li>3 = OIA</li></ul>	Access attribute  Mandatory if preferentialCug is not defined.
preferentialCug	String Values are 0-32767, NONE.	Preferential CUG index
<BSG> <sup>(1)</sup>	CugSingleBsgOptionType	Basic Service Group: All speech transmission services
accessibility	unsignedByte	Access attribute
preferentialCug	String Values are 0-32767, NONE.	Preferential CUG index

(1) The following BSGs are available: ts10, ts60, tsd0, bs20, and bs30.

A CUG BSG options set can be used in an ordinary Create/Set operation, as described in following examples.

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:cai3="http://schemas.ericsson.com/cai3g1.2/"
  xmlns:m2m="http://schemas.ericsson.com/ma/m2mhlr/">
  <soapenv:Header>
    <cai3:SessionId?></cai3:SessionId>
  </soapenv:Header>
  <soapenv:Body>
    <cai3:Create>
      <cai3:MOType>Subscription@http://schemas.ericsson.com/ma/m2mhlr/</cai3:MOType>
      <cai3:MOId>
        <m2m:imsi>123456789123456</m2m:imsi>
        <m2m:msisdn>46455381234</m2m:msisdn>
      </cai3:MOId>
      <cai3:MOAttributes>
        <m2m:createSubscription imsi="123456789123456" msisdn="46455381234">
          <m2m:imsi>123456789123456</m2m:imsi>
          <m2m:msisdn>46455381234</m2m:msisdn>
          <m2m:m2msp>10</m2m:m2msp>
          <m2m:closedUserGroup cugIndex="291">
            <m2m:cugIndex>291</m2m:cugIndex>
            <m2m:interlockCode>0291-1920</m2m:interlockCode>
            <m2m:restriction>0</m2m:restriction>
            <m2m:bs20>1</m2m:bs20>
          </m2m:closedUserGroup>
          <m2m:cugBsgOption>
            <m2m:accessibility>2</m2m:accessibility>
            <m2m:preferentialCug>3</m2m:preferentialCug>
          </m2m:cugBsgOption>
        </m2m:createSubscription>
      </cai3:MOAttributes>
    </cai3:Create>
  </soapenv:Body>
</soapenv:Envelope>
```

**Example 23** Example of CUG BSG Options Create Add:



```

<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:cai3="http://schemas.ericsson.com/cai3gl.2/"
  xmlns:m2m="http://schemas.ericsson.com/ma/m2mhlr/">
  <soapenv:Header>
    <cai3:SessionId?></cai3:SessionId>
  </soapenv:Header>
  <soapenv:Body>
    <cai3:Set>
      <cai3:MOType>Subscription@http://schemas.ericsson.com/ma/m2mhlr/</cai3:MOType>
      <cai3:MOId>
        <m2m:msisdn>46455381234</m2m:msisdn>
      </cai3:MOId>
      <cai3:MOAttributes>
        <m2m:setSubscription msisdn="46455381234">
          <m2m:cugBsgOption>
            <m2m:ts60>
              <m2m:accessibility>1</m2m:accessibility>
              <m2m:preferentialCug>3333</m2m:preferentialCug>
            </m2m:ts60>
            </m2m:cugBsgOption>
          </m2m:setSubscription>
        </cai3:MOAttributes>
      </cai3:Set>
    </soapenv:Body>
  </soapenv:Envelope>

```

#### *Example 24 Example of CUG BSG Options Set Add:*

```

<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:cai3="http://schemas.ericsson.com/cai3gl.2/"
  xmlns:m2m="http://schemas.ericsson.com/ma/m2mhlr/">
  <soapenv:Header>
    <cai3:SessionId?></cai3:SessionId>
  </soapenv:Header>
  <soapenv:Body>
    <cai3:Set>
      <cai3:MOType>Subscription@http://schemas.ericsson.com/ma/m2mhlr/</cai3:MOType>
      <cai3:MOId>
        <m2m:msisdn>46455381234</m2m:msisdn>
      </cai3:MOId>
      <cai3:MOAttributes>
        <m2m:setSubscription msisdn="46455381234">
          <m2m:cugBsgOption>
            <m2m:bs30>
              <m2m:accessibility>2</m2m:accessibility>
            </m2m:bs30>
            </m2m:cugBsgOption>
          </m2m:setSubscription>
        </cai3:MOAttributes>
      </cai3:Set>
    </soapenv:Body>
  </soapenv:Envelope>

```

#### *Example 25 Example of CUG BSG Options Set Change:*

### 2.2.4.2

### **CUG BSG Options in Get Subscription Response**

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

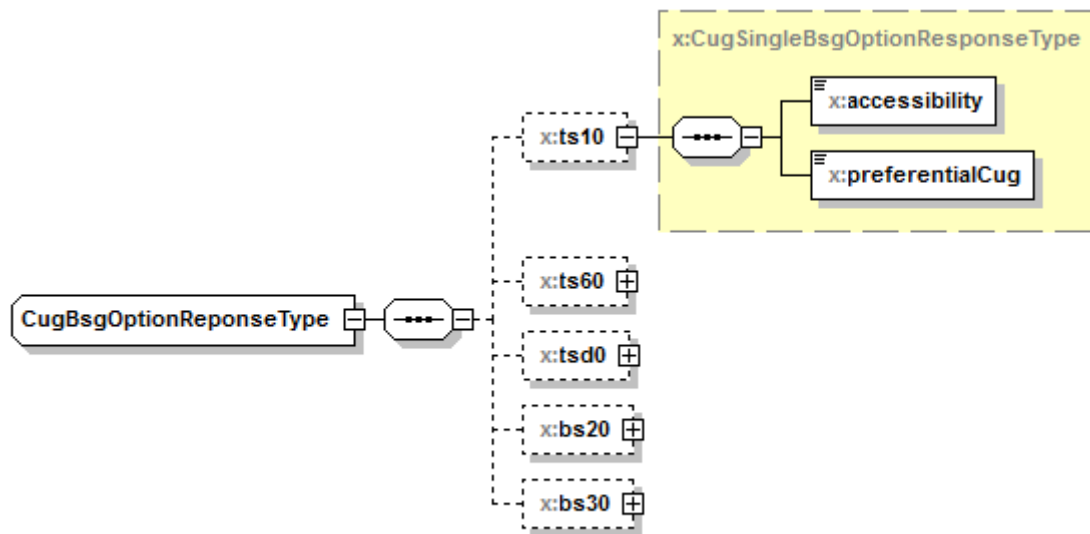


Figure 12 Get CUG BSG Options Response

Table 20 CUGBSG Options

Parameter	Type	Description
<BSG> <sup>(1)</sup>	CugSingleBsgOptionType	Basic Service Group: All speech transmission services
accessibility	unsignedByte Values are 0-3. • 0 = NONE • 1 = OA • 2 = IA • 3 = OIA	Access attribute
preferential Cug	String Values are 0-32767, NONE.	Preferential CUG index

(1) The following BSGs are available: ts10, ts60, tsd0, bs20, and bs30.



```
<S:Envelope xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:cai3g="http://schemas.ericsson.com/cai3gl.2/">
  <S:Header>
    <cai3g:SessionId>9754ce15951345e084233f9b940fd407</cai3g:SessionId>
  </S:Header>
  <S:Body>
    <ns2:GetResponse xmlns:ns2="http://schemas.ericsson.com/cai3gl.2/">
      <ns2:MOAttributes>
        <getResponseSubscription:getResponseSubscription imsi="264000000075053"
          msisdn="75053" xmlns="http://schemas.ericsson.com/ma/m2mhlr/"
          xmlns:getResponseSubscription="http://schemas.ericsson.com/ma/m2mhlr/">
          <imsi>264000000075053</imsi>
          <msisdn>75053</msisdn>
          <m2msp>7081</m2msp>
          <state>CONNECTED</state>
          <zoneid>81</zoneid>
          <cugBsgOption>
            <ts10>
              <accessibility>2</accessibility>
              <preferentialCug>3</preferentialCug>
            </ts10>
            <ts60>
              <accessibility>2</accessibility>
              <preferentialCug>3</preferentialCug>
            </ts60>
            <tsd0>
              <accessibility>2</accessibility>
              <preferentialCug>3</preferentialCug>
            </tsd0>
            <bs20>
              <accessibility>2</accessibility>
              <preferentialCug>3</preferentialCug>
            </bs20>
            <bs30>
              <accessibility>2</accessibility>
              <preferentialCug>3</preferentialCug>
            </bs30>
          </cugBsgOption>
          <pwd>0000</pwd>
          <socb>0</socb>
          <cug>1</cug>
          <messageWaiting>
            <mce>0</mce>
            <mnrf>1</mnrf>
            <mnrg>1</mnrg>
          </messageWaiting>
        </getResponseSubscription:getResponseSubscription>
      </ns2:MOAttributes>
    </ns2:GetResponse>
  </S:Body>
</S:Envelope>
```

*Example 26 Example of CUG BSG Options Get*

## 2.2.5 Barring Supplementary Services

The barring supplementary services supported for M2M subscription are:

- Barring of all incoming calls (BAIC)
- Barring of all outgoing calls (BAOC)
- Barring of all incoming calls when roaming outside the Home Public Land Mobile Network (PLMN) country (BICRO)
- Barring of all outgoing international calls (BOIC)



- Barring of all outgoing international calls except those directed to the home PLMN country (BOIEXH)

These barring services are provisioned in the same manner. The provision state of these barring services is defined in the M2M Service Profile that is assigned to a subscription. The activation state of these services is provisioned on per subscription bases.

### 2.2.5.1 Parameters for Barring Supplementary Service

*Table 21 Barring Supplementary Service Parameters*

Parameter	Type	Description
activationState	unsignedByte Values are: <ul style="list-style-type: none"> <li>• 0-1 for Create and Set operations.</li> <li>• 0-2 for Get operation.</li> </ul>	Activation state of a service

### 2.2.5.2 Barring Supplementary Services in Create and Set Subscription

In create subscription operation, it is possible to:

- Activate a barring service for all BSGs
- Activate a barring service for one or more BSGs individually

In Set Subscription operation, it is possible to:

- Activate a barring service for all BSGs
- Deactivate a barring service for all BSGs
- Activate a barring service for one or more BSGs individually
- Deactivate a barring service for one or more BSGs individually
- Activate a barring service for one or more BSGs and deactivate the service for other BSGs at the same time

The argument for Barring Supplementary Service is illustrated as follows.

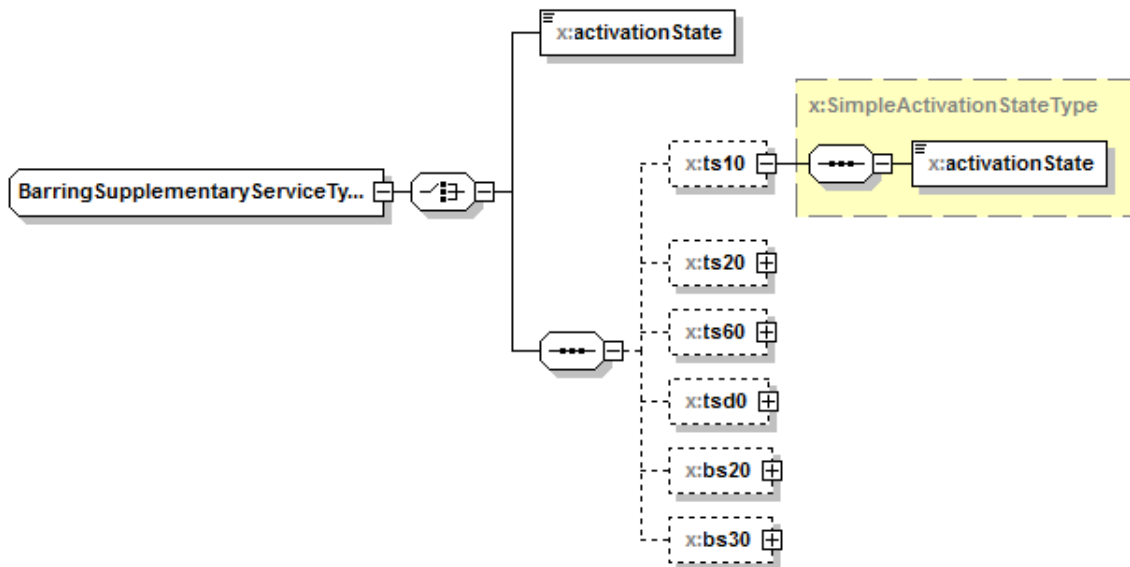


Figure 13 Barring Supplementary Service Type

For details of the parameters, see table Parameters for Barring Supplementary Service Table 21.

The following example is a create subscription operation that creates a subscription and:

- Activates BAIC service for ts10.
- Activates BAOC service for ts20 and bs20.
- Activates BOIC service for all BSGs.
- Activates BICRO service for all BSGs.





```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:cai3="http://schemas.ericsson.com/cai3gl.2/"
xmlns:m2m="http://schemas.ericsson.com/ma/m2mhlr/">
  <soapenv:Header>
    <cai3:SessionId>4198fa276bdb4250b5640cc09463e0cb</cai3:SessionId>
  </soapenv:Header>
  <soapenv:Body>
    <cai3:Create>
      <cai3:MOType>Subscription@http://schemas.ericsson.com/ma/m2mhlr/</cai3:MOType>
      <cai3:MOId>
        <m2m:imsi>264000000075231</m2m:imsi>
        <m2m:msisdn>75231</m2m:msisdn>
      </cai3:MOId>
      <cai3:MOAttributes>
        <m2m:createSubscription imsi="264000000075231" msisdn="75231" >
          <m2m:imsi>264000000075231</m2m:imsi>
          <m2m:msisdn>75231</m2m:msisdn>
          <m2m:m2msp>7091</m2m:m2msp>
          <m2m:baic>
            <m2m:ts10>
              <m2m:activationState>1</m2m:activationState>
            </m2m:ts10>
          </m2m:baic>
          <m2m:baoc>
            <m2m:ts20>
              <m2m:activationState>1</m2m:activationState>
            </m2m:ts20>
            <m2m:bs30>
              <m2m:activationState>1</m2m:activationState>
            </m2m:bs30>
          </m2m:baoc>
          <m2m:boic>
            <m2m:activationState>1</m2m:activationState>
          </m2m:boic>
          <m2m:bicro>
            <m2m:activationState>1</m2m:activationState>
          </m2m:bicro>
        </m2m:createSubscription>
      </cai3:MOAttributes>
    </cai3:Create>
  </soapenv:Body>
</soapenv:Envelope>
```

### *Example 27 Barring Service Create Subscription*

The following example is a set subscription operation that:

- Deactivates BAIC service for ts10 and activates it for ts20.
- Deactivates BOIC service for all BSGs.
- Deactivates BICRO service for all BSGs.
- Activates BOIEXH service for all BSGs.



