

Layered EPS Provisioning over CAI3G

Ericsson Dynamic Activation 1

INTERFACE DESCRIPTION

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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 explanations of typographic conventions used in this document.

1.1 Purpose and Scope

This document describes the supported operations or Customers Service Orders (CSOs) in the provisioning of the Evolved Packet System (EPS) Service in the Customer Administration Interface Third Generation (CAI3G) interface, which is used for provisioning of the Home Subscriber Server Front End (HSS-FE) module data. It also declares the types and occurrences of the attributes used in the operations.

This document is not a tutorial of CAI3G; it must be used together with *Generic CAI3G Interface 1.2*, Reference [2].

1.2 Target Groups

The target groups for this document are as follows:

- System Integrator

For more information about the different target groups, see *Library Overview*, Reference [3].

1.3 Typographic Conventions

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

In addition, this document uses the following to indicate operations:

C	Create
S	Set
G	Get
D	Delete

1.4 Prerequisites

To use this document fully, users must meet the following prerequisites:



- Basic knowledge about the Ericsson™ Dynamic Activation (EDA) product
- Knowledge about *Generic CAI3G Interface 1.2*, Reference [2]

1.5 Namespaces

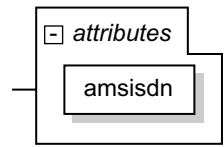
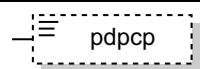

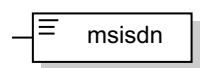
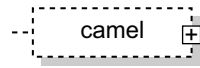
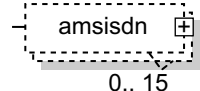
This document refers to the following namespaces:

- CAI3G 1.2 namespace:
`http://schemas.ericsson.com/cai3g1.2/`
- Provisioning namespace:
`http://schemas.ericsson.com/ma/HSS/`

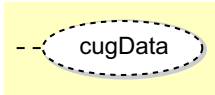
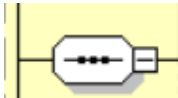
1.6 Legends

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.



Legend	Description
	<p>User-defined type</p> <p>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.</p>
	<p>Sequence icon</p> <p>A list of elements, the sequence order must be followed.</p>

1.7 Operations

One Managed Object (MO) with four operations is described in this document. See the following table for the commands and valid operations:

Table 2 EPSCMultiSC Provisioning MOs

MO	Operation			
	Create	Get	Set	Delete
EPSCMultiSC	x	x	x	x

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.

1.9 MOType

MOType is a plain text string based on the type `xs:string`. An MO type 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 MO type 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 MO identifiers or multiple MO identifier. The following is an example of an MOId:

```
<MOId>
  <msisdn>46455395000</msisdn>
  <imsi>46234563545000</imsi>
</MOId>
```

Example 1 Example of MOId

The MOId is defined as a sequence of `xs:any` element in CAI3G schema file. It is the developers responsibility to define the real schema for this parameter.

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

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



2 Create EPSMultiSC

This section covers the EPS command `CreateEPSMultiSC`.

MOType

`EPSMultiSC@http://schemas.ericsson.com/ma/HSS/`

2.1 Request Data

Note: In case, there is an ongoing IMSI Changeover on the subscriber tied to the IMSI used in the request, the following restrictions apply to the IMSI:

- If the state of the IMSI Changeover is `Pending`, the IMSI used in the request must be the old IMSI otherwise the request is rejected.
- If the state of the IMSI Changeover is `Executed` or `Forced`, the IMSI used in the request must be the new IMSI otherwise the request is rejected.

2.1.1 Parameters

MOld

Table 3 Create EPSMultiSC MOld

Parameter	Type	Occurrence	Description
imsi	String minLength value="6" maxLength value="15" Pattern value="[0-9]*"	Mandatory	The IMSI number of the subscriber