```

<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:cai3="http://schemas.ericsson.com/cai3gl.2/"
  xmlns:m2m="http://schemas.ericsson.com/ma/m2mhlr/">
  <soapenv:Header>
    <cai3:SessionId>4198fa276bdb4250b5640cc09463e0cb</cai3:SessionId>
  </soapenv:Header>
  <soapenv:Body>
    <cai3:Set>
      <cai3:MOType>Subscription@http://schemas.ericsson.com/ma/m2mhlr/</cai3:MOType>
      <cai3:MOId>
        <m2m:imsi>264000000075231</m2m:imsi>
      </cai3:MOId>
      <cai3:MOAttributes>
        <m2m:setSubscription imsi="264000000075231">
          <m2m:baic>
            <m2m:ts10>
              <m2m:activationState>0</m2m:activationState>
            </m2m:ts10>
            <m2m:ts20>
              <m2m:activationState>1</m2m:activationState>
            </m2m:ts20>
          </m2m:baic>
          <m2m:boic>
            <m2m:activationState>0</m2m:activationState>
          </m2m:boic>
          <m2m:bicro>
            <m2m:activationState>0</m2m:activationState>
          </m2m:bicro>
          <m2m:boiexh>
            <m2m:activationState>1</m2m:activationState>
          </m2m:boiexh>
        </m2m:setSubscription>
      </cai3:MOAttributes>
    </cai3:Set>
  </soapenv:Body>
</soapenv:Envelope>

```

### *Example 28 Barring Service Set Subscription*

#### 2.2.5.3

#### **Barring Supplementary Services in Get Subscription Response**

In the Get operation, the activation state of each barring service are shown on per BSG bases as shown in following figure.

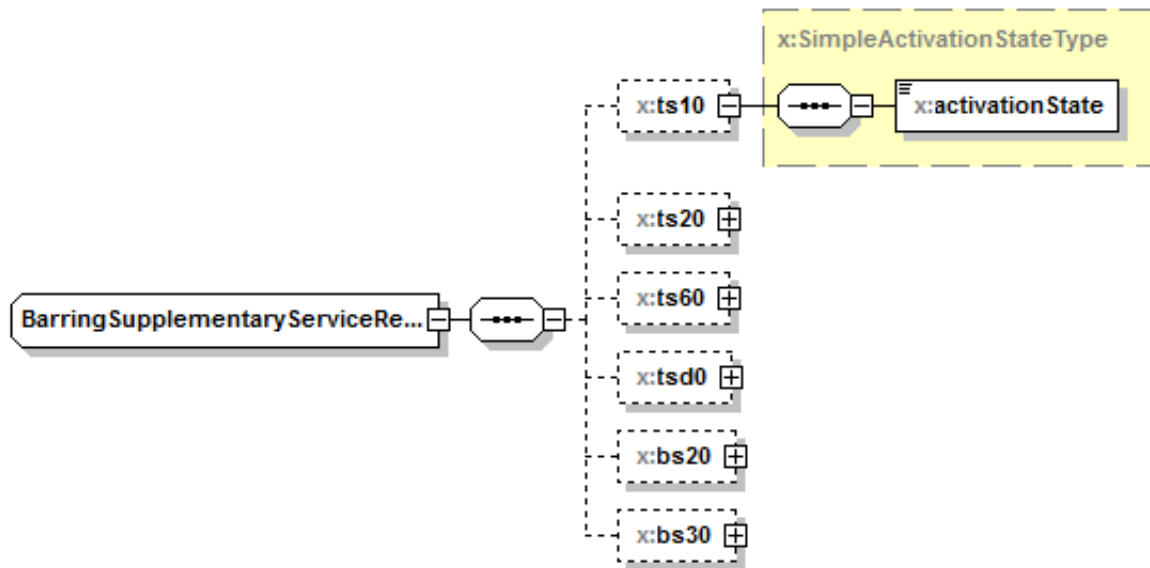


Figure 14 Barring Supplementary Service Response

For details of the parameters, see table Parameters for Barring Supplementary Service see Table 21.

The following example is a get subscription response for a subscription with barring service.

```
<S:Envelope xmlns:cai3g="http://schemas.ericsson.com/cai3g1.2/"
xmlns:S="http://schemas.xmlsoap.org/soap/envelope/">
  <S:Header>
    <cai3g:SessionId>4198fa276bdb4250b5640cc09463e0cb</cai3g:SessionId>
  </S:Header>
  <S:Body>
    <ns2:GetResponse xmlns:ns2="http://schemas.ericsson.com/cai3g1.2/">
      <ns2:MOAttributes>
        <getResponseSubscription:getResponseSubscription
xmlns:getResponseSubscription="http://schemas.ericsson.com/ma/m2mhlr/"
xmlns="http://schemas.ericsson.com/ma/m2mhlr/" msisdn="75231" imsi="264000000075231">
          <imsi>264000000075231</imsi>
          <msisdn>75231</msisdn>
          <m2msp>7091</m2msp>
          <state>CONNECTED</state>
          <baic>
            <ts10>
              <activationState>1</activationState>
            </ts10>
          </baic>
          <baoc>
            <ts20>
              <activationState>1</activationState>
            </ts20>
            <bs30>
              <activationState>1</activationState>
            </bs30>
          </baoc>
          <boic>
            <ts10>
              <activationState>1</activationState>
            </ts10>
            <ts20>
              <activationState>1</activationState>
            </ts20>
          </boic>
        </getResponseSubscription>
      </ns2:MOAttributes>
    </ns2:GetResponse>
  </S:Body>
</S:Envelope>
```

```

<ts60>
  <activationState>1</activationState>
</ts60>
<tsd0>
  <activationState>1</activationState>
</tsd0>
<bs20>
  <activationState>1</activationState>
</bs20>
<bs30>
  <activationState>1</activationState>
</bs30>
</boic>
<bicro>
  <ts10>
    <activationState>1</activationState>
  </ts10>
  <ts20>
    <activationState>1</activationState>
  </ts20>
  <ts60>
    <activationState>1</activationState>
  </ts60>
  <tsd0>
    <activationState>1</activationState>
  </tsd0>
  <bs20>
    <activationState>1</activationState>
  </bs20>
  <bs30>
    <activationState>1</activationState>
  </bs30>
</bicro>
<pwd>0000</pwd>
<socb>0</socb>
<messageWaiting>
  <mce>0</mce>
  <mnrf>1</mnrf>
  <mnrg>1</mnrg>
</messageWaiting>
</getResponseSubscription:getResponseSubscription>
</ns2:MOAttributes>
</ns2:GetResponse>
</S:Body>
</S:Envelope>

```

*Example 29 Barring Service Get Subscription Response*

## 2.2.6 Call Forwarding Services

The Call Forwarding services supported for M2M subscription are:

- Call Forwarding Unconditional (CFU)
- Call Forwarding on mobile subscriber Busy (CFB)
- Call Forwarding on mobile subscriber Not Reachable (CFNRC)
- Call Forwarding on No Reply (CFNRY)
- Default Call Forwarding (DCF)



### 2.2.6.1 CFU, CFB, and CFNRC

CFU, CFB, and CFNRC are provisioned in the same manner. The provision state of these Call Forwarding services is defined in the M2M Service Profile that is assigned to a subscription. The activation state as well as the forwarding setting of these services is defined on per subscription bases.

Details are described in the following sub sections.

#### 2.2.6.1.1 Parameters for CFU, CFB, and CFNRC

The following table lists all parameters applicable for CFU, CFB, and CFNRC service.

*Table 22 Parameters for CFU, CFB, and CFNRC*

Parameter	Type	Description
activationState	unsignedByte Values are: <ul style="list-style-type: none"> <li>0-1 for Create and Set operations.</li> <li>0-2 for Get operation.</li> </ul>	Activation state of a service
fnum	String, 1-18 digits	Forwarded-to Number applicable for call forwarding services.
subAddress	String Expressed as a-b: <ul style="list-style-type: none"> <li>a = 0, 1 or 2</li> <li>b = 2 - 40 hexadecimal octets in pair</li> </ul>	Subaddress, can be added to the Forwarded-to number
ofa	unsignedShort Values are 0-511	Origin Forward to number Analysis. Can only be provided together with fnum.
keep	unsignedByte Values are: <ul style="list-style-type: none"> <li>0: erase the data</li> <li>1: keep the data</li> </ul>	Keeps the original Forwarded-to number. Can only be used when the value of activationState is 0.

#### 2.2.6.1.2 CFU, CFB, and CFNRC in Create Subscription

In a Create Subscription operation, it is possible to:

- Activate CFU, CFB, and CFNRC for all BSGs.
- Define forwarded-to number with associated data to all BSGs.
- Activate CFU, CFB, and CFNRC for one or more BSGs.
- Define forwarded-to number with associated data to one or more BSGs.

- Activate CFU, CFB, and CFNRC for one or more BSGs and define forward-to-number with associated data to one or more BSGs at the same time.

The service is automatically activated when provisioning forwarded-to number, that is, attribute `activationState` is not to be provisioned at the same time.

The argument for CFU, CFB, and CFNRC in Create Subscription operation is illustrated as follows.

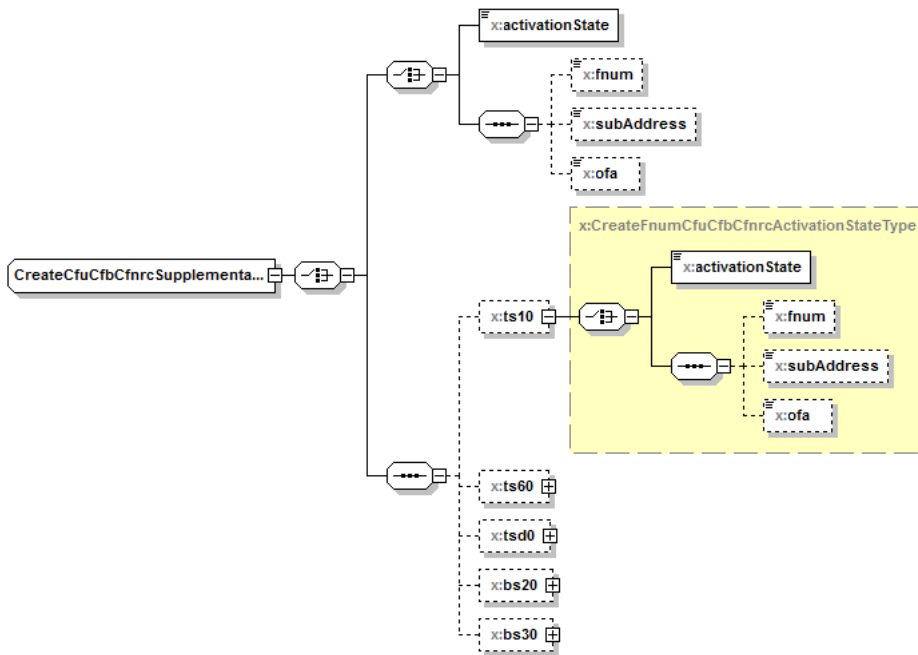


Figure 15 Argument for CFU, CFB, and CFNRC in Create Subscription Operation

For details of the parameters, see table Parameters for CFU, CFB, and CFNRC Table 22.

The following example is a create subscription operation that creates a subscription and:

- Activates the CFU service for BSGs and defines that all incoming calls are to be forwarded to 464550001.



```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:cai3="http://schemas.ericsson.com/cai3gl.2/"
  xmlns:m2m="http://schemas.ericsson.com/ma/m2mhlr/">
  <soapenv:Header>
    <cai3:SessionId>4198fa276bdb4250b5640cc09463e0cb</cai3:SessionId>
  </soapenv:Header>
  <soapenv:Body>
    <cai3:Create>
      <cai3:MOTType>Subscription@http://schemas.ericsson.com/ma/m2mhlr/</cai3:MOTType>
      <cai3:MOId>
        <m2m:imsi>264000000075233</m2m:imsi>
        <m2m:msisdn>75233</m2m:msisdn>
      </cai3:MOId>
      <cai3:MOAttributes>
        <m2m:createSubscription imsi="264000000075233" msisdn="75233" >
          <m2m:imsi>264000000075233</m2m:imsi>
          <m2m:msisdn>75233</m2m:msisdn>
          <m2m:m2msp>7091</m2m:m2msp>
          <m2m:cfu>
            <m2m:fnum>464550001</m2m:fnum>
          </m2m:cfu>
        </m2m:createSubscription>
      </cai3:MOAttributes>
    </cai3:Create>
  </soapenv:Body>
</soapenv:Envelope>
```

### *Example 30 CFU, CFB, and CFNRC in Create Subscription*

#### 2.2.6.1.3 CFU, CFB, and CFNRC in Set Subscription

In a Set Subscription operation, it is possible to:

- Activate CFU, CFB, and CFNRC for all BSGs.
- Define CFU, CFB, and CFNRC forwarded-to number with associated data to all BSGs.
- Deactivate CFU, CFB, and CFNRC for all BSGs and erase the forwarded-to number setting from the database.
- Deactivate CFU, CFB, and CFNRC for all BSGs and keep the forwarded-to number setting in the database.
- Activate CFU, CFB, and CFNRC for one or more BSGs individually.
- Define forwarded-to number with associated data to one or more BSGs individually.
- Deactivate CFU, CFB, and CFNRC for one or more BSGs and erase the forwarded-to number setting from the database individually.
- Deactivate CFU, CFB, and CFNRC for one or more BSGs and keep the forwarded-to number setting in the database.
- Define forwarded-to number with associated data to one or more BSGs individually. At the same time deactivate the service for one or more BSGs, either erase the data or keep the data.

- Activate CFU, CFB, and CFNRC for one or more BSGs individually. At the same time deactivate the service for one or more BSGs, either erase the data or keep the data.

The service is automatically activated when provisioning forwarded-to number, that is, attribute `activationState` is not to be provisioned at the same time.

The argument for CFNRY in Set Subscription operation is illustrated as follows.

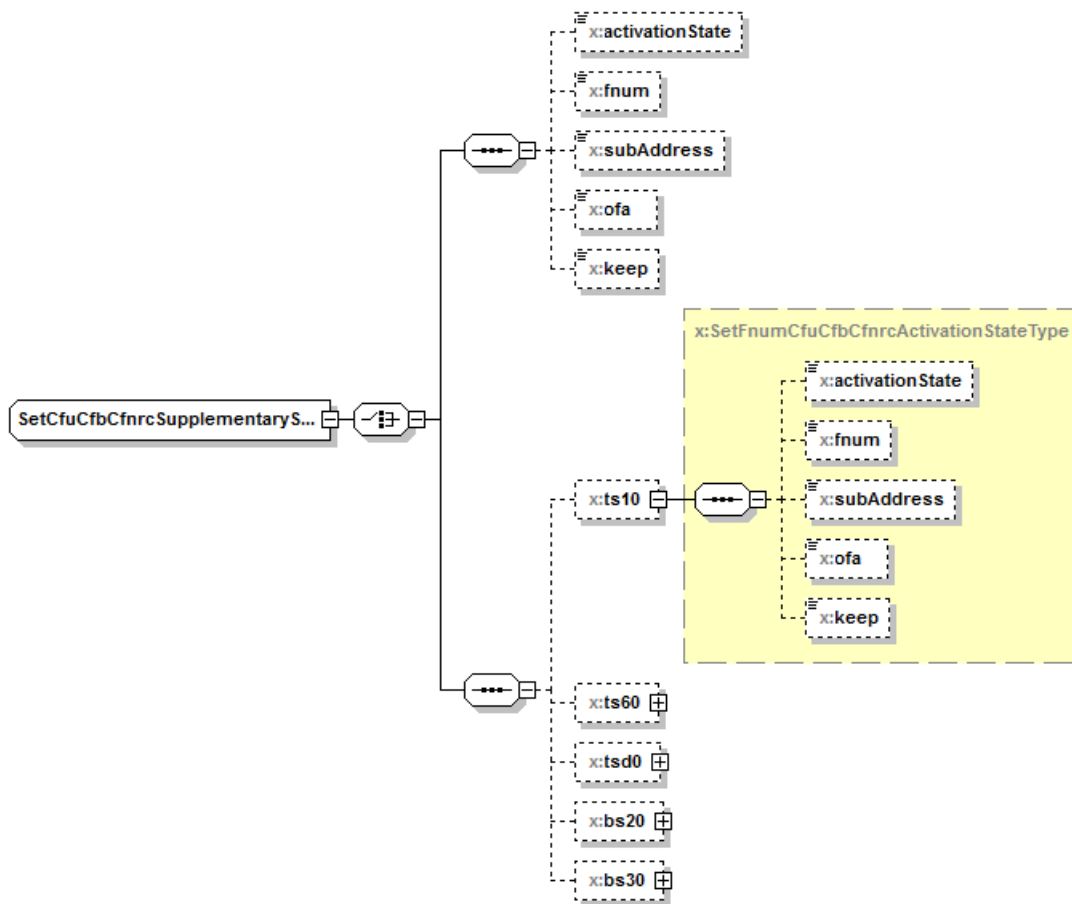


Figure 16 Argument for CFNRY in Set Subscription Operation

For details of the parameters, see table Parameters for CFU, CFB, and CFNRC Table 22.

The following example is a set subscription operation that:

- Deactivates the CFU service for BSGs but keeps the fnum data in the database.
- Activates CFB service for ts10 with fnum set to 464550001.
- Activates CFB service for ts60 with fnum as 464550002.





```

<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:cai3="http://schemas.ericsson.com/cai3gl.2/"
  xmlns:m2m="http://schemas.ericsson.com/ma/m2mhlr/">
  <soapenv:Header>
    <cai3:SessionId>4198fa276bdb4250b5640cc09463e0cb</cai3:SessionId>
  </soapenv:Header>
  <soapenv:Body>
    <cai3:Set>
      <cai3:MOType>Subscription@http://schemas.ericsson.com/ma/m2mhlr/</cai3:MOType>
      <cai3:MOId>
        <m2m:imsi>264000000075233</m2m:imsi>
      </cai3:MOId>
      <cai3:MOAttributes>
        <m2m:setSubscription imsi="264000000075233">
          <m2m:cfu>
            <m2m:activationState>0</m2m:activationState>
            <m2m:keep>1</m2m:keep>
          </m2m:cfu>
          <m2m:cfb>
            <m2m:ts10>
              <m2m:fnum>464550001</m2m:fnum>
            </m2m:ts10>
            <m2m:ts60>
              <m2m:fnum>464550002</m2m:fnum>
            </m2m:ts60>
          </m2m:cfb>
        </m2m:setSubscription>
      </cai3:MOAttributes>
    </cai3:Set>
  </soapenv:Body>
</soapenv:Envelope>

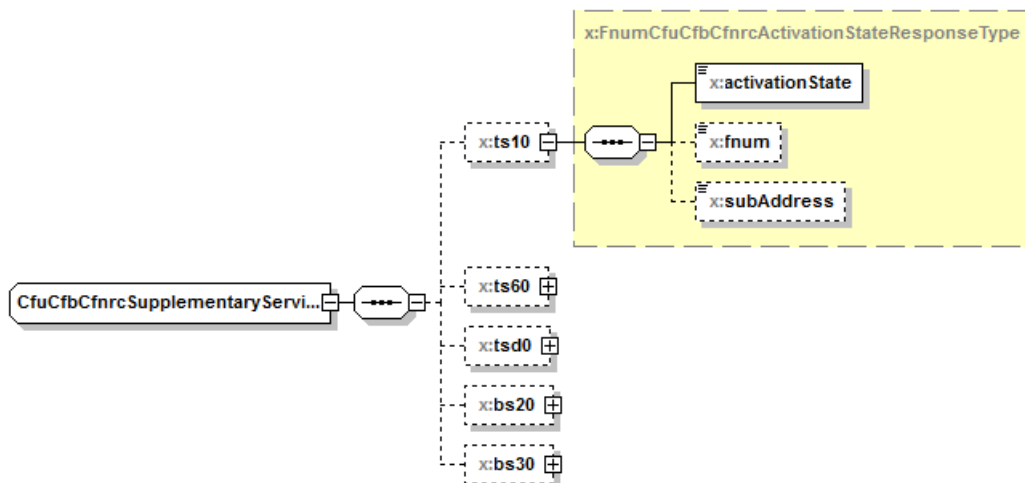
```

**Example 31** CFU, CFB, and CFNRC in Set Subscription

#### 2.2.6.1.4

#### CFU, CFB, and CFNRC in Get Subscription Response

The response for CFU, CFB, and CFNRC show the activation state and, when available, the forwarded-to number and its associated data on per BSG bases. The argument for CFU, CFB, and CFNRC in Get Subscription Response is illustrated as follows.



**Figure 17** Argument for CFU, CFB, and CFNRC in Get Subscription Response



For details of the parameters, see table Parameters for CFU, CFB, and CFNRC Table 22.

The following example is a get subscription response for a subscription with CFU service.

```
<S:Envelope xmlns:cai3g="http://schemas.ericsson.com/cai3g1.2/"
xmlns:S="http://schemas.xmlsoap.org/soap/envelope/">
  <S:Header>
    <cai3g:SessionId>4198fa276bdb4250b5640cc09463e0cb</cai3g:SessionId>
  </S:Header>
  <S:Body>
    <ns2:GetResponse xmlns:ns2="http://schemas.ericsson.com/cai3g1.2/">
      <ns2:MOAttributes>
        <getResponseSubscription:getResponseSubscription
xmlns:getResponseSubscription="http://schemas.ericsson.com/ma/m2mhlr/"
xmlns="http://schemas.ericsson.com/ma/m2mhlr/" msisdn="75233" imsi="264000000075233">
          <imsi>264000000075233</imsi>
          <msisdn>75233</msisdn>
          <m2msp>7091</m2msp>
          <state>CONNECTED</state>
          <cfu>
            <ts10>
              <activationState>1</activationState>
              <fnum>464550001</fnum>
            </ts10>
            <ts60>
              <activationState>1</activationState>
              <fnum>464550001</fnum>
            </ts60>
            <tsd0>
              <activationState>1</activationState>
              <fnum>464550001</fnum>
            </tsd0>
            <bs20>
              <activationState>1</activationState>
              <fnum>464550001</fnum>
            </bs20>
            <bs30>
              <activationState>1</activationState>
              <fnum>464550001</fnum>
            </bs30>
          </cfu>
          <pwd>0000</pwd>
          <socb>0</socb>
          <messageWaiting>
            <mce>0</mce>
            <mnrf>1</mnrf>
            <mnrg>1</mnrg>
          </messageWaiting>
        </getResponseSubscription:getResponseSubscription>
      </ns2:MOAttributes>
    </ns2:GetResponse>
  </S:Body>
</S:Envelope>
```

*Example 32 CFU, CFB, and CFNRC in Get Subscription Response*

## 2.2.6.2

### CFNRY

The provision state of CFNRY is defined in the M2M Service Profile that is assigned to a subscription. The activation state as well as the forwarding setting is defined on per subscription bases.



### 2.2.6.2.1 Parameters for CFNRY

The following table lists all parameters applicable for CFNRY service.

*Table 23 Parameters for CFNRY*

Parameter	Type	Description
activationState	unsignedByte Values are: <ul style="list-style-type: none"> <li>0-3 for Create and Set operations.</li> <li>0-4 for Get operation.</li> </ul>	Activation state of a service
fnum	String, 1-18 digits	Forwarded-to Number applicable for call forwarding services.
noReplyTime	String Values are: 5, 10, 15, 20, 25 or 30	No-reply-time
subAddress	String Expressed as a-b: <ul style="list-style-type: none"> <li>a = 0, 1 or 2</li> <li>b = 2 - 40 hexadecimal octets in pair</li> </ul>	Subaddress, can be added to the Forwarded-to number
ofa	unsignedShort Values are 0-511	Origin Forward to number Analysis. Can only be provided together with fnum.
keep	unsignedByte Values are: <ul style="list-style-type: none"> <li>0: erase the data</li> <li>1: keep the data</li> </ul>	Keeps the original Forwarded-to number. Can only be used when the value of activationState is 0.

### 2.2.6.2.2 CFNRY in Create Subscription

In a Create subscription operation, it is possible to:

- Activate CFNRY for all BSGs
- Define forwarded-to number with associated data to all BSGs
- Activate CFNRY for one or more BSGs
- Define forwarded-to number with associated data to one or more BSGs

The service is automatically activated when provisioning forwarded-to number, that is, attribute `activationState` is not to be provisioned at the same time.

The argument for CFNRY in Create subscription operation is illustrated as follows.

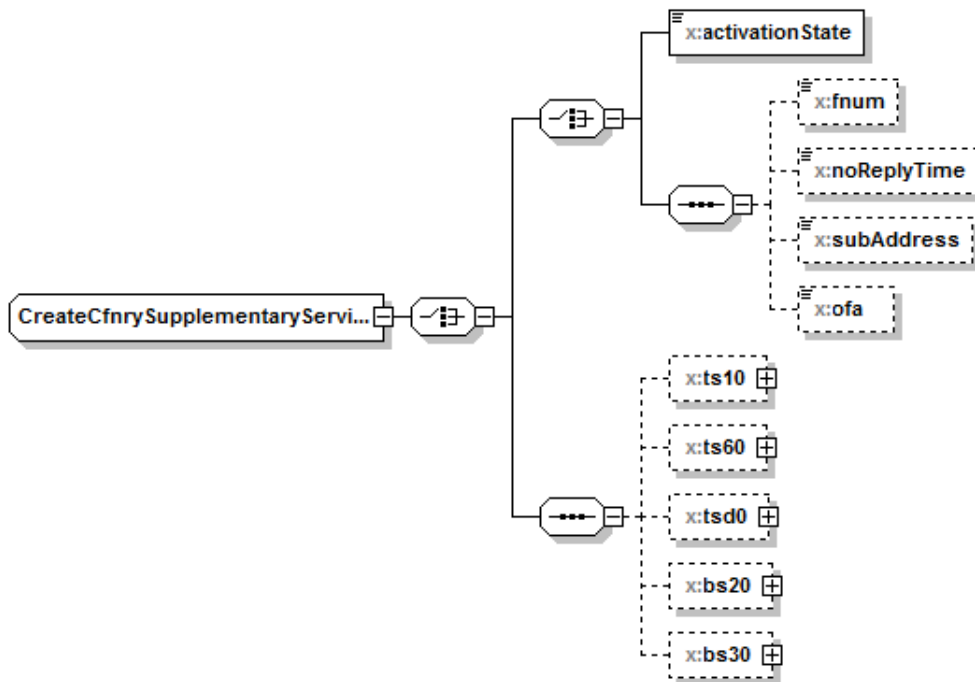


Figure 18 Argument for CFNRY in Create Subscription Operation

For details of the parameters, see table Parameters for CFNRY Table 23.

The following example is a create subscription operation that creates a subscription and:

- Activate the CFNRY service for BSG ts10 and define that all incoming calls are to be forwarded to 464550001 if no reply for 30 seconds
- Activate the CFNRY service for BSG tsd0 and define that all incoming calls are to be forwarded to 464550002 if no reply for 15 seconds



```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:cai3="http://schemas.ericsson.com/cai3gl.2/"
xmlns:m2m="http://schemas.ericsson.com/ma/m2mhlr/">
  <soapenv:Header>
    <cai3:SessionId>4198fa276bdb4250b5640cc09463e0cb</cai3:SessionId>
  </soapenv:Header>
  <soapenv:Body>
    <cai3:Create>
      <cai3:MOTType>Subscription@http://schemas.ericsson.com/ma/m2mhlr/</cai3:MOTType>
      <cai3:MOId>
        <m2m:imsi>264000000075234</m2m:imsi>
        <m2m:msisdn>75234</m2m:msisdn>
      </cai3:MOId>
      <cai3:MOAttributes>
        <m2m:createSubscription imsi="264000000075234" msisdn="75234" >
          <m2m:imsi>264000000075234</m2m:imsi>
          <m2m:msisdn>75234</m2m:msisdn>
          <m2m:m2msp>7091</m2m:m2msp>
          <m2m:cfnry>
            <m2m:ts10>
              <m2m:fnum>464550001</m2m:fnum>
              <m2m:noReplyTime>30</m2m:noReplyTime>
            </m2m:ts10>
            <m2m:tsd0>
              <m2m:fnum>464550002</m2m:fnum>
              <m2m:noReplyTime>15</m2m:noReplyTime>
            </m2m:tsd0>
          </m2m:cfnry>
        </m2m:createSubscription>
      </cai3:MOAttributes>
    </cai3:Create>
  </soapenv:Body>
</soapenv:Envelope>
```

### *Example 33 CFNRY in Create Subscription*

#### 2.2.6.2.3 CFNRY in Set Subscription

In a Set Subscription operation, it is possible to:

- Activate CFNRY for all BSGs
- Define CFNRY forwarded-to number with associated data to all BSGs
- Deactivate CFNRY for all BSGs and erase the forwarded-to number setting from the database
- Deactivate CFNRY for all BSGs and keep the forwarded-to number setting in the database
- Activate CFNRY for one or more BSGs individually
- Define forwarded-to number with associated data to one or more BSGs individually
- Deactivate CFNRY for one or more BSGs and erase the forwarded-to number setting from the database individually
- Deactivate CFNRY for one or more BSGs and keep the forwarded-to number setting in the database

- Define forwarded-to number with associated data to one or more BSGs individually. At the same time deactivate the service for other BSGs, either erase or keep the data
- Activate CFNRY for one or more BSGs individually. At the same time deactivate the service for other BSGs, either erase or keep the data

The service is automatically activated when provisioning forwarded-to number, that is, attribute `activationState` is not to be provisioned at the same time.

The argument for CFNRY in Set Subscription operation is illustrated as follows.

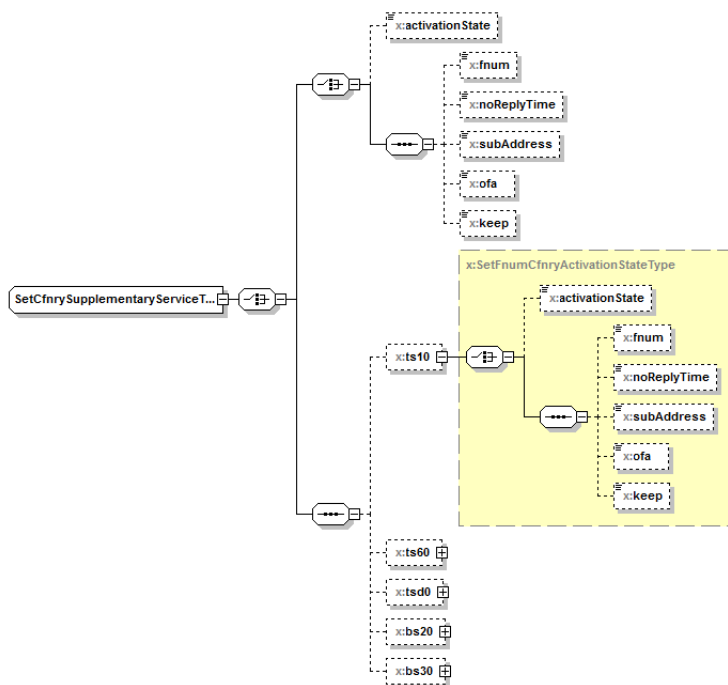


Figure 19 Argument for CFNRY in Set Subscription Operation

For details of the parameters, see table Parameters for CFNRY Table 23.

Example 34 is a set subscription operation that:

- Changes the `fnum` value, incoming calls are to be forwarded to 464550003 if no reply in 15 seconds.
- Deactivates the CFNRY service for `tsd0` and deletes the data from the database.
- Activates CFNRY service for `bs20` and defines that all incoming calls are to be forwarded to 464550004 if no reply in 20 seconds.