MOAttributes

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

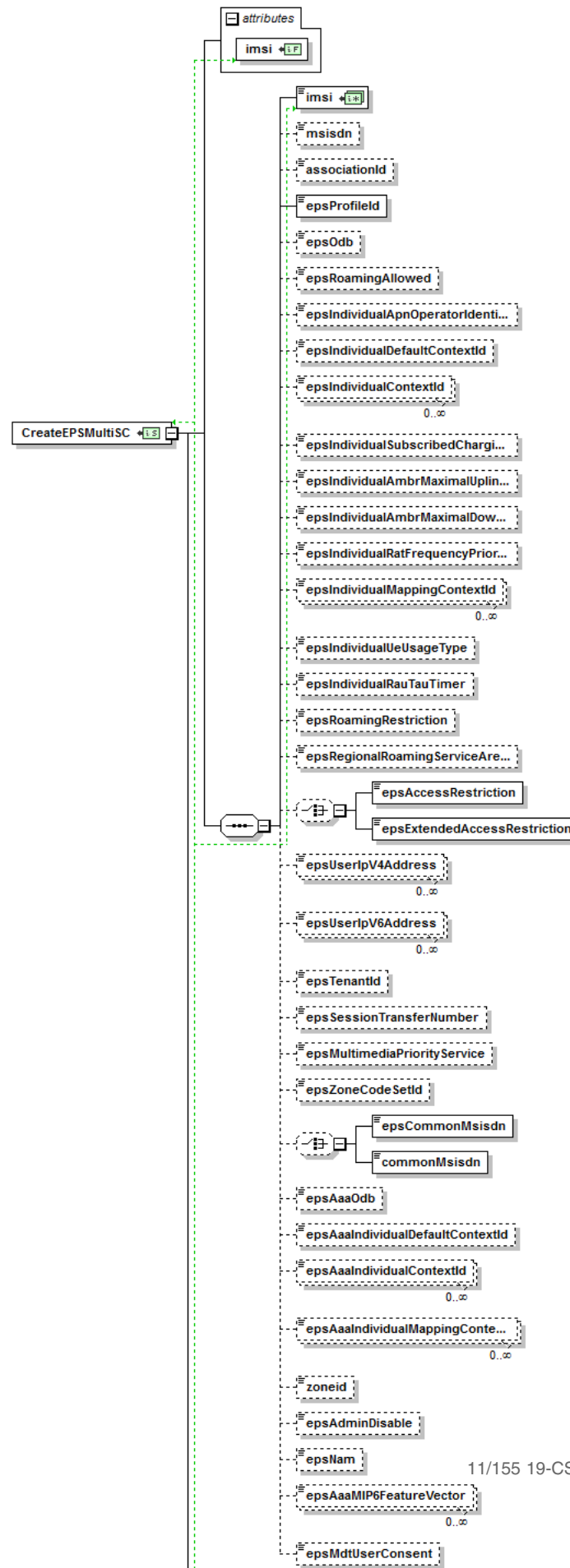




Table 4 Create EPSMultiSC Parameters

Parameter	Type	Occurrence	Description
imsi	String minLength value="6" maxLength value="15" Pattern value="[0-9]*"	Mandatory	The IMSI number of the subscriber
msisdn	String minLength value="5" maxLength value="15" <xs:pattern value="[0-9]*"	Optional	Mobile Subscriber Integrated Services Digital Network (ISDN) (MSISDN). Used for charging purposes.
associationId	String maxLenght value="72"	Optional	Parameter is defined for future use, and is not supported.
epsProfileId	String maxLength value="255"	Mandatory	Contains reference to the EPS profile assigned to the MultiSC. The content of the EPS profile is defined through a configuration interface; refer to Reference [4].
epsOdb	String Enumeration value ="NONE" Enumeration value ="ODB-ALL" Enumeration value ="ODB-HPLMN-APN" Enumeration value ="ODB-VPLMN-APN"	Optional	Contains the EPS Operator Determined Barring (ODB) indicator to be applied to the MultiSC: <ul style="list-style-type: none"> • (NONE), the MultiSC has access to all EPS packet-oriented services • (ODB-ALL), all EPS packet-oriented services are barred for the MultiSC • (ODB-HPLMN-APN), EPS packet-oriented services are barred for the MultiSC from access points that are within the home PLM network, while the MultiSC is roaming in a visited PLM network • (ODB-VPLMN-APN), EPS packet-oriented services are barred for the MultiSC from access points that are within the roamed visited PLM network The default value is NONE
epsRoamingAllowed	Boolean {true, false}	Optional	Tells if the MultiSC is allowed to roam and has access to the EPS service. It is only applicable if the attribute <code>epsRoamingRestriction</code> is not defined, or if defined, is set to TRUE. Default value is false.



Parameter	Type	Occurrence	Description
epsIndividualApnOperatorIdentifierReplacement	String maxLength value="255"	Optional	<p>Specifies, individually for the EPS MultiServiceConsumer, the domain name to replace the APN Operator Identifier when constructing the PDN Gateway (GW) FQDN upon which to perform a DNS resolution.</p> <p>If defined, during traffic the value overrides the value in the corresponding attribute of the associated configured Profile.</p> <p>Domain name in the format of mnc<MNC>.mcc<MCC>.gprs, optionally preceded by one or more labels each separated by a dot. <MNC> and <MCC> are digits.</p> <p>Example: mnc012.mcc345.gprs</p>
epsIndividualDefaultContextId	Unsigned integer	Optional ⁽¹⁾	<p>Specifies, individually for the EPS MultiServiceConsumer, a default APN configuration among the allowed ones.</p> <p>The allowed ones are either those in the Individual Context Id list, if defined. Otherwise, it is those allowed APN configurations of the associated configured Profile.</p> <p>It is not possible for a wildcard APN to be the Default Context Id for an EPS MultiServiceConsumer</p> <p>If defined, during traffic the value overrides the value in the corresponding attribute of the associated configured Profile.</p> <p>The entry cannot be removed when there is a static IP address assigned to the MultiSC (EpsUserIpV4Address or EpsUserIpV6Address) for an entry in the list.</p>
epsIndividualContextId	Unsigned integer	Optional	<p>Specifies, individually for the EPS MultiServiceConsumer, the allowed APN configurations.</p> <p>If one, or more Individual Context Identifiers are defined for the EPS MultiServiceConsumer there must also be an individual Default Context Id defined that corresponds to one of these allowed APNs.</p> <p>The entry that corresponds to the Default Context Id cannot be removed.</p> <p>If defined, during traffic the value overrides the value in the corresponding Context Id list in the associated configured Profile.</p> <p>Whenever there is a static IP address assigned to the MultiSC (EpsUserIpV4Address or EpsUserIpV6Address) for an entry in this list, the entry cannot be removed.</p>



Parameter	Type	Occurrence	Description
epsIndividualSubscribedChargingCharacteristic	Integer	Optional	Specifies, individually for the EPS MultiServiceConsumer the subscribed charging profile assigned to the subscriber. If defined, during traffic the value overrides the value in the corresponding attribute of the associated configured Profile.
epsIndividualAmbrMaximalUplinkFlow	Unsigned integer	Optional	Specifies, individually for the EPS MultiServiceConsumer, the AMBR IP-CAN session level QoS parameter and it indicates the maximum requested bandwidth in bits per second for an uplink IP flow. If defined, during traffic the value overrides the value in the corresponding attribute of the associated configured Profile.
epsIndividualAmbrMaximalDownlinkFlow	Unsigned integer	Optional	Specifies, individually for the EPS MultiServiceConsumer, the AMBR IP-CAN session level QoS parameter and it indicates the maximum requested bandwidth in bits per second for a downlink IP flow. If defined, during traffic the value overrides the value in the corresponding attribute of the associated configured Profile.
epsIndividualRatFrequencyPriorityId	Unsigned integer	Optional	Specifies, individually for the EPS MultiServiceConsumer, the Subscriber Profile Identity for Radio Access Technology (RAT)/Frequency Priority. If defined, during traffic the value overrides the value in the corresponding attribute of the associated configured Profile.
epsIndividualMappingContextId	String Multi-value attribute structured with separator "\$" EPSContextId: uint8 APNContextId: uint32	Optional	This attribute specifies, individually for the EPS MultiServiceConsumer, the mapping between the APN Context Ids allowed for this user and an EPS Context Id used for traffic purposes. This allows to map the APN Context Ids at configuration level to EPS user-specific value. If it is not defined the applicable value for the EPS MultiServiceConsumer during the traffic, is the one set in the EpsIndContextId. If it is present, then EpsIndContextId is not taken into account. Format: EPSContextId\$APNContextId For example, "2\$4563"
epsIndividualUeUsageType	Integer minInclusive value="0" maxInclusive value="255"	Optional	This attribute indicates the usage characteristics of the UE that enables the selection of a specific Dedicated Core Network (DCN). If it is not defined, the applicable value for the DCN is the one set in the associated configured Profile (EpsProfileId) in the FE.