```

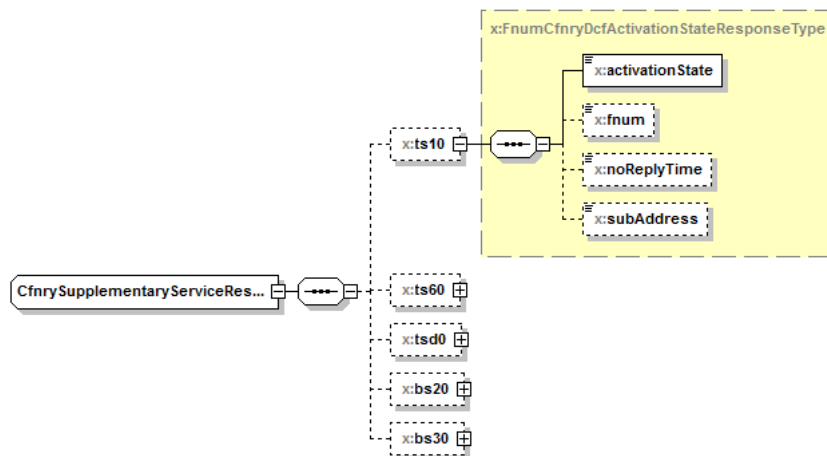
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/" xmlns:cai3="http://schemas.ericsson.com/ma/m2mhlr">
  <soapenv:Header>
    <cai3:SessionId>4198fa276bdb4250b5640cc09463e0cb</cai3:SessionId>
  </soapenv:Header>
  <soapenv:Body>
    <cai3:Set>
      <cai3:MOType>Subscription@http://schemas.ericsson.com/ma/m2mhlr</cai3:MOType>
      <cai3:MOId>
        <m2m:imsi>264000000075234</m2m:imsi>
      </cai3:MOId>
      <cai3:MOAttributes>
        <m2m:setSubscription imsi="264000000075234">
          <m2m:cfnry>
            <m2m:ts10>
              <m2m:fnum>464550003</m2m:fnum>
              <m2m:noReplyTime>15</m2m:noReplyTime>
            </m2m:ts10>
            <m2m:tsd0>
              <m2m:activationState>0</m2m:activationState>
              <m2m:keep>0</m2m:keep>
            </m2m:tsd0>
            <m2m:bs20>
              <m2m:fnum>464550004</m2m:fnum>
              <m2m:noReplyTime>20</m2m:noReplyTime>
            </m2m:bs20>
          </m2m:cfnry>
        </m2m:setSubscription>
      </cai3:MOAttributes>
    </cai3:Set>
  </soapenv:Body>
</soapenv:Envelope>

```

**Example 34** CFNRY Set Subscription

#### 2.2.6.2.4 CFNRY in Get Subscription Response

The response for CFNRY shows the activation state and, when available, the forwarded-to number and its associated data on per BSG bases. The argument for CFNRY in Get Subscription Response is illustrated as follows.



**Figure 20** CFNRY in Get Subscription Response

For details of the parameters, see table Parameters for CFNRY Table 23.

Example 35 is a get subscription response for a subscription with CFNRY service.



```
<S:Envelope xmlns:cai3g="http://schemas.ericsson.com/cai3g1.2/" xmlns:S="http://schemas.xmlsoap.org/soap/envelope/">
  <S:Header>
    <cai3g:SessionId>4198fa276bdb4250b5640cc09463e0cb</cai3g:SessionId>
  </S:Header>
  <S:Body>
    <ns2:GetResponse xmlns:ns2="http://schemas.ericsson.com/cai3g1.2/">
      <ns2:MOAttributes>
        <getResponseSubscription:getResponseSubscription xmlns:getResponseSubscription="http://schemas.ericsson.com/ma/m2mhlr/" xmlns="http://schemas.ericsson.com/ma/m2mhlr/"
          msisdn="75234" imsi="264000000075234">
          <imsi>264000000075234</imsi>
          <msisdn>75234</msisdn>
          <m2msp>7091</m2msp>
          <state>CONNECTED</state>
        </getResponseSubscription:getResponseSubscription>
      </ns2:MOAttributes>
      <cfnry>
        <ts10>
          <activationState>1</activationState>
          <fnum>464550001</fnum>
          <noReplyTime>30</noReplyTime>
        </ts10>
        <tsd0>
          <activationState>1</activationState>
          <fnum>464550002</fnum>
          <noReplyTime>15</noReplyTime>
        </tsd0>
      </cfnry>
      <pwd>0000</pwd>
      <socb>0</socb>
      <messageWaiting>
        <mce>0</mce>
        <mnrf>1</mnrf>
        <mnrq>1</mnrq>
      </messageWaiting>
    </ns2:GetResponse>
  </S:Body>
</S:Envelope>
```

### Example 35 CFNRY Get Subscription Response

## 2.2.6.3 DCF

All subscriber data related to the DCF service is assigned to a subscription directly, that is, not by a M2M service profile.

### 2.2.6.3.1 Parameters for DCF

The following table lists all parameters applicable for DCF service.

Table 24 Parameters for DCF

Parameter	Type	Description
provisionState	unsignedByte Values are 0-1	Provision state of a service
activationState	unsignedByte Values are: <ul style="list-style-type: none"><li>0-5 for Create and Set operations.</li><li>0-6 for Get operation.</li></ul>	Activation state of a service
fnum	String, 1-18 digits	Forwarded-to Number applicable for call forwarding services.





Parameter	Type	Description
noReplyTime	String Values are: 5, 10, 15, 20, 25 or 30	No-reply-time
subAddress	String Expressed as a-b: <ul style="list-style-type: none"> <li>• a = 0, 1 or 2</li> <li>• b = 2 - 40 hexadecimal octets in pair</li> </ul>	Subaddress, can be added to the Forwarded-to number
ofa	unsignedShort Values are 0-511	Origin Forward to number Analysis. Can only be provided together with fnum.

### 2.2.6.3.2 DCF in Create Subscription

In a Create Subscription operation, it is possible to:

- Provision the DCF service to the subscription with or without one of the following tasks:
  - Activate DCF for all BSGs
  - Define forwarded-to number with associated data to all BSGs
  - Activate DCF for one or more BSGs
  - Define forwarded-to number with associated data to one or more BSGs
  - Activate DCF for one or more BSGs and define forward-to-number with associated data to other BSGs at the same time

The service is automatically activated when provisioning forwarded-to number. That is, attribute `activationState` is not to be provisioned at the same time when providing forwarded-to number.

The argument for DCF in Create subscription operation is illustrated as follows.

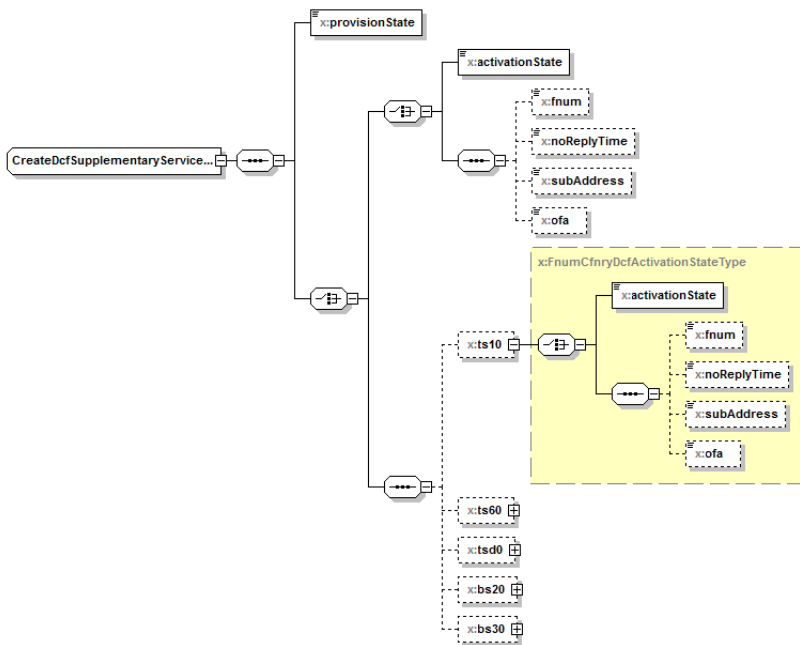


Figure 21 DCF in Create Subscription Operation

For details of the parameters, see table Parameters for DCF Table 24.

Example 36 as follows is a creation subscription operation that creates a subscription and:

- Provides the DCF service for the subscription.
- Activates the DCF service for BSG ts10 and defines that all incoming calls are to be forwarded to 464550005 if no reply in 30 seconds.
- Activates the DCF service for BSG tsd0 and defines that all incoming calls are to be forwarded to 464550006 if no reply in 10 seconds.



```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/" xmlns:cai3="http://schemas.ericsson.com/ma/m2mhlr">
  <soapenv:Header>
    <cai3:SessionId>4198fa276bdb4250b5640cc09463e0cb</cai3:SessionId>
  </soapenv:Header>
  <soapenv:Body>
    <cai3:Create>
      <cai3:MOType>Subscription@http://schemas.ericsson.com/ma/m2mhlr</cai3:MOType>
      <cai3:MOId>
        <m2m:imsi>264000000075235</m2m:imsi>
        <m2m:msisdn>75235</m2m:msisdn>
      </cai3:MOId>
      <cai3:MOAttributes>
        <m2m:createSubscription imsi="264000000075235" msisdn="75235" >
          <m2m:imsi>264000000075235</m2m:imsi>
          <m2m:msisdn>75235</m2m:msisdn>
          <m2m:m2msp>7091</m2m:m2msp>
          <m2m:dcf>
            <m2m:provisionState>1</m2m:provisionState>
            <m2m:ts10>
              <m2m:fnum>464550005</m2m:fnum>
              <m2m:noReplyTime>30</m2m:noReplyTime>
            </m2m:ts10>
            <m2m:tsd0>
              <m2m:fnum>464550006</m2m:fnum>
              <m2m:noReplyTime>10</m2m:noReplyTime>
            </m2m:tsd0>
          </m2m:dcf>
        </m2m:createSubscription>
      </cai3:MOAttributes>
    </cai3:Create>
  </soapenv:Body>
</soapenv:Envelope>
```

### Example 36 DCF Create Subscription

#### 2.2.6.3.3 DCF in Set Subscription

In a Set Subscription operation, it is possible to:

- Provision the DCF service to the subscription with or without one of the following tasks:
  - Activate DCF for all BSGs
  - Define forwarded-to number with associated data to all BSGs
  - Activate DCF for one or more BSGs
  - Define forwarded-to number with associated data to one or more BSGs
  - Activate DCF for one or more BSGs and define forward-to-number with associated data to other BSGs at the same time
- Withdraw the DCF service from the subscription
- Activate DCF for all BSGs
- Define forwarded-to number with associated data to all BSGs
- Activate DCF for one or more BSGs
- Define forwarded-to number with associated data to one or more BSGs

- Activate DCF for one or more BSGs and define forward-to-number with associated data to other BSGs at the same time
- Deactivate DCF for all BSGs
- Deactivate DCF for one or more BSGs
- Activate DCF for one or more BSGs and at the same time deactivate the service for other BSGs
- Define forwarded-to number with associated data to one or more BSGs and at the same time deactivate the service for other BSGs

The service is automatically activated when provisioning forwarded-to-number. That is, attribute `activationState` is not to be provisioned at the same time.

The argument for DCF in Set subscription operation is illustrated as follows.

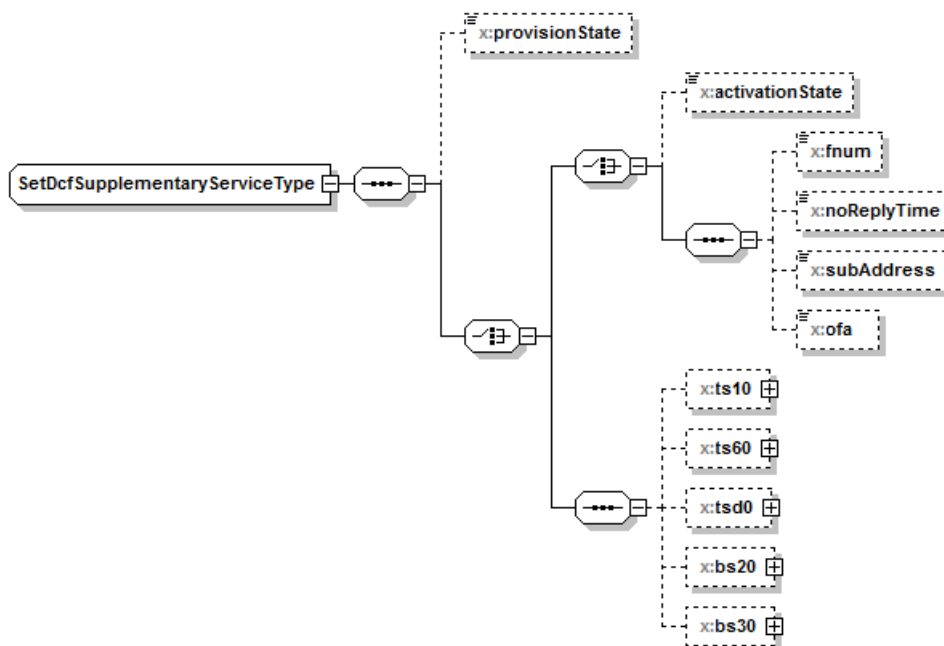


Figure 22 DCF in Set Subscription Operation

For details of the parameters, see table Parameters for DCF Table 24.

Example 37 as follows, is a set of subscription operation that:

- Withdraws the DCF service from the subscription.



```

<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/" xmlns:cai3="http://schemas.ericsson.com/ma/m2mhlr">
  <soapenv:Header>
    <cai3:SessionId>4198fa276bdb4250b5640cc09463e0cb</cai3:SessionId>
  </soapenv:Header>
  <soapenv:Body>
    <cai3:Set>
      <cai3:MOType>Subscription</cai3:MOType>
      <cai3:MOId>
        <m2m:imsi>264000000075235</m2m:imsi>
      </cai3:MOId>
      <cai3:MOAttributes>
        <m2m:setSubscription imsi="264000000075235">
          <m2m:dcf>
            <m2m:provisionState>1</m2m:provisionState>
          </m2m:dcf>
        </m2m:setSubscription>
      </cai3:MOAttributes>
    </cai3:Set>
  </soapenv:Body>
</soapenv:Envelope>

```

### Example 37 DCF in Set Subscription

#### 2.2.6.3.4 DCF in Get Subscription Response

The Get Subscription Response contains the following DCF information:

- Provision state of the service for the subscription
- When provision state is 1, the activated BSGs are shown with their activation state as well as the forwarded-to information on per BSG bases.

The argument for DCF in Get subscription operation is illustrated as follows.

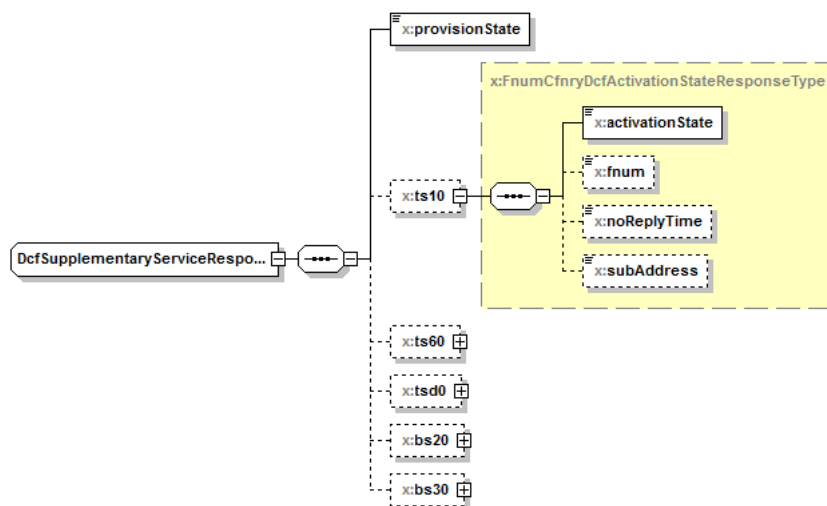


Figure 23 DCF in Get Subscription Operation

For details of the parameters, see table Parameters for DCF Table 24.

Example 38 is a get subscription response for a subscription with DCF service.



```
<S:Envelope xmlns:cai3g="http://schemas.ericsson.com/cai3g1.2/" xmlns:S="http://schemas.xmlsoap.org/soap/envelope/">
  <S:Header>
    <cai3g:SessionId>4198fa276bdb4250b5640cc09463e0cb</cai3g:SessionId>
  </S:Header>
  <S:Body>
    <ns2:GetResponse xmlns:ns2="http://schemas.ericsson.com/cai3g1.2/">
      <ns2:MOAttributes>
        <getResponseSubscription:getResponseSubscription
          xmlns:getResponseSubscription="http://schemas.ericsson.com/ma/m2mhlr/"
          xmlns="http://schemas.ericsson.com/ma/m2mhlr/" msisdn="75235" imsi="26400000075235">
          <imsi>26400000075235</imsi>
          <msisdn>75235</msisdn>
          <m2msp>7091</m2msp>
          <state>CONNECTED</state>
          <dcf>
            <provisionState>1</provisionState>
            <ts10>
              <activationState>1</activationState>
              <fnum>464550005</fnum>
              <noReplyTime>30</noReplyTime>
            </ts10>
            <tsd0>
              <activationState>1</activationState>
              <fnum>464550006</fnum>
              <noReplyTime>10</noReplyTime>
            </tsd0>
          </dcf>
          <pwd>0000</pwd>
          <socb>0</socb>
          <messageWaiting>
            <mce>0</mce>
            <mnrf>1</mnrf>
            <mnrng>1</mnrng>
          </messageWaiting>
        </getResponseSubscription:getResponseSubscription>
      </ns2:MOAttributes>
    </ns2:GetResponse>
  </S:Body>
</S:Envelope>
```

### Example 38 DCF in Get Subscription

## 2.2.7 Single Personal Number

All subscriber data related to the Single Personal Number (SPN) service is assigned to a subscription directly, that is, not by a M2M service profile. SPN service is only applicable for BSG TS10.

### 2.2.7.1 Parameters for SPN

Table 25 Parameters for SPN

Parameter	Type	Description
provisionState	unsignedByte Values are 0-1	Provision state of a service
activationState	unsignedByte Values are: <ul style="list-style-type: none"><li>0-7 for Create and Set operations.</li><li>0-8 for Get operation.</li></ul>	Activation state of a service



Parameter	Type	Description
fnum	String, 1-18 digits	Forwarded-to Number applicable for call forwarding services.
ofa	unsignedShort Values are 0-511	Origin Forward to number Analysis. Can only be provided together with fnum.

### 2.2.7.2

### SPN in Create Subscription

In a Create Subscription operation, it is possible to:

- Provision the SPN service to the subscription with or without one of the following tasks:
  - Activate SPN
  - Define forwarded-to number with associated data to the service

The service is automatically activated when provisioning forwarded-to number, that is, attribute `activationState` is not to be provisioned at the same time when providing forwarded-to number.

The argument for SPN in Create subscription operation is illustrated as follows.

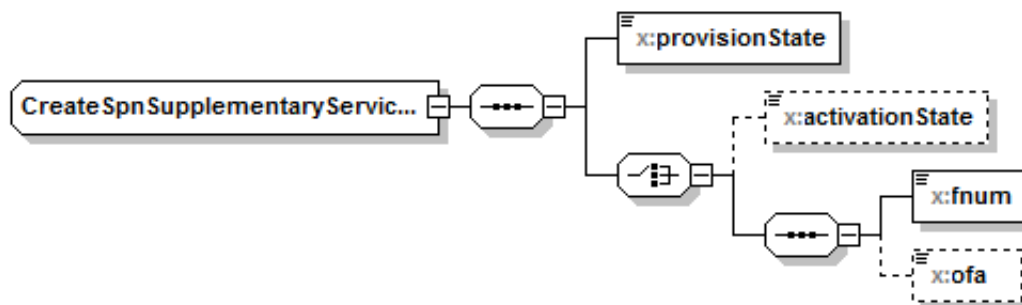


Figure 24 Argument for SPN in Create Subscription Operation

For details of the parameters, see table Parameters for SPN Table 25.

Example 39 is a creation subscription operation that creates a subscription and:

- Provides the SPN service for the subscription.
- Activates the SPN service for the subscription and defines all incoming calls that are to be forwarded to 464550006.

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/" xmlns:cai3="http://
  <soapenv:Header>
    <cai3:SessionId>4198fa276bdb4250b5640cc09463e0cb</cai3:SessionId>
  </soapenv:Header>
  <soapenv:Body>
    <cai3:Create>
      <cai3:MOType>Subscription@http://schemas.ericsson.com/ma/m2mhlr/</cai3:MOType>
      <cai3:MOId>
        <m2m:imsi>264000000075236</m2m:imsi>
        <m2m:msisdn>75236</m2m:msisdn>
      </cai3:MOId>
      <cai3:MOAttributes>
        <m2m:createSubscription imsi="264000000075236" msisdn="75236" >
          <m2m:imsi>264000000075236</m2m:imsi>
          <m2m:msisdn>75236</m2m:msisdn>
          <m2m:m2msp>7091</m2m:m2msp>
            <m2m:spn>
              <m2m:provisionState>1</m2m:provisionState>
              <m2m:fnum>464550006</m2m:fnum>
            </m2m:spn>
          </m2m:createSubscription>
        </cai3:MOAttributes>
      </cai3:Create>
    </soapenv:Body>
  </soapenv:Envelope>
```

*Example 39 SPN in Create Subscription*

### 2.2.7.3

#### SPN in Set Subscription

In a Set subscription operation, it is possible to:

- Provision the SPN service to the subscription with or without one of the following tasks:
  - Activate SPN
  - Define forwarded-to number with associated data to the service
- Withdraw the SPN service from the subscription
- Activate the SPN service
- Deactivate the SPN service
- Define forwarded-to number with associated data to the service

The service is automatically activated when provisioning forwarded-to number, that is, attribute `activationState` is not to be provisioned at the same time when providing forwarded-to number.

The argument for SPN in Set Subscription operation is illustrated as follows.



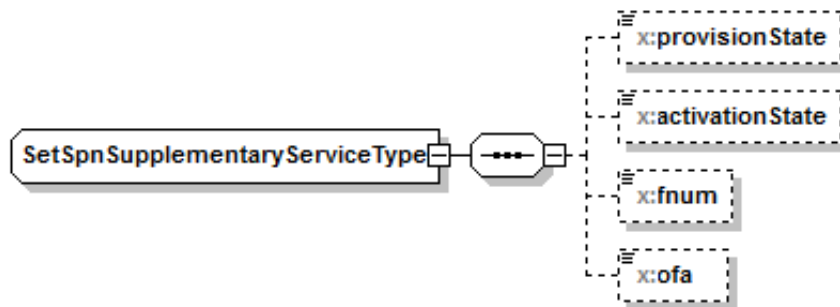


Figure 25 Argument for SPN in Set Subscription Operation

For details of the parameters, see table Parameters for SPN Table 25.

Example 40 as follows is a set subscription operation that:

- Deactivates the SPN service for the subscription.

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/" xmlns:cai3="http://schemas.ericsson.com/ma/m2mhlr/">
  <soapenv:Header>
    <cai3:SessionId>4198fa276bdb4250b5640cc09463e0cb</cai3:SessionId>
  </soapenv:Header>
  <soapenv:Body>
    <cai3:Set>
      <cai3:MOType>Subscription@http://schemas.ericsson.com/ma/m2mhlr/</cai3:MOType>
      <cai3:MOId>
        <m2m:imsi>264000000075236</m2m:imsi>
      </cai3:MOId>
      <cai3:MOAttributes>
        <m2m:setSubscription imsi="264000000075236">
          <m2m:spn>
            <m2m:activationState>0</m2m:activationState>
          </m2m:spn>
        </m2m:setSubscription>
      </cai3:MOAttributes>
    </cai3:Set>
  </soapenv:Body>
</soapenv:Envelope>
```

Example 40 SPN in Set Subscription

#### 2.2.7.4

#### SPN in Get Subscription Response

The Get subscription response contains the following SPN information:

- Provision state of the service for the subscription
- When provision state is 1, the activation state as well as the forwarded-to information is shown for TS10

The argument for SPN in Get subscription operation is illustrated as follows.

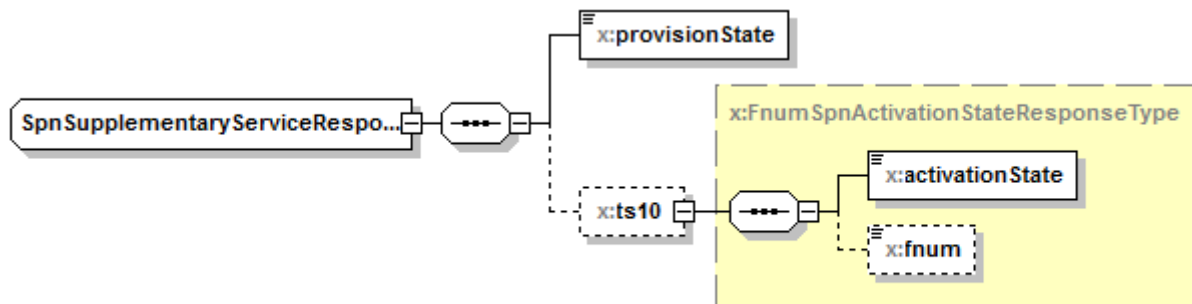


Figure 26 SPN in Get Subscription Response

For details of the parameters, see table Parameters for SPN Table 25.

Example 41 as follows is a get subscription response for a subscription with SPN service.

```
<S:Envelope xmlns:cai3g="http://schemas.ericsson.com/cai3g1.2/"
xmlns:S="http://schemas.xmlsoap.org/soap/envelope/">
  <S:Header>
    <cai3g:SessionId>4198fa276bdb4250b5640cc09463e0cb</cai3g:SessionId>
  </S:Header>
  <S:Body>
    <ns2:GetResponse xmlns:ns2="http://schemas.ericsson.com/cai3g1.2/">
      <ns2:MOAttributes>
        <getResponseSubscription:getResponseSubscription
          xmlns:getResponseSubscription="http://schemas.ericsson.com/ma/m2mhlr/"
          xmlns="http://schemas.ericsson.com/ma/m2mhlr/" msisd="75236" imsi="26400000075236">
          <imsi>26400000075236</imsi>
          <msisd>75236</msisd>
          <m2msp>7091</m2msp>
          <state>CONNECTED</state>
          <spn>
            <provisionState>1</provisionState>
            <ts10>
              <activationState>1</activationState>
              <fnum>464550006</fnum>
            </ts10>
          </spn>
          <pwd>0000</pwd>
          <soch>0</soch>
          <messageWaiting>
            <mce>0</mce>
            <mnrf>1</mnrf>
            <mnrg>1</mnrg>
          </messageWaiting>
        </getResponseSubscription:getResponseSubscription>
      </ns2:MOAttributes>
    </ns2:GetResponse>
  </S:Body>
</S:Envelope>
```

Example 41 SPN in Get Subscription Response

## 2.2.8

### Call Waiting

The provision state of Call Waiting (CAW) service is defined in the M2M Service Profile that is assigned to a subscription. The activation state is defined on per subscription bases.

### 2.2.8.1 Parameters for CAW

Table 26 CAW Parameters

Parameter	Type	Description
activationState	unsignedByte Values are 0-2.	Activation state of a service

### 2.2.8.2 CAW in Create and Set Subscription

In create subscription operation, it is possible to:

- Activate CAW service for all BSGs.
- Activate CAW service for one or more BSGs individually.

In Set Subscription operation, it is possible to:

- Activate CAW service for all BSGs.
- Deactivate CAW service for all BSGs.
- Activate CAW service for one or more BSGs individually.
- Deactivate CAW service for one or more BSGs individually.
- Activate CAW service for one or more BSGs and deactivate the service for other BSGs at the same time.

The argument is illustrated in the following figure.

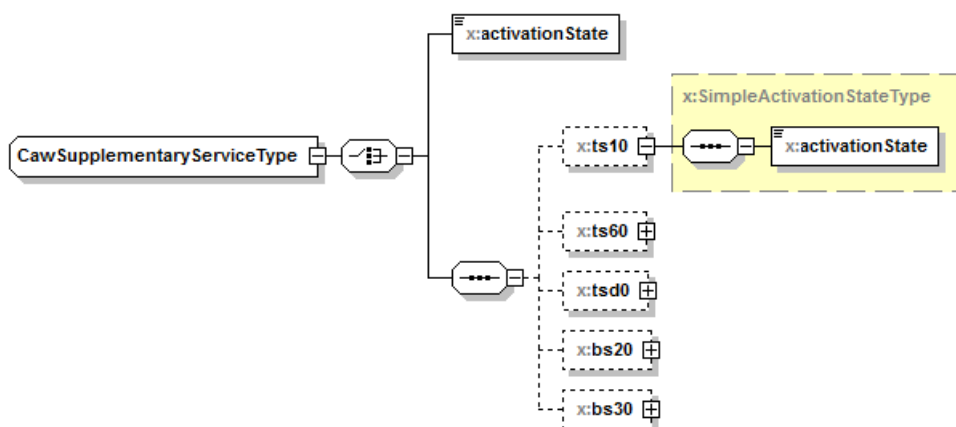


Figure 27 Spatial Triggers Data in Create Subscription

For detail of the parameters, see table Parameters for CAW Table 26.

The following example is a create subscription operation that creates a subscription and:



- Activates CAW service for all BSGs.

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:cai3="http://schemas.ericsson.com/cai3g1.2/"
  xmlns:m2m="http://schemas.ericsson.com/ma/m2mhlr/">
  <soapenv:Header>
    <cai3:SessionId>4198fa276bdb4250b5640cc09463e0cb</cai3:SessionId>
  </soapenv:Header>
  <soapenv:Body>
    <cai3:Create>
      <cai3:MOType>Subscription@http://schemas.ericsson.com/ma/m2mhlr/</cai3:MOType>
      <cai3:MOId>
        <m2m:imsi>264000000075232</m2m:imsi>
        <m2m:msisdn>75232</m2m:msisdn>
      </cai3:MOId>
      <cai3:MOAttributes>
        <m2m:createSubscription imsi="264000000075232" msisdn="75232" >
          <m2m:imsi>264000000075232</m2m:imsi>
          <m2m:msisdn>75232</m2m:msisdn>
          <m2m:m2msp>7091</m2m:m2msp>
          <m2m:caw>
            <m2m:activationState>1</m2m:activationState>
          </m2m:caw>
        </m2m:createSubscription>
      </cai3:MOAttributes>
    </cai3:Create>
  </soapenv:Body>
</soapenv:Envelope>
```

#### Example 42 CAW Create Subscription

The following example is a set subscription operation that:

- Deactivates CAW service for ts10 and ts60.