Parameter	Type	Occurrence	Description
epsIndividualRauTauTimer ⁽²⁾	Integer minInclusive value="0" maxInclusive value="4294967295"	Optional	<p>This attribute indicates the subscribed periodic RAU/TAU timer value in seconds.</p> <p>If not defined, the applicable value for the EPS multiServiceConsumer during traffic is the one set in the associated configured Profile (epsProfileId) or fallback Profile if used.</p>
epsRoamingRestriction	Boolean {true, false}	Optional	<p>Contains information whether there are roaming restrictions for this MultiSC or not. If TRUE, the attribute epsRoamingAllowed applies; if FALSE, roaming restriction is turned off for the EPS MultiSC.</p> <p>If not defined the roaming allowed for the EPS MultiSC during traffic is defined by epsRoamingAllowed.</p>
epsRegionalRoamingServiceAreaId	Unsigned Integer minInclusive value="1" maxInclusive value="65535"	Optional	<p>This attribute indicates the Roaming Service Area assigned to the EPS user for Roaming Service Restriction support. It must be pointing to an existing HSS-EsmRoamingServiceAreaId configured in the HSS-FE.</p>
epsAccessRestriction ⁽³⁾	String Enumeration value = "E-UTRAN-DENIED" Enumeration value = "NON-3GPP-ACC-DENIED" Enumeration value = "ALL-DENIED"	Optional	<p>Specifies those accesses types restricted for the EPS MultiSC.</p> <p>If not defined all accesses types are allowed.</p> <ul style="list-style-type: none">• (E-UTRAN-DENIED), the MultiSC is not to be given E-UTRAN access• (NON-3GPP-ACC-DENIED), the MultiSC is not to be given non-3GPP access• (ALL-DENIED), the MultiSC is not to be given access at all.



Parameter	Type	Occurrence	Description
epsExtendedAccessRestriction ⁽⁴⁾	Unsigned Integer Values depending on the bit mask: <ul style="list-style-type: none"> • Bit 0: UTRAN Not Allowed • Bit 1: GERAN Not Allowed • Bit 2: GAN Not Allowed • Bit 3: I-HSPA-Evolution Not Allowed • Bit 4: E-UTRAN Not Allowed • Bit 5: HO-To-Non-3GPP Access Not Allowed • Bit 6: EUTRAN-NB-IoT Not Allowed All combinations of the previous settings are possible. minInclusive value="0" maxInclusive value="127"	Optional	This parameter specifies those access types restricted for the EPS MultiSC. If this parameter is not defined or set to 0, all access types are allowed. <ul style="list-style-type: none"> • 16 - E-UTRAN-DENIED, the MultiSC is not to be given the E-UTRAN access. • 32 - Hand over to the Non-3GPP access is restricted. The rest of accesses are allowed. • 64 - IoT feature traffic is not allowed. • 127 - All possible accesses are denied, no access to the MultiSC.
epsUserIpV4Address	String maxLength value="255"	Optional	Contains the static IPv4 addresses allocated to the MultiSC per APN Context ID. Structured with separator "\$" (ContextID\$IP Address). The APN Context ID must be defined for this MultiSC in epsIndividualContextId/epsAaaIndividualContextId attribute, if epsIndividualContextId/epsAaaIndividualContextId attribute is defined for the MultiSC.
epsUserIpV6Address	String maxLength value="255"	Optional	Contains the static IPv6 addresses and IPv6 prefixes allocated to the user per APN Context ID. Structured with separator "\$" (ContextID\$IP Address). The APN Context ID must be defined for this MultiSC in epsIndividualContextId/epsAaaIndividualContextId attribute, if epsIndividualContextId/epsAaaIndividualContextId attribute is defined for the MultiSC.

Parameter	Type	Occurrence	Description
epsTenantId	Integer minInclusive value="1" maxInclusive value="100"	Optional	This attribute indicates the identifier of the Tenant Configuration associated to the EPS MultiSC. It can only take values in the range [1-100].
epsSessionTransfer Number	String minLength value ="5" maxLength value ="15" Pattern value="[0-9]*"	Optional	This parameter indicates the Session Transfer Number (STN) in international number format for Single Radio Voice Call Continuity (STN-SR), which is used for SRVCC call transfer to be downloaded to the MME.
epsMultimediaPriorityService	Unsigned Integer Values depending on the bit mask: <ul style="list-style-type: none">• Bit 0: the MPS-CS-Priority. It subscribes the UE to the eMLPP or 1xRTT priority service in the CS domain.• Bit 1: the MPS-EPS-Priority. It subscribes the UE to the priority service in the EPS domain.	Optional	This parameter indicates whether the EPS user is subscribed to the priority service in the EPC network.
epsZoneCodeSetId	Unsigned Integer	Optional	This parameter indicates the zone code set assigned to the EPS user for regional services supports. It must point to an existing HSS - ZoneCodeSetId in the HSS-FE configuration.
epsCommonMsisdn ⁽⁵⁾	String minLength value ="5" maxLength value ="15" Pattern value="[0-9]*"	Optional	This Common MSISDN is associated to multiple LTE subscriptions, that is, to allow the provisioning of multiple subscriptions in LTE with the same MSISDN.
commonMsisdn ⁽⁵⁾	String minLength value ="5" maxLength value ="15" Pattern value="[0-9]*"	Optional	This Common MSISDN is associated to multiple LTE subscriptions, that is, to allow the provisioning of multiple subscriptions in LTE with the same MSISDN.



Parameter	Type	Occurrence	Description
epsAaaOdb	String Enumeration value ="NONE" Enumeration value ="ODB-ALL"	Optional	Contains the EPS Operator Determined Barring (ODB) indicator for non-3GPP access to be applied to the MultiSC: <ul style="list-style-type: none"> • (NONE), the MultiSC has access to all EPS packet-oriented services. • (ODB-ALL), all EPS packet-oriented services are barred for the MultiSC.
epsAaaIndividualDefaultContextId	Unsigned Integer	Optional	Specifies, individually for the EPS MultiServiceConsumer, a default non-3GPP APN configuration among the allowed ones. The allowed ones are either those in the Individual Context Id list, if defined. Otherwise, it is those allowed APN configurations of the associated configured Profile. It is not possible for a wildcard APN to be the Default Context Id for an EPS MultiServiceConsumer. If defined, during traffic the value overrides the value in the corresponding attribute of the associated configured Profile.
epsAaaIndividualContextId	Unsigned Integer	Optional	Specifies, individually for the EPS MultiServiceConsumer, the allowed non-3GPP APN configurations. If one, or more Individual Context Identifiers are defined for the EPS MultiServiceConsumer there must also be an individual Default Context Id defined that corresponds to one of these allowed APNs. The entry that corresponds to the Default Context Id cannot be removed. If defined, during traffic the value overrides the value in the corresponding Context Id list in the associated configured Profile.
epsAaaIndividualMappingContextId	String Multi-value attribute structured with separator "\$" EPSContextId: uint8 APNContextId: uint32	Optional	Specifies, individually for the EPS MultiServiceConsumer, the mapping between the non-3GPP APN Context Ids allowed for this user and an EPS Context Id used for traffic purposes. This allows to map the APN Context Ids at configuration level to EPS user-specific value. If it is not defined the applicable value for the EPS MultiServiceConsumer during the traffic, is the one set in the EpsAaaIndContextId. If it is present, then EpsAaaIndContextId is not taken into account. Format: EPSContextId\$APNContextId For example, "2\$4563"



Parameter	Type	Occurrence	Description
zoneid	Integer minInclusive value="0" maxInclusive value="65535"	Optional	This attribute indicates the geographical area that the MultiSC belongs to. If EPS is added to an already existing MultiSC, this zoneid will be ignored.
epsAdminDisable	Boolean {true, false}	Optional	This parameter indicates whether the Administrative User Disable function is assigned to the EPS user.
epsNam	Integer minInclusive value="0" maxInclusive value="2"	Optional	Network Access Mode of EPS service 0 = Both GPRS and non-GPRS 1 = Non-GPRS 2 = GPRS



Parameter	Type	Occurrence	Description
epsAaaMIP6FeatureVector	String Enumeration value = "NO_CAPABILITY" Enumeration value = "MIP6_INTEGRATED" Enumeration value = "LOCAL_HOME_AGENT_ASSIGNMENT" Enumeration value = "PMIP6_SUPPORTED" Enumeration value = "IP4_HOA_SUPPORTED" Enumeration value = "LOCAL_MAG_ROUTING_SUPPORTED" Enumeration value = "ASSIGN_LOCAL_IP" Enumeration value = "MIP4_SUPPORTED" Enumeration value = "OPTIMIZED_IDLE_MODE_MOBILITY" Enumeration value = "GTPv2_SUPPORTED"	Optional	<p>This attributes indicates the authorized IP mobility capabilities of the non-3GPP access network from HSS to 3GPP AAA.</p> <ul style="list-style-type: none"> (NO_CAPABILITY), all Mobile IPv6 functions are void. If NO_CAPABILITY is present, other values will be ignored. As a result the value of epsAaaMIP6FeatureVector will be NO_CAPABILITY. (MIP6_INTEGRATED), it means that the Mobile IPv6 integrated scenario bootstrapping functionality is supported. For details, refer to Reference [9]. (LOCAL_HOME_AGENT_ASSIGNMENT), it indicates that a local home agent outside the home realm is requested or the assignment of local Home Agents(HAs) is authorized by the Diameter server. For details, refer to Reference [10]. (PMIP6_SUPPORTED), It indicates to the 3GPP AAA Server that it supports PMIPv6. For details, refer to Reference [9]. (IP4_HOA_SUPPORTED), it indicates that the Mobile Access Gateway (MAG) implements a minimal functionality of a DHCP server (and a relay) and is able to deliver IPv4-MN-HoA to the Mobile Node (MN). For details, refer to Reference [11]. (LOCAL_MAG_ROUTING_SUPPORTED), direct routing of IP packets between MNs anchored to the same MAG is supported. For details, refer to Reference [11]. (ASSIGN_LOCAL_IP), it indicates to the non-3GPP access network that the non-3GPP access network shall assign to the user a local IP address (for Host Based Mobility (HBM)). For details, refer to Reference [9]. (MIP4_SUPPORTED), it indicates to the 3GPP AAA Server that it supports MIPv4 FA-CoA mode. For details, refer to Reference [9]. (OPTIMIZED_IDLE_MODE_MOBILITY), it indicates if the PDN GW information needs to be updated for the case of idle mode mobility from E-UTRAN to HRPD access. For details, refer to Reference [9]. (GTPv2_SUPPORTED), it indicates to the 3GPP AAA Server that it supports GTPv2. For details, refer to Reference [9].
epsMdtUserConsent ⁽²⁾	Integer minInclusive value="0" maxInclusive value="1"	Optional	This attribute indicates whether the user has given his consent for MDT activation or not.



- (1) If the Individual Context Identifier List is defined for the EPS MultiServiceConsumer there must also be an individual Default Context Id defined that belong to the allowed APNs in `epsIndividualContextId`.
- (2) This parameter is applicable for HSS 1.6 and onwards.
- (3) This parameter is applicable for HSS 11B.
- (4) This parameter is applicable for HSS 12A and onwards.
- (5) There is a choice to use the `commonMsisdn` or the `epsCommonMsisdn` attribute. Both are supported for *Create* and *Set* operations. The recommended option is to use `commonMsisdn`, since `epsCommonMsisdn` for *Create* and *Set* operations are phased out in a later release.