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:cai3="http://schemas.ericsson.com/cai3g1.2/"
  xmlns:m2m="http://schemas.ericsson.com/ma/m2mhlr/">
  <soapenv:Header>
    <cai3:SessionId>4198fa276bdb4250b5640cc09463e0cb</cai3:SessionId>
  </soapenv:Header>
  <soapenv:Body>
    <cai3:Set>
      <cai3:MOType>Subscription@http://schemas.ericsson.com/ma/m2mhlr/</cai3:MOType>
      <cai3:MOId>
        <m2m:imsi>264000000075232</m2m:imsi>
      </cai3:MOId>
      <cai3:MOAttributes>
        <m2m:setSubscription imsi="264000000075232">
          <m2m:caw>
            <m2m:ts10>
              <m2m:activationState>0</m2m:activationState>
            </m2m:ts10>
            <m2m:ts60>
              <m2m:activationState>0</m2m:activationState>
            </m2m:ts60>
          </m2m:caw>
        </m2m:setSubscription>
      </cai3:MOAttributes>
    </cai3:Set>
  </soapenv:Body>
</soapenv:Envelope>
```

#### Example 43 CAW Set Subscription

### 2.2.8.3

### CAW in Get Subscription Response

The response in get subscription for CAW indicates the activation state on per BSG bases.

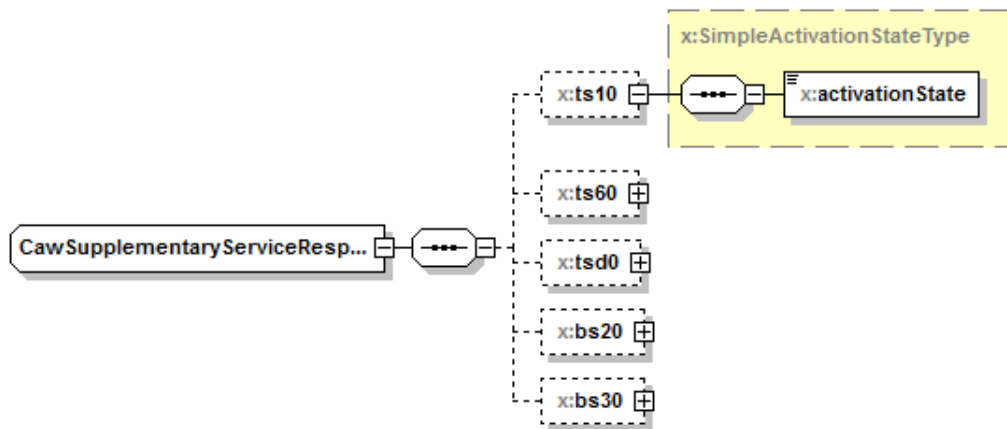


Figure 28 CAW Supplementary Service Response Syntax

For details of the parameters, see table Parameters for CAW Table 26.

The following example is a get subscription response for a subscription with CAW service.



```
<S:Envelope xmlns:cai3g="http://schemas.ericsson.com/cai3g1.2/"
xmlns:S="http://schemas.xmlsoap.org/soap/envelope/">
  <S:Header>
    <cai3g:SessionId>4198fa276bdb4250b5640cc09463e0cb</cai3g:SessionId>
  </S:Header>
  <S:Body>
    <ns2:GetResponse xmlns:ns2="http://schemas.ericsson.com/cai3g1.2/">
      <ns2:MOAttributes>
        <getResponseSubscription:getResponseSubscription
          xmlns:getResponseSubscription="http://schemas.ericsson.com/ma/m2mhlr/"
          xmlns="http://schemas.ericsson.com/ma/m2mhlr/"
          msisdn="75232" imsi="264000000075232">
          <imsi>264000000075232</imsi>
          <msisdn>75232</msisdn>
          <m2msp>7091</m2msp>
          <state>CONNECTED</state>
          <m2m:caw>
            <m2m:ts10>
              <m2m:activationState>1</m2m:activationState>
            </m2m:ts10>
            <m2m:ts60>
              <m2m:activationState>1</m2m:activationState>
            </m2m:ts60>
            <m2m:tsd0>
              <m2m:activationState>1</m2m:activationState>
            </m2m:tsd0>
            <m2m:bs20>
              <m2m:activationState>1</m2m:activationState>
            </m2m:bs20>
            <m2m:bs30>
              <m2m:activationState>1</m2m:activationState>
            </m2m:bs30>
          </m2m:caw>
          <pwd>0000</pwd>
          <socb>0</socb>
          <messageWaiting>
            <mce>0</mce>
            <mnrf>1</mnrf>
            <mnrg>1</mnrg>
          </messageWaiting>
        </getResponseSubscription:getResponseSubscription>
      </ns2:MOAttributes>
    </ns2:GetResponse>
  </S:Body>
</S:Envelope>
```

*Example 44 CAW Get Subscription Response*

## 2.2.9 Spatial Trigger

Spatial Trigger data defines spatial triggers events associated with a GMLC address identifier for a M2M mobile subscriber in the HLR. One Spatial Triggers Event can be defined per subscription

### 2.2.9.1 Parameters for Spatial Trigger Data

*Table 27 Parameters for Spatial Trigger Data*

Parameter	Type	Description
ste	String Numeral0-15.	Spatial Triggers Event

Parameter	Type	Description
gmlcid	String Numeral0-255.	Gateway Mobile Location Center (GMLC) address Identifier
gmlca	String	Gateway Mobile Location Center (GMLC) Address

### 2.2.9.2 Spatial Triggers Data in Creation Subscription

In create subscription operation, it is possible to:

- Define Spatial Triggers Event for the subscription

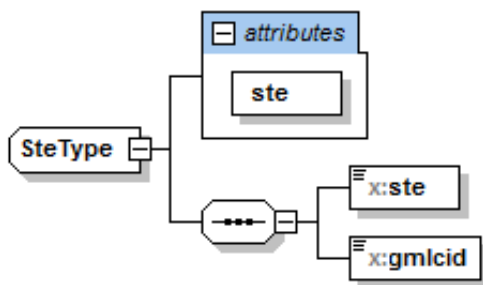


Figure 29 Spatial Triggers Data in Create Subscription

For detail of the parameters, see table Parameters for Spatial Trigger Data Table 27.

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:cai3="http://schemas.ericsson.com/cai3gl.2/"
xmlns:m2m="http://schemas.ericsson.com/ma/m2mhlr/">
  <soapenv:Header>
    <cai3:SessionId>efae04728c434decb3d9ff1a3b93331c</cai3:SessionId>
  </soapenv:Header>
  <soapenv:Body>
    <cai3:Create>
      <cai3:MOType>Subscription@http://schemas.ericsson.com/ma/m2mhlr/</cai3:MOType>
      <cai3:MOId>
        <m2m:imsi>12345678933333</m2m:imsi>
        <m2m:msisdn>46455381234</m2m:msisdn>
      </cai3:MOId>
      <cai3:MOAttributes>
        <m2m:createSubscription imsi="12345678933333" msisdn="46455381234" >
          <m2m:imsi>12345678933333</m2m:imsi>
          <m2m:msisdn>46455381234</m2m:msisdn>
          <m2m:m2msp>7081</m2m:m2msp>
          <m2m:steMo ste="0">
            <m2m:ste>0</m2m:ste>
            <m2m:gmlcid>33</m2m:gmlcid>
          </m2m:steMo>
        </m2m:createSubscription>
      </cai3:MOAttributes>
    </cai3:Create>
  </soapenv:Body>
</soapenv:Envelope>
```

**Example 45** Example of Create Subscriber Spatial Trigger Data

### 2.2.9.3 Set Subscriber Spatial Trigger Data

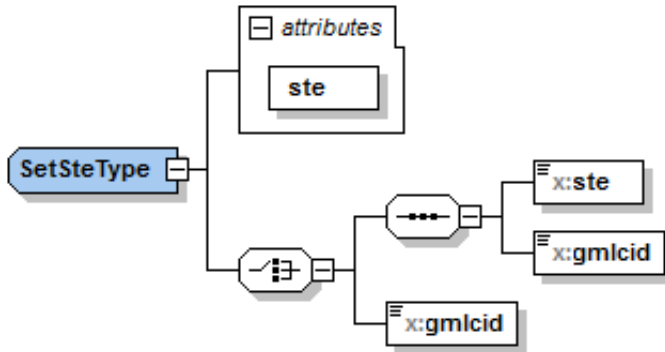


Figure 30 Set Subscriber Spatial Trigger Data

For detail of the parameters, see table Parameters for Spatial Trigger Data Table 27.

Add Subscriber Spatial Trigger Data with a set command.

```

<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:cai3="http://schemas.ericsson.com/cai3g1.2/"
  xmlns:m2m="http://schemas.ericsson.com/ma/m2mhlr/"
  >
  <soapenv:Header>
    <cai3:SessionId>efae04728c434decb3d9ff1a3b93331c</cai3:SessionId>
  </soapenv:Header>
  <soapenv:Body>
    <cai3:Set>
      <cai3:MOType>Subscription@http://schemas.ericsson.com/ma/m2mhlr/</cai3:MOType>
      <cai3:MOId>
        <m2m:msisdn>46455381234</m2m:msisdn>
      </cai3:MOId>
      <cai3:MOAttributes>
        <m2m:setSubscription msisdn="46455381234" >
          <m2m:steMo ste="0">
            <m2m:ste>0</m2m:ste>
            <m2m:gmlcid>34</m2m:gmlcid>
          </m2m:steMo>
        </m2m:setSubscription>
      </cai3:MOAttributes>
    </cai3:Set>
  </soapenv:Body>
</soapenv:Envelope>
  
```

**Example 46** Set Add Subscriber Spatial Trigger Data

Modify Subscriber Spatial Trigger Data with a set command.





```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:cai3="http://schemas.ericsson.com/cai3gl.2/"
  xmlns:m2m="http://schemas.ericsson.com/ma/m2mhlr/">
  <soapenv:Header>
    <cai3:SessionId>efae04728c434decb3d9ffa3b93331c</cai3:SessionId>
  </soapenv:Header>
  <soapenv:Body>
    <cai3:Set>
      <cai3:MOType>Subscription@http://schemas.ericsson.com/ma/m2mhlr/</cai3:MOType>
      <cai3:MOId>
        <m2m:msisdn>46455381234</m2m:msisdn>
      </cai3:MOId>
      <cai3:MOAttributes>
        <m2m:setSubscription msisdn="46455381234" >
          <m2m:steMo ste="0">
            <m2m:gmlcid>35</m2m:gmlcid>
          </m2m:steMo>
        </m2m:setSubscription>
      </cai3:MOAttributes>
    </cai3:Set>
  </soapenv:Body>
</soapenv:Envelope>
```

#### Example 47 Set Modify Subscriber Spatial Trigger Data

Delete Subscriber Spatial Trigger Data with a set command.

#### Example 48 Set Delete Subscriber Spatial Trigger Data

### 2.2.9.4

#### Get Subscriber Spatial Trigger Data Response

In set subscription operation, it is possible to:

- Define Spatial Triggers Event
- Modify Spatial Triggers Event
- Remove Spatial Triggers Event

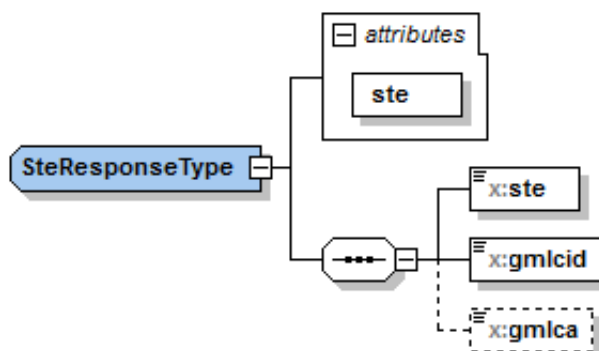


Figure 31 Get Subscriber Spatial Trigger Data Response

For detail of the parameters, see table Parameters for Spatial Trigger Data Table 27.

```
<S:Envelope xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:cai3g="http://schemas.ericsson.com/cai3gl.2/">
  <S:Header>
    <cai3g:SessionId>efae04728c434dec3d9ff1a3b93331c</cai3g:SessionId>
  </S:Header>
  <S:Body>
    <ns2:GetResponse xmlns:ns2="http://schemas.ericsson.com/cai3gl.2/">
      <ns2:MOAttributes>
        <getResponseSubscription:getResponseSubscription imsi="12345678933333"
          msisdn="46455381234" xmlns="http://schemas.ericsson.com/ma/m2mhlr/"
          xmlns:getResponseSubscription="http://schemas.ericsson.com/ma/m2mhlr/">
          <imsi>12345678933333</imsi>
          <msisdn>46455381234</msisdn>
          <m2msp>7081</m2msp>
          <ste>1</ste>
          <steMo ste="0">
            <ste>0</ste>
            <gmlcid>33</gmlcid>
            <gmlca>987654321</gmlca>
          </steMo>
          <pwd>0000</pwd>
          <socb>0</socb>
          <messageWaiting>
            <mce>0</mce>
            <mnrf>1</mnrf>
            <mnrg>1</mnrg>
          </messageWaiting>
        </getResponseSubscription:getResponseSubscription>
      </ns2:MOAttributes>
    </ns2:GetResponse>
  </S:Body>
</S:Envelope>
```

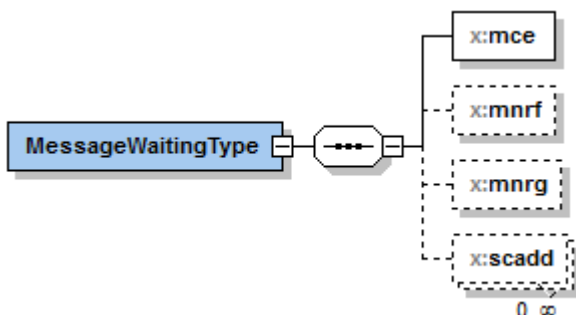
*Example 49 Get Subscriber Spatial Trigger Data Response*

## 2.2.10 Message Waiting Service Type

Message Waiting handles Service Center addresses stored in the Message Waiting data list for the given subscriber.