The following attributes, `epsAccessRestriction`, and `epsExtendedAccessRestriction` included in the table above, are mutually exclusive. This means that only one can be used.

The `epsExtendedAccessRestriction` is needed to make use of the new alternatives for this parameter from HSS 12A and onwards. If for example the CAI3G interface is not updated and only the HSS 11B alternatives for access restriction is used, then PG is to be configured to run in HSS 11B using the `epsAccessRestriction` attribute.

To know which one to use there is a configuration parameter, `ExARD` in the activation logic function that must be set to indicate which one of these attributes that are valid to use. If the `ExARD` parameter is set to `true`, use the `ExtendedAccessRestriction` attribute in the inbound interface to provision HSS 12A and onwards. If it is set to `false`, use the `AccessRestriction` attribute in the inbound interface to provision HSS 11B.

In Example 2, for HSS 11B, `<hss:epsAccessRestriction>NON-3GPP-ACC-DENIED</hss:epsAccessRestriction>` is used. If this example was to be sent towards HSS 12A or later, `<hss:epsExtendedAccessRestriction>32</hss:epsExtendedAccessRestriction>` would be used instead.

For more information, see *Configuration Manual for Resource Activation*, Reference [6], and *User Guide for Resource Activation*, Reference [7].

2.2 Examples

Request Example

Example 2 shows an example of a `CreateEPSPMultiSC` request.



```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:cai3="http://schemas.ericsson.com/cai3gl.2/" xmlns:hss="http://
schemas.ericsson.com/ma/HSS/">
  <soapenv:Header>
    <cai3:SessionId>d78e0fd9ff6c436984bd4d998633487a</cai3:SessionId>
  </soapenv:Header>
  <soapenv:Body>
    <cai3:Create>
      <cai3:MOTType>EPSMultiSC@http://schemas.ericsson.com/ma/HSS</cai3:MOTType>
      <cai3:MOId>
        <hss:imsi>123456</hss:imsi>
      </cai3:MOId>
      <cai3:MOAttributes>
        <hss:CreateEPSMultiSC imsi="123456">
          <hss:imsi>123456</hss:imsi>
          <hss:msisdn>54321</hss:msisdn>
          <hss:epsProfileId>UserProfile1</hss:epsProfileId>
          <hss:epsOdb>NONE</hss:epsOdb>
          <hss:epsRoamingAllowed>true</hss:epsRoamingAllowed>
          <hss:epsIndividualApnOperatorIdentifierReplacement>mnc012.mcc345.gprs
          </hss:epsIndividualApnOperatorIdentifierReplacement>
          <hss:epsIndividualDefaultContextId>22
          </hss:epsIndividualDefaultContextId>
          <hss:epsIndividualContextId>22</hss:epsIndividualContextId>
          <hss:epsIndividualContextId>33</hss:epsIndividualContextId>
          <hss:epsIndividualContextId>44</hss:epsIndividualContextId>
          <hss:epsIndividualRauTauTimer>3600</hss:epsIndividualRauTauTimer>
          <hss:epsRoamingRestriction>>false</hss:epsRoamingRestriction>
          <hss:epsRegionalRoamingServiceAreaId>12345
          </hss:epsRegionalRoamingServiceAreaId>
          <hss:epsAccessRestriction>E-UTRAN-DENIED</hss:epsAccessRestriction>
          <hss:epsUserIPv4Address>10.64.7.12</hss:epsUserIPv4Address>
          <hss:epsUserIPv6Address>2$2001:0db8:0::0:1428:07ab/64
          </hss:epsUserIPv6Address>
          <hss:epsTenantId>12</hss:epsTenantId>
          <hss:epsAaaOdb>ODB-ALL</hss:epsAaaOdb>
          <hss:epsAaaIndividualDefaultContextId>555</hss:epsAaaIndividualDefaultContextId>
          <hss:epsAaaIndividualContextId>555</hss:epsAaaIndividualContextId>
          <hss:epsAaaIndividualContextId>666</hss:epsAaaIndividualContextId>
          <hss:epsAaaIndividualContextId>777</hss:epsAaaIndividualContextId>
          <hss:epsAaaIndividualMappingContextId>2$555</hss:epsAaaIndividualMappingContextId>
          <hss:zoneid>128</hss:zoneid>
          <hss:epsAdminDisable>true</hss:epsAdminDisable>
          <hss:epsNam>0</hss:epsNam>
          <hss:epsAaaMIP6FeatureVector>MIP6_INTEGRATED</hss:epsAaaMIP6FeatureVector>
          <hss:epsMdtUserConsent>0</hss:epsMdtUserConsent>
        </hss:CreateEPSMultiSC>
      </cai3:MOAttributes>
    </cai3:Create>
  </soapenv:Body>
</soapenv:Envelope>
```

Example 2 Create EPSMultiSC Request Message

An LTE subscriber with IMSI 123456 is initiated.

Response Example

Example 3 shows an example of a CreateEPSMultiSC response message.



```
<S:Envelope
xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:cai3g="http://schemas.ericsson.com/cai3gl.2/">
  <S:Header>
    <cai3g:SessionId>d78e0fd9ff6c436984bd4d998633487a
    </cai3g:SessionId>
  </S:Header>
  <S:Body>
    <ns2:CreateResponse xmlns:ns2=
      "http://schemas.ericsson.com/cai3gl.2/">
      <ns2:MOId>
        <hss:imsi xmlns:hss=
          "http://schemas.ericsson.com/ma/HSS/">123456
        </hss:imsi>
      </ns2:MOId>
    </ns2:CreateResponse>
  </S:Body>
</S:Envelope>
```

Example 3 *Create EPSMultiSC Response Message*



3 Get EPSMultiSC

This section covers the EPS command `GetEPSMultiSC`.