### 2.2.10.1 Message Waiting in Get Subscription Response

The Get response message of a request, to print all service center addresses stored in the Message Waiting data list for the given subscriber, contains the MessageWaiting data in the following format:



*Figure 32 Message Waiting Get Subscription Response*



**Table 28** Message Waiting Parameters

Parameter	Type	Description
mce	unsignedByte Values are 0-1	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.
mnrf	unsignedByte Values are 0-1	Mobile station not reachable. It can only be one of the following two values:  0: NREACH, mobile station is not reachable through the Mobile Switch Center (MSC).  1: REACH, mobile station is reachable.
mnrg	unsignedByte Values are 0-1	Mobile station not reachable through the Serving General Packet Radio Service Support Node. It can only be one of the following two values:  0: NREACH, mobile station is not reachable through the Mobile Switch Center (MSC).  1: REACH, mobile station is reachable.
scadd	ScaddType	Service Center address, expressed as na-ai where:  na = Nature of address indicator (3 = National, 4 = International)  ai = Address information

```

<ns2:GetResponse xmlns:ns2="http://schemas.ericsson.com/cai3g1.2/">
  <ns2:MOAttributes>
    <getResponseSubscription:getResponseSubscription imsi="26400000005010"
      msisdn="491900005010" xmlns="http://schemas.ericsson.com/ma/m2mhlr
      xmlns:getResponseSubscription="http://schemas.ericsson.com/ma/m2mhlr">
      <msisdn>491900005010</msisdn>
      <imsi>26400000005010</imsi>
      <m2msp>17</m2msp>
      <authd>AVAILABLE</authd>
      <pwd>0000</pwd>
      <socb>0</socb>
      <messageWaiting>
        <mce>0</mce>
        <mnrf>1</mnrf>
        <mnrg>1</mnrg>
      </messageWaiting>
    </getResponseSubscription:getResponseSubscription>
  </ns2:MOAttributes>
</ns2:GetResponse>

```

**Example 50** Example of Message Waiting Get Subscription Response



## 3 Multiple Subscription

### 3.1 Create Multiple Subscription

This section covers the M2M Multiple Subscription command `createMultipleSubscription`, which initiates multiple subscription by linking one or several (maximum 10) subscriptions identified by parameter IMSI to the master subscription identified by parameter MSISDN.

#### MOType

`MultipleSubscription@http://schemas.ericsson.com/ma/m2mhlr/`

#### 3.1.1 Request Data

##### MOId

Table 29 Create Multiple Subscription MOId

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

##### MOAttributes

The parameters that are used in the operation are shown in Figure 33.

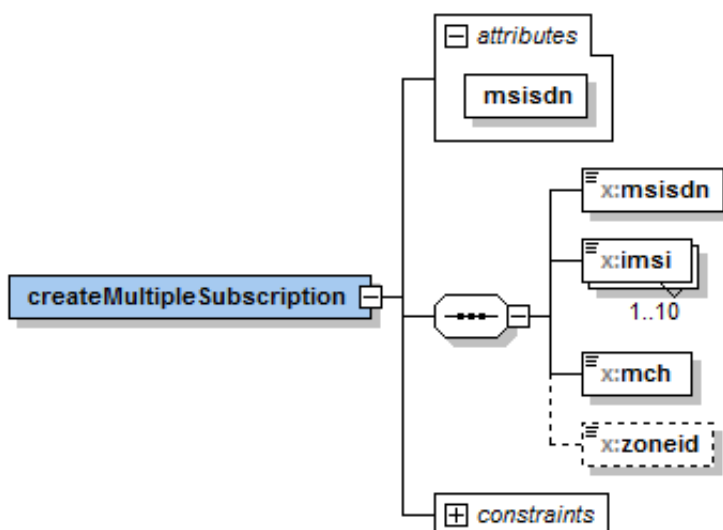


Figure 33 Parameters in a `createMultipleSubscription` Request



The following table covers the parameters that can be used in a createMultipleSubscription request.

*Table 30 Create M2M Multiple Subscription Parameters*

Parameter	Type	Description
msisdn	Digit string 5-15 digits. Each digit is 0-9.	Mobile Subscriber ISDN Number (MSISDN)
imsi	Digit string 6-15 digits. Each digit is 0-9.	International Mobile Subscriber Identity
mch	One of the following strings: <ul style="list-style-type: none"><li>• LOC</li><li>• USSD</li></ul>	Multiple subscription activation mechanism. <ul style="list-style-type: none"><li>• LOC - Location updating mechanism.</li><li>• USSD - Subscriber procedure based on Unstructured Supplementary Service Data (USSD).</li></ul>
zoneid	Integer 0-65535	Indicates the geographical area the MultiSC or the association belongs to

### 3.1.2

## Examples

### Example createMultipleSubscription request message

Below is an example of a createMultipleSubscription request message.

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:cai3="http://schemas.ericsson.com/cai3g1.2/"
xmlns:m2m="http://schemas.ericsson.com/ma/m2mhlr/">
  <soapenv:Header>
    <cai3:SessionId?></cai3:SessionId>
  </soapenv:Header>
  <soapenv:Body>
    <cai3:Create>
      <cai3:MOType>MultipleSubscription@http://schemas.ericsson.com/ma/m2mhlr/
      </cai3:MOType>
      <cai3:MOId>
        <m2m:msisdn>1122334455</m2m:msisdn>
      </cai3:MOId>
      <cai3:MOAttributes>
        <m2m:createMultipleSubscription msisdn="1122334455">
          <m2m:msisdn>1122334455</m2m:msisdn>
          <m2m:imsi>1234567890</m2m:imsi>
          <m2m:mch>LOC</m2m:mch>
        </m2m:createMultipleSubscription>
      </cai3:MOAttributes>
    </cai3:Create>
  </soapenv:Body>
</soapenv:Envelope>
```

### Example 51 Create M2M Multiple Subscription Request Message

Multiple subscription data is initiated with master subscription identified by MSISDN 1122334455. Subscription with IMSI 1234567890 is linked to the multiple subscription and location updating procedure is the multiple subscription activation mechanism.

### Response Example



Below is an example of a createMultipleSubscription response message.

```
<S:Envelope xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:cai3g="http://schemas.ericsson.com/cai3gl.2/">
  <S:Header>
    <cai3g:SessionId?></cai3g:SessionId>
  </S:Header>
  <S:Body>
    <ns2:CreateResponse xmlns:ns2="http://schemas.ericsson.com/cai3gl.2/">
      <ns2:MOId>
        <m2m:msisdn xmlns:m2m="http://schemas.ericsson.com/ma/m2mhlr/">
          1122334455</m2m:msisdn>
        </ns2:MOId>
      </ns2:CreateResponse>
    </S:Body>
  </S:Envelope>
```

*Example 52 Create M2M Multiple Subscription Response Message*

## 3.2 Get Multiple Subscription

This section covers the getMultipleSubscription command.

The getMultipleSubscription command prints multiple subscription for a subscription identified by MSISDN. Multiple subscription is printed when any of the linked subscriptions or the master subscription is entered in the command.

### MOType

MultipleSubscription@http://schemas.ericsson.com/ma/m2mhlr/

### 3.2.1 Request Data

#### MOID

The following table covers the parameters that can be received in a getMultipleSubscription request.

*Table 31 Get Multiple Subscription Parameters*

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

#### MOAttributes

N/A

### 3.2.2 Response Data

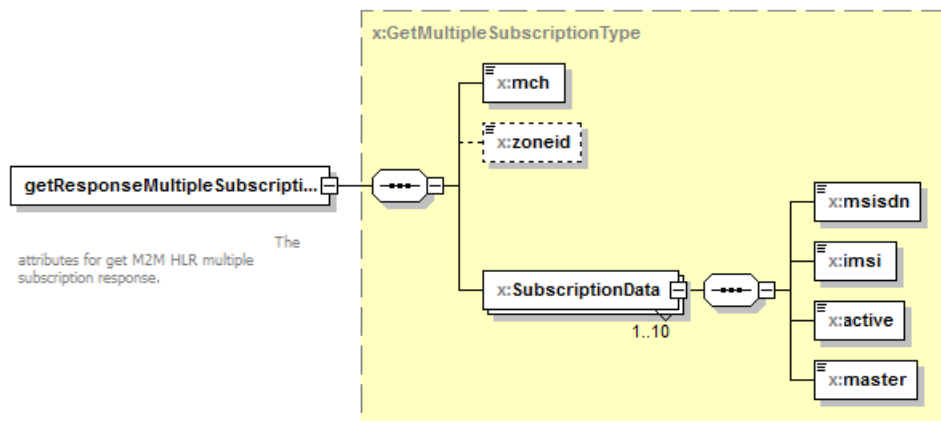
#### MOId

**Table 32** *Get Multiple Subscription Response MOld*

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

## MOAttributes

The parameters that are returned in the operation are shown in Figure 34.



**Figure 34** *Parameters in Get Multiple Subscription*

The following table covers the parameters that can be received in a `getSubscription` response.

**Table 33** *Get Multiple Subscription Parameters*

Parameter	Type	Description
active	Boolean {true, false}	Indicates if this is the active subscription in the multiple subscription. true means active subscription.
master	Boolean {true, false}	Indicates if this is the master subscription in the multiple subscription. true means master subscription
msisdn	Digit string, 5-15 digits. Each digit is 0-9.	Mobile Subscriber ISDN Number (MSISDN)
imsi	Digit string, 6-15 digits. Each digit is 0-9.	International Mobile Subscriber Identity





Parameter	Type	Description
mch	One of the following strings: <ul style="list-style-type: none"> <li>• LOC</li> <li>• USSD</li> </ul>	Multiple subscription activation mechanism. <ul style="list-style-type: none"> <li>• LOC - Location updating mechanism.</li> <li>• USSD - Subscriber procedure based on Unstructured Supplementary Service Data (USSD).</li> </ul>
zoneid	Integer 0-65535	Indicates the geographical area the MultiSC or the association belongs to.

### 3.2.3

## Examples

### Example request message

Below is an example of a GetMultipleSubscription request message.

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:cai3="http://schemas.ericsson.com/cai3gl.2/"
  xmlns:m2m="http://schemas.ericsson.com/ma/m2mhlr/">
  <soapenv:Header>
    <cai3:SessionId>a5dbc03021fe43eaaa0647df28e19604</cai3:SessionId>
  </soapenv:Header>
  <soapenv:Body>
    <cai3:Get>
      <cai3:MOType>MultipleSubscription@http://schemas.ericsson.com/ma/m2mhlr/
    </cai3:MOType>
    <cai3:MOId>
      <m2m:msisdn>46200000755701</m2m:msisdn>
    </cai3:MOId>
    <cai3:MOAttributes>
      <m2m:getMultipleSubscription msisdn="46200000755701"/>
    </cai3:MOAttributes>
    </cai3:Get>
  </soapenv:Body>
</soapenv:Envelope>
```

**Example 53**    *Get Multiple Subscription Request Message*

### Response Example

Below is an example of a getMultipleSubscription response message.



```
<S:Envelope xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:cai3g="http://schemas.ericsson.com/cai3g1.2/">
  <S:Header>
    <cai3g:SessionId>a5dbc03021fe43eaaa0647df28e19604</cai3g:SessionId>
  </S:Header>
  <S:Body>
    <ns2:GetResponse xmlns:ns2="http://schemas.ericsson.com/cai3g1.2/">
      <ns2:MOAttributes>
        <ns:getResponseMultipleSubscription
xmlns:ns="http://schemas.ericsson.com/ma/m2mhlr/">
          <ns:mch>LOC</ns:mch>
          <ns:SubscriptionData>
            <ns:msisdn>46200000755701</ns:msisdn>
            <ns:imsi>264000000755701</ns:imsi>
            <ns:active>true</ns:active>
            <ns:master>true</ns:master>
          </ns:SubscriptionData>
          <ns:SubscriptionData>
            <ns:msisdn>46200000755702</ns:msisdn>
            <ns:imsi>264000000755702</ns:imsi>
            <ns:active>false</ns:active>
            <ns:master>false</ns:master>
          </ns:SubscriptionData>
        </ns:getResponseMultipleSubscription>
      </ns2:MOAttributes>
    </ns2:GetResponse>
  </S:Body>
</S:Envelope>
```

*Example 54 Get Multiple Subscription Response Message*

## 3.3 Set Multiple Subscription

This section covers the `setMultipleSubscription` command.

The `setMultipleSubscription` command changes multiple subscriptions, identified by `msisdn`.

The following data can be changed in the multiple subscription:

- A subscription is linked to the multiple subscription when the attribute `imsi`, identifying the subscription, is entered. Maximum 10 subscribers can be part of the multiple subscription.
- The subscription identified by the attribute `imsi` is unlinked from the multiple subscription when the attribute `imsi` is entered and the element `Subscription` is set to `nillable="true"`.
- The activation mechanism in the multiple subscription is changed when the attribute `mch` is entered.
- The active subscription in the multiple subscription is changed when the attribute `acimsi` is entered and the multiple subscription activation mechanism is a subscriber procedure based on USSD.
- The master subscription in the multiple subscription is changed when the attribute `msisdn` is entered.

### MOType

MultipleSubscription@http://schemas.ericsson.com/ma/m2mhlr/

3.3.1 Request Data

MOId

Table 34 Set Multiple Subscription MOId

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

MOAttributes

The parameters that are used in the operation are shown in Figure 35

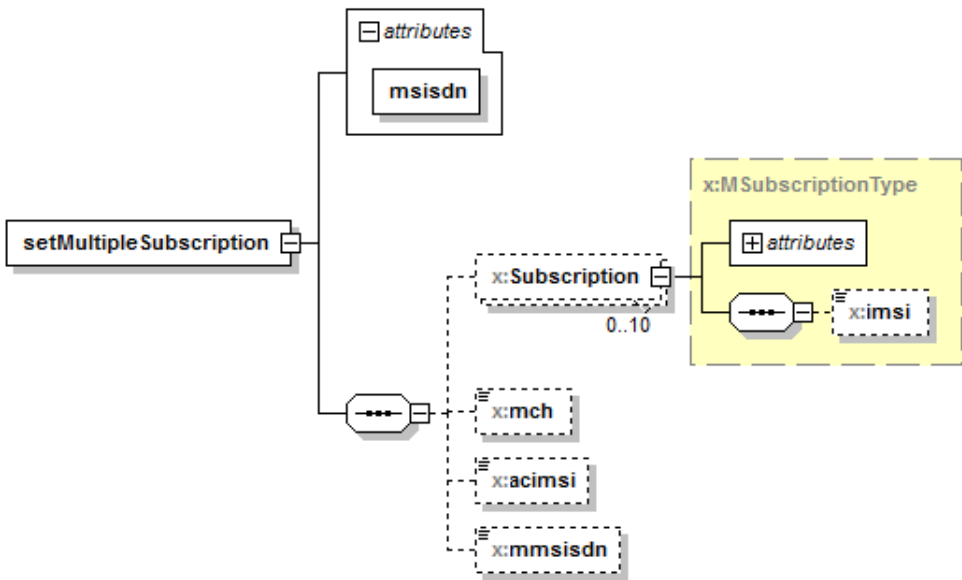


Figure 35 Parameters in Set Multiple Subscription

The following table covers the parameters that can be used in a setMultipleSubscription request.

Table 35 Set Multiple Subscription Parameters

Parameter	Type	Description
acimsi	Digit string, 6-15 digits. Each digit is 0-9	Active subscription in the multiple subscription.
imsi	Digit string, 6-15 digits. Each digit is 0-9	International Mobile Subscriber Identity (IMSI)
mmsisdn	Digit string, 5-15 digits. Each digit is 0-9	Master subscription in the multiple subscription.



Parameter	Type	Description
msisdn	Digit string, 5-15 digits. Each digit is 0-9	MSISDN
mch	One of the following strings: <ul style="list-style-type: none"><li>• LOC</li><li>• USSD</li></ul>	Multiple subscription activation mechanism. <ul style="list-style-type: none"><li>• LOC - Location updating mechanism.</li><li>• USSD - Subscriber procedure based on Unstructured Supplementary Service Data (USSD).</li></ul>

### 3.3.2

## Examples

### Request example

Below is an example of a setMultipleSubscription request message.

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:cai3="http://schemas.ericsson.com/cai3gl.2/"
xmlns:m2m="http://schemas.ericsson.com/ma/m2mhlr/"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <soapenv:Header>
    <cai3:SessionId?></cai3:SessionId>
  </soapenv:Header>
  <soapenv:Body>
    <cai3:Set>
      <cai3:MOType>MultipleSubscription@http://schemas.ericsson.com/ma/m2mhlr/
    </cai3:MOType>
      <cai3:MOId>
        <m2m:msisdn>12345678901234</m2m:msisdn>
      </cai3:MOId>
      <cai3:MOAttributes>
        <m2m:setMultipleSubscription msisdn="12345678901234">
          <m2m:Subscription imsi="1234567890" xsi:nil="true">
            </m2m:Subscription>
          </m2m:setMultipleSubscription>
        </cai3:MOAttributes>
      </cai3:Set>
    </soapenv:Body>
  </soapenv:Envelope>
```

#### *Example 55 Set Multiple Subscription Request Message*

The subscription identified by the IMSI 1234567890 is unlinked from the multiple subscription with master subscription identified by MSISDN 12345678901234.

### Response example

Below is an example of a setMultipleSubscription response message.

```
<S:Envelope xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:cai3g="http://schemas.ericsson.com/cai3gl.2/">
  <S:Header>
    <cai3g:SessionId>5817283e9a5043dfbe71843fe90252d2</cai3g:SessionId>
  </S:Header>
  <S:Body>
    <ns2:SetResponse xmlns:ns2="http://schemas.ericsson.com/cai3gl.2/">
    </S:Body>
  </S:Envelope>
```

#### *Example 56 Set Multiple Subscription Response Message*



## 3.4 Delete Multiple Subscription

This section covers the deleteMultipleSubscription command.

The command ends multiple subscriptions. The subscription linked to the master subscription identified by attribute MSISDN is unlinked. Ending of multiple subscription is not allowed if more than one subscription is linked to the master subscription.

### MOType

MultipleSubscription@http://schemas.ericsson.com/ma/m2mhlr/

### 3.4.1 Request Data

#### MOId

*Table 36 Delete Multiple Subscription MOId*

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

#### MOAttributes

N/A

### 3.4.2 Examples

#### Request example

Below is an example of a deleteMultipleSubscription request message.

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:cai3="http://schemas.ericsson.com/cai3g1.2/"
  xmlns:m2m="http://schemas.ericsson.com/ma/m2mhlr/">
  <soapenv:Header>
    <cai3:SessionId?></cai3:SessionId>
  </soapenv:Header>
  <soapenv:Body>
    <cai3:Delete>
      <cai3:MOType>MultipleSubscription@http://schemas.ericsson.com/ma/m2mhlr/
    </cai3:MOType>
      <cai3:MOId>
        <m2m:msisdn>12345678901234</m2m:msisdn>
      </cai3:MOId>
    </cai3:Delete>
  </soapenv:Body>
</soapenv:Envelope>
```

#### *Example 57 Delete Multiple Subscription Request Message*

Multiple subscription data with master subscription identified by parameter MSISDN 12345678901234 is ended.



## Response example

Below is an example of a deleteMultipleSubscription response message.

```
<S:Envelope xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:cai3g="http://schemas.ericsson.com/cai3g1.2/">
  <S:Header>
    <cai3g:SessionId?</cai3g:SessionId>
  </S:Header>
  <S:Body>
    <ns2:DeleteResponse xmlns:ns2="http://schemas.ericsson.com/cai3g1.2/">
      <ns2:MOId>
        <m2m:msisdn xmlns:m2m="http://schemas.ericsson.com/ma/m2mhlr/">
          12345678901234</m2m:msisdn>
        </ns2:MOId>
      </ns2:DeleteResponse>
    </S:Body>
  </S:Envelope>
```

*Example 58 Delete Multiple Subscription Response Message*



## 4 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 M2M Subscription and M2M Multiple Subscription specific error codes are described in this section. These error codes are included in the Fault type `FaultDetails`.

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

### 4.1 Subordinate M2M Subscription Error Codes

The following table covers subordinate error codes for M2M Subscription commands over the CAI3G interface.

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)

*Table 37 M2M Subscription Error Codes*

Error Code	Description	Type	Create	Set	Delete	Get
1	IMSI already defined	D	x			
2	MSISDN already defined	D	x	x		
6	Subscriber authentication data not found	F	x			
13	IMSI not defined	D	X	x	x	
14	MSISDN not defined	D	x	x	x	
15	Subscriber data not recognized	S	x	x		
16	Supplementary service not recognized	S	x	x		

**Table 37 M2M Subscription Error Codes**

Error Code	Description	Type	Create	Set	Delete	Get
17	Supplementary service not applicable	S	x	x		
18	Supplementary service not provided	S	x	x		
19	Forward-to-number restricted	D/S	x	x		
25	Parameter not applicable	S	x	x		
26	Forwarded to number missing	D/S	x	x		
27	Operation not allowed because of interaction	S	x	x		
32	Subscriber data not applicable	S	x	x		
33	Operation not allowed because of current location	T	x	x		
41	No basic service subscribed within specified BSG	S	x	x		
43	Basic service group not recognized	S	x	x		
44	SS not applicable to specified BSG	S	x	x		
47	Subscription limit of numbers reached	F	x	x		
48	MSISDN is not an additional MSISDN	D/S		x		
53	MSISDN type incorrect	D/S			x	
55	BC not defined	D/S	x	x		
57	BC out of range	S	x	x		
61	SS not applicable to any subscribed BSG	D/S	x	x		
62	Supplementary service not registered	D/S	x	x		
68	BC represents a BS not supported	S	x	x		
75	Functionality not supported by this exchange	S	x	x	X	
76	CUG not applicable to BSG	S	x	x		
77	Index already defined	D/S	x	x		
78	Interlock code already defined	D/S	x	x		
79	BSG included more than once	S	x	x		
81	CUG not applicable to any BSG	S	x	x		
82	Maximum number of CUGs reached	S	x	x		
83	Basic service group erasure not allowed	S		x		
84	Index not defined	D/S		x		





**Table 37 M2M Subscription Error Codes**

Error Code	Description	Type	Create	Set	Delete	Get
85	MSISDN not defined as CUG member	D/S		x		x
86	BSG not defined within any CUG	D/S		x		
87	BSG not defined within given PCUG	D/S		x		
88	PCUG not defined as index	D/S		x		
89	PCUG not allowed	S		x		
102	Odd number of characters in subaddress	D/S	x	x		
115	Restriction not allowed	S		x		
116	Index erasure not allowed	S		x		
117	CollectiveBSG not allowed	S	x	x		
151	Storage shortage in facsimile transmission data file	T	x	x		
153	Storage shortage in data circuit asynchronous data file	T	x	x		
154	Storage shortage in data circuit synchronous data file	T	x	x		
159	BC not permitted	D/S	x	x		
168	DP already defined	D/S	x	x		
169	DP not defined	D/S	x	x		
170	DP activated	D/S	x	x		
171	DP not activated	D/S		x		
172	DP value not allowed	D/S	x	x		
173	Maximum number of detection points exceeded	D	x	x		
174	Too many detection points specified	D/S	x	x		
175	GSA not defined	D	x	x		
183	Parameter not supported by this exchange	D	x	x		
189	Parameter value not supported by this exchange	D/S	x	x		
10221	Subscriber data incompatible with stored subscriber data	D	x	x		
10240	GMLC address not defined	D/S	x	x		
10242	Storage shortage in sub address data file for speech	T	x	x		
10243	Storage shortage in sub address data file for data circuit asynchronous	T	x	x		
10244	Storage shortage in sub address data file for data circuit synchronous	T	x	x		

**Table 37 M2M Subscription Error Codes**

Error Code	Description	Type	Create	Set	Delete	Get
10245	Storage shortage in sub address data file for facsimile	T	x	x		
10246	Storage shortage in sub address data file for auxiliary speech	T	x	x		
10259	OFA value not allowed	D	x	x		
10265	Storage shortage in BSG for auxiliary speech services data file	T	x	x		
10420	Subscriber spatial triggers data already defined	D/S	x	x		
10421	Storage shortage in spatial triggers data file	T	x	x		
10422	Subscriber spatial triggers data not defined	D/S		x		
10444	Spatial triggers event value not allowed	D/S	x	x		
10446	FNUM value not allowed	D/S	x	x		
10456	Subscription belongs to a multiple subscription	F	x	x		
10489	FNUM value incompatible with OFA value	D/S	x	x		
10520	Illegal combination of parameter values	F	x	x		
10534	Centralized user database not reachable	D	x	x	x	
10535	Resource limitation	D	x	x	x	
10537	Storage shortage in additional MSISDN data files	D	x	x		
10539	Storage shortage in CUG data files	D	x	x		
10601	M2M service profile not defined	D	x			
10816	Not an M2M subscription	D			x	x
12003	Identifier in use	D			x	
12006	Database locked for backup	D	x		x	
12013	Operation failed rollback succeeded	-	x	x		
12014	Operation failed rollback unsuccessful	F	x	x		
1001	Ext. system communication link failure	T/F	x	x	x	x
1002	External system error	F	x	x	x	x
2002	Internal Dynamic Activation error	F	x	x	x	x
2003	NE does not exist					



**Table 37** M2M Subscription Error Codes

Error Code	Description	Type	Create	Set	Delete	Get
3001	Invalid command	S	x	x	x	x
3002	Operation not supported	S	x	x	x	x
3003	Unknown NE object	F	x	x	x	x
3004	Insufficient parameters	S	x	x	x	x
3005	Invalid argument or out of range	S	x	x	x	x
3007	Rejection, must login first	S	x	x	x	x
3008	Invalid command sequence	S	x	x	x	x
3009	Licensed subscriber number overruns	F	x			
3010	Invalid license	F	x	x	x	x
3011	License expired	F	x	x	x	x
3012	Not authorized	F	x	x	x	x

## 4.2 Subordinate M2M Multiple Subscription Error Codes

The following table covers subordinate error codes for M2M Multiple Subscription commands over the CAI3G interface.

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)

**Table 38** M2M Multiple Subscription Error Codes

Error Code	Description	Type	Create	Set	Delete	Get
13	IMSI not defined	D	x	x	x	
14	MSISDN not defined	D	x	x	x	
75	Functionality not supported by this exchange	S	x	x	x	
189	Parameter value not supported by this exchange	D/S	x	x		
10456	Subscription belongs to a multiple subscription	F	x	x		

**Table 38 M2M Multiple Subscription Error Codes**

Error Code	Description	Type	Create	Set	Delete	Get
10457	IMSI corresponds to master subscription	F	x	x		
10461	Storage shortage in multiple IMSI subscription data file	F	x			
10462	Subscription is not a master subscription	F		x	x	
10463	Subscription does not belong to the multiple subscription	F	x	x	x	
10464	Maximum number of subscriptions in multiple IMSI	F	x	x		
10465	Minimum number of subscriptions in multiple IMSI	F		x		
10466	Change of active subscription not allowed	F		x		
10504	IMSI belongs to a different home PLMN	D	x	x		
10534	Centralized user database not reachable	D	x	x	x	
10535	Resource limitation	D	x	x	x	
10589	Too many subscriptions within multiple IMSI subscription	D			x	
10816	Not an M2M subscription	F	x	x	x	
12006	Database locked for backup	D	x		x	
12013	Operation failed rollback succeeded	T	x			
12014	Operation failed rollback unsuccessful	T	x			
1001	Ext. system communication link failure	T/F	x	x	x	x
1002	External system error	F	x	x	x	x
2002	Internal Dynamic Activation error	F	x	x	x	x
3001	Invalid command	S	x	x	x	x
3002	Operation not supported	S	x	x	x	x
3003	Unknown NE object	F	x	x	x	x
3004	Insufficient parameters	S	x	x	x	x
3005	Invalid argument or out of range	S	x	x	x	x
3007	Rejection, must login first	S	x	x	x	x
3008	Invalid command sequence	S	x	x	x	x
3009	Licensed subscriber number overruns	F	x			
3010	Invalid license	F	x	x	x	x



**Table 38** M2M Multiple Subscription Error Codes

Error Code	Description	Type	Create	Set	Delete	Get
3011	License expired	F	x	x	x	x
3012	Not authorized	F	x	x	x	x

## 4.3 CAI3G Error Message Example

The following, shown in Example 59, is an example of a CAI3G error message:

```
<S:Envelope xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:cai3g="http://schemas.ericsson.com/cai3gl.2/">
  <S:Header>
    <cai3g:SessionId>b9d2fb8417b4409789658605cd435b58</cai3g:SessionId>
  </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/cai3gl.2/"
xmlns:Cai3gFault="http://schemas.ericsson.com/cai3gl.2/">
          <faultcode>4006</faultcode>
          <faultreason>
            <reasonText>External error.</reasonText>
          </faultreason>
          <faultrole>MF</faultrole>
          <details>
            <FaultDetails:FaultDetails xmlns="http://schemas.ericsson.com/ma/"
xmlns:FaultDetails="http://schemas.ericsson.com/ma/">
              <errorcode>13</errorcode>
              <errormessage>IMSI is not defined</errormessage>
              <errordetails>Main ID does not exist.</errordetails>
            </FaultDetails:FaultDetails>
          </details>
        </Cai3gFault:Cai3gFault>
      </detail>
    </ns2:Fault>
  </S:Body>
</S:Envelope>
```

**Example 59** CAI3G Error Message





## Reference List

### Ericsson Documents

- [1] *Glossary of Terms and Acronyms*, 0033-CSH 109 628 Uen
- [2] *Generic CAI3G Interface 1.2 Specification*, 2/155 19-FAY 302 0003 Uen
- [3] *Library Overview*, 18/1553-CSH 109 628 Uen
- [4] *CAI3G Implementation*, 26/155 19-CSH 109 628 Uen