MOType

`EPSMultiSC@http://schemas.ericsson.com/ma/HSS/`

3.1 Request Data

3.1.1 Parameters

MOId

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

Table 5 Get EPSMultiSC MOId

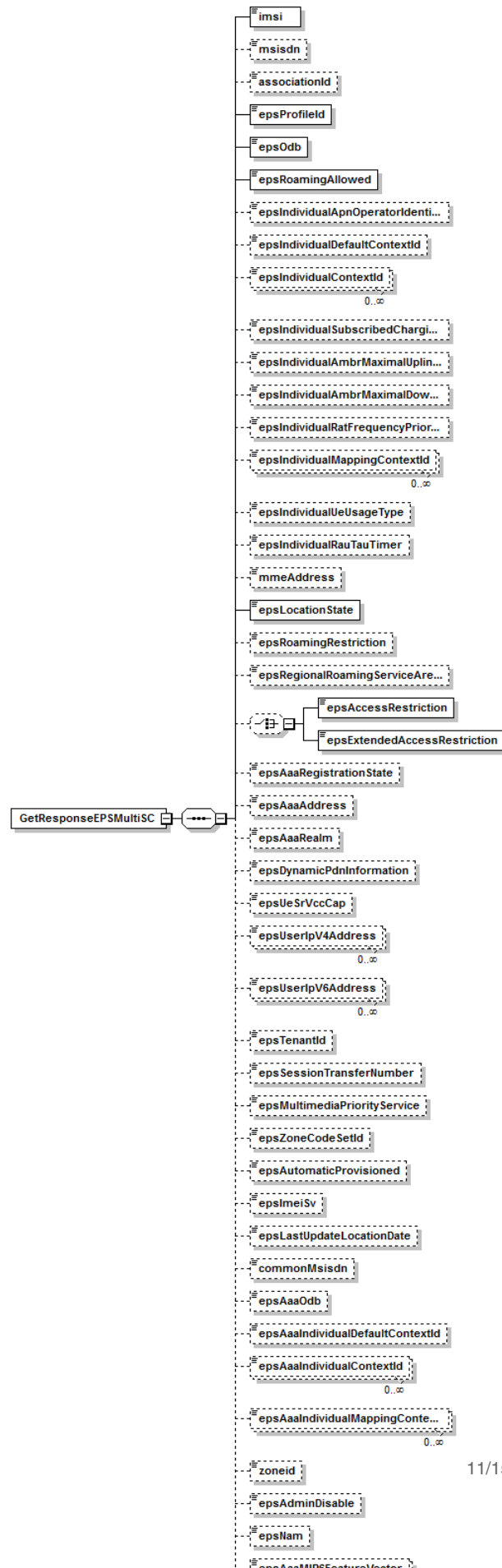
Parameter	Type	Occurrence	Description
imsi	String minLength value="6" maxLength value="15" Pattern value="[0-9]*"	Optional	The IMSI number of the subscriber. Cannot be used if MSISDN is used.
msisdn	String minLength value="5" maxLength value="15" Pattern value="[0-9]*"	Optional	The MSISDN number of the subscriber. Cannot be used if IMSI is used.

3.2 Response Data

3.2.1 Parameters

MOAttributes

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





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

Table 6 Get Response EPSMultiSC Parameters

Parameter	Type	Occurrence	Description
imsi	String minLength value="6" maxLength value="15" Pattern value="[0-9]*"	Mandatory	The IMSI number of the subscriber If there is an ongoing IMSI Changeover on the subscriber tied to the IMSI used in the request, it will return the new IMSI of the subscriber.
msisdn	String minLength value="5" maxLength value="15" <xs:pattern value="[0-9]*"	Optional	Mobile Subscriber Integrated Services Digital Network (MSISDN). Used for charging purposes.
epsProfileId	String maxLength value="255"	Mandatory	Contains reference to the EPS profile assigned to the MultiSC. The content of the EPS profile is defined through a configuration interface; refer to Reference [4].
epsOdb	String Enumeration value = "NONE" Enumeration value = "ODB-ALL" Enumeration value = "ODB-HPLMN-APN" Enumeration value = "ODB-VPLMN-APN"	Mandatory	Contains the EPS Operator Determined Barring (ODB) indicator to be applied to the MultiSC: <ul style="list-style-type: none"> • (NONE), the MultiSC has access to all EPS packet-oriented services • (ODB-ALL), all EPS packet-oriented services are barred for the MultiSC • (ODB-HPLMN-APN), EPS packet-oriented services are barred for the MultiSC from access points that are within the home PLM network, while the MultiSC is roaming in a visited PLM network • (ODB-VPLMN-APN), EPS packet-oriented services are barred for the MultiSC from access points that are within the roamed visited PLM network
epsRoamingAllowed	Boolean {true, false}	Mandatory	Tells if the MultiSC is allowed to roam and has access to the EPS service.



Parameter	Type	Occurrence	Description
epsIndividualApnOperatorIdentifierReplacement	String maxLength value="255"	Optional	<p>Specifies, individually for the EPS MultiServiceConsumer, the domain name to replace the APN Operator Identifier when constructing the PDN Gateway (GW) FQDN upon which to perform a DNS resolution.</p> <p>If defined, during traffic the value overrides the value in the corresponding attribute of the associated configured Profile.</p> <p>Domain name in the format of <code>mnc<MNC>.mcc<MCC>.gprs</code>, optionally preceded by one or more labels each separated by a dot. <MNC> and <MCC> are digits.</p> <p>Example: <code>mnc012.mcc345.gprs</code></p>
epsIndividualDefaultContextId	Unsigned integer	Optional	<p>Specifies, individually for the EPS MultiServiceConsumer, a default APN configuration among the allowed ones.</p> <p>The allowed ones are either those in the Individual Context Id list, if defined. Otherwise, it is those allowed APN configurations of the associated configured Profile.</p> <p>It is not possible for a wildcard APN to be the Default Context Id for an EPS MultiServiceConsumer</p> <p>If defined, during traffic the value overrides the value in the corresponding attribute of the associated configured Profile.</p>
epsIndividualContextId	Unsigned integer	Optional	<p>Specifies, individually for the EPS MultiServiceConsumer, the allowed APN configurations.</p> <p>If one, or more Individual Context Identifiers are defined for the EPS MultiServiceConsumer there must also be an individual Default Context Id defined that corresponds to one of these allowed APNs.</p> <p>The entry that corresponds to the Default Context Id cannot be removed.</p> <p>If defined, during traffic the value(s) overrides the value(s) in the corresponding Context Id list in the associated configured Profile.</p>
epsIndividualSubscribedChargingCharacteristic	Integer	Optional	<p>Specifies, individually for the EPS MultiServiceConsumer the subscribed charging profile assigned to the subscriber.</p> <p>If defined, during traffic the value overrides the value in the corresponding attribute of the associated configured Profile.</p>



Parameter	Type	Occurrence	Description
epsIndividualAmbrMaximalUplinkIpFlow	Unsigned integer	Optional	<p>Specifies, individually for the EPS MultiServiceConsumer, the AMBR IP-CAN session level QoS parameter and it indicates the maximum requested bandwidth in bits per second for an uplink IP flow.</p> <p>If defined, during traffic the value overrides the value in the corresponding attribute of the associated configured Profile.</p>
epsIndividualAmbrMaximalDownlinkIpFlow	Unsigned integer	Optional	<p>Specifies, individually for the EPS MultiServiceConsumer, the AMBR IP-CAN session level QoS parameter and it indicates the maximum requested bandwidth in bits per second for a downlink IP flow.</p> <p>If defined, during traffic the value overrides the value in the corresponding attribute of the associated configured Profile.</p>
epsIndividualRatFrequencyPriorityId	Unsigned integer	Optional	<p>Specifies, individually for the EPS MultiServiceConsumer, the Subscriber Profile Identity for Radio Access Technology (RAT)/Frequency Priority.</p> <p>If defined, during traffic the value overrides the value in the corresponding attribute of the associated configured Profile.</p>
epsIndividualMappingContextId	String Multi-value attribute structured with separator "\$" EPSContextId: uint8 APNContextId: uint32	Optional	<p>This attribute specifies, individually for the EPS MultiServiceConsumer, the mapping between the APN Context Ids allowed for this user and an EPS Context Id used for traffic purposes. This allows to map the APN Context Ids at configuration level to EPS user-specific value.</p> <p>If it is not defined the applicable value for the EPS MultiServiceConsumer during the traffic, is the one set in the EpsIndContextId.</p> <p>If it is present, then EpsIndContextId is not taken into account.</p> <p>Format: EPSContextId\$APNContextId</p> <p>For example, "2\$4563"</p>
epsIndividualUeUsageType	Integer minInclusive value="0" maxInclusive value="255"	Optional	<p>This attribute indicates the usage characteristics of the UE that enables the selection of a specific Dedicated Core Network (DCN).</p> <p>If it is not defined, the applicable value for the DCN is the one set in the associated configured Profile (EpsProfileId) in the FE.</p>

Parameter	Type	Occurrence	Description
epsIndividualRauTauTimer ⁽¹⁾	Integer minInclusive value="0" maxInclusive value="4294967295"	Optional	This attribute indicates the subscribed periodic RAU/TAU timer value in seconds. If not defined, the applicable value for the EPS multiServiceConsumer during traffic is the one set in the associated configured Profile (epsProfileId) or fallback Profile if used.
mmeAddress	String maxLength value="255"	Optional	Contains the domain name of the MME node currently serving the MultiSC.
epsLocationState	String Enumeration value = "UNKNOWN" Enumeration value = "LOCATED" Enumeration value = "PURGED"	Mandatory	Contains the MultiSC location state.
epsRoamingRestriction	Boolean {true, false}	Optional	Contains information whether there are roaming restrictions for this MultiSC or not. If TRUE, the attribute epsRoamingAllowed applies; if FALSE, roaming restriction is turned off for the EPS MultiSC. If not defined the roaming allowed for the EPS MultiSC during traffic is defined by epsRoamingAllowed.
epsRegionalRoamingServiceAreaId	Unsigned Integer minInclusive value="1" maxInclusive value="65535"	Optional	This attribute indicates the Roaming Service Area assigned to the EPS user for Roaming Service Restriction support. It must be pointing to an existing HSS-EsmRoamingServiceAreaId configured in the HSS-FE.
epsAccessRestriction ⁽²⁾	String Enumeration value = "E-UTRAN-DENIED" Enumeration value = "NON-3GPP-ACC-DENIED" Enumeration value = "ALL-DENIED"	Optional	Specifies those accesses types restricted for the EPS MultiSC. If not defined all accesses types are allowed. <ul style="list-style-type: none"> (E-UTRAN-DENIED), the MultiSC is not to be given E-UTRAN access (NON-3GPP-ACC-DENIED), the MultiSC is not to be given non-3GPP access (ALL-DENIED), the MultiSC is not to be given access at all.



Parameter	Type	Occurrence	Description
epsExtendedAccessRestriction ⁽³⁾	Unsigned Integer Values depending on the bit mask: <ul style="list-style-type: none"> • Bit 0: UTRAN Not Allowed • Bit 1: GERAN Not Allowed • Bit 2: GAN Not Allowed • Bit 3: I-HSPA-Evolution Not Allowed • Bit 4: E-UTRAN Not Allowed • Bit 5: HO-To-Non-3GPP Access Not Allowed • Bit 6: EUTRAN-NB-IoT Not Allowed All combinations of the previous settings are possible. minInclusive value="0" maxInclusive value="127"	Optional	This parameter specifies those access types restricted for the EPS MultiSC. If this parameter is not defined or set to 0, all access types are allowed. <ul style="list-style-type: none"> • 16 - E-UTRAN-DENIED, the MultiSC is not to be given the E-UTRAN access. • 32 - Hand over to the Non-3GPP access is restricted. The rest of accesses are allowed. • 64 - CIoT feature traffic is not allowed. • 127 - All possible accesses are denied, no access to the MultiSC.
epsAaaAddress	String maxLength value="255"	Optional	The diameter identity of the 3GPP AAA server currently assigned to the EPS MultiSC.
epsAaaRealm	String maxLength value="255"	Optional	The domain name of 3GPP AAA server currently assigned to the EPS MultiSC.
epsAaaRegistrationState	String Enumeration value = "NOT_REGISTERED" Enumeration value = "AAA_ASSIGNED" Enumeration value = "REGISTERED"	Optional	Indicates the non-3GPP EPS user registration state.
epsDynamicPdnInformation	String	Optional	Shows the lists of PDN Gateways dynamically assigned to the different APNs of the MultiSC.
epsUeSrVccCap	String	Optional	This attribute indicates if the MME currently serving the EPS user supports the SRVCC Capability.



Parameter	Type	Occurrence	Description
epsUserIpV4Address	String maxLength value="255"	Optional	Contains the static IPv4 addresses allocated to the MultiSC per APN Context ID. Structured with separator "\$" (ContextID\$IP Address). The APN Context ID must be defined for this MultiSC in epsIndividualContextId/epsAaaIndividualContextId attribute, if epsIndividualContextId/epsAaaIndividualContextId attribute is defined for the MultiSC.
epsUserIpV6Address	String maxLength value="255"	Optional	Contains the static IPv6 addresses and IPv6 prefixes allocated to the user per APN Context ID. Structured with separator "\$" (ContextID\$IP Address). The APN Context ID must be defined for this MultiSC in epsIndividualContextId/epsAaaIndividualContextId attribute, if epsIndividualContextId/epsAaaIndividualContextId attribute is defined for the MultiSC.
epsTenantId	Integer Integer minInclusive value="1" maxInclusive value="100"	Optional	Indicates the identifier of the Tenant Configuration associated to the EPS MultiSC. It can only take values in the range [1-100].
epsSessionTransferNumber	String minLength value ="5" maxLength value ="15" Pattern value=" [0-9] **"	Optional	This parameter indicates the STN in international number format for the STN-SR, which is used for SRVCC call transfer to be downloaded to the MME.
epsMultimediaPriorityService	Unsigned Integer Values depending on bit mask: <ul style="list-style-type: none">• Bit 0: the MPS-CS-Priority. It subscribes the UE to the eMLPP or 1xRTT priority service in the CS domain.• Bit 1: the MPS-EPS-Priority. It subscribes the UE to the priority service in the EPS domain.	Optional	This parameter indicates whether the EPS user is subscribed to the priority service in the EPC network.
epsZoneCodeSetId	Unsigned Integer	Optional	This parameter indicates the zone code set assigned to the EPS user for regional services supports. It must point to an existing HSS-ZoneCodeSetId in the HSS-FE configuration.



Parameter	Type	Occurrence	Description
epsAutomaticProvisioned	Boolean {true, false}	Optional	This parameter indicates whether the EPS MultiServiceConsumer has been automatically provisioned or not. Holds value TRUE or FALSE
epsImeiSv	String minLength value ="0" maxLength value ="16" Pattern value="[0-9]*"	Optional	This parameter indicates the International Mobile Station Equipment Identity and Software Version (IMEISV) that is connecting the EPS user, or the one it used to connect in the last attach to the E-UTRAN.
epsLastUpdateLocationDate	String Format UTC: "YYYYMMDDThhmmssddd" where T is a literal "T". maxLength value ="255"	Optional	This parameter indicates the time and date when the location information of the EPS MultiServiceConsumer was last updated.
commonMsisdn	String minLength value ="5" maxLength value ="15" Pattern value="[0-9]*"	Optional	This Common MSISDN is associated to multiple LTE subscriptions, that is, to allow the provisioning of multiple subscriptions in LTE with the same MSISDN.
epsAaaOdb	String Enumeration value ="NONE" Enumeration value ="ODB-ALL"	Optional	Contains the EPS Operator Determined Barring (ODB) indicator for non-3GPP access to be applied to the MultiSC: <ul style="list-style-type: none">• (NONE), the MultiSC has access to all EPS packet-oriented services.• (ODB-ALL), all EPS packet-oriented services are barred for the MultiSC.
epsAaaIndividualDefaultContextId	Unsigned integer	Optional	Specifies, individually for the EPS MultiServiceConsumer, a default non-3GPP APN configuration among the allowed ones. The allowed ones are either those in the Individual Context Id list, if defined. Otherwise, it is those allowed APN configurations of the associated configured Profile. It is not possible for a wildcard APN to be the Default Context Id for an EPS MultiServiceConsumer. If defined, during traffic the value overrides the value in the corresponding attribute of the associated configured Profile.



Parameter	Type	Occurrence	Description
epsAaaIndividualContextId	Unsigned integer	Optional	<p>Specifies, individually for the EPS <code>MultiServiceConsumer</code>, the allowed non-3GPP APN configurations.</p> <p>If one, or more Individual Context Identifiers are defined for the EPS <code>MultiServiceConsumer</code> there must also be an individual Default Context Id defined that corresponds to one of these allowed APNs.</p> <p>The entry that corresponds to the Default Context Id cannot be removed.</p> <p>If defined, during traffic the value overrides the value in the corresponding Context Id list in the associated configured Profile.</p>
epsAaaIndividualMappingContextId	String Multi-value attribute structured with separator "\$" EPSContextId: uint8 APNContextId: uint32	Optional	<p>Specifies, individually for the EPS <code>MultiServiceConsumer</code>, the mapping between the non-3GPP APN Context Ids allowed for this user and an EPS Context Id used for traffic purposes. This allows to map the APN Context Ids at configuration level to EPS user-specific value.</p> <p>If it is not defined the applicable value for the EPS <code>MultiServiceConsumer</code> during the traffic, is the one set in the <code>EpsAaaIndContextId</code>.</p> <p>If it is present, then <code>EpsAaaIndContextId</code> is not taken into account.</p> <p>Format: <code>EPSContextId\$APNContextId</code></p> <p>For example, "2\$4563"</p>
zoneid	Integer minInclusive value="0" maxInclusive value="65535"	Optional	<p>This attribute indicates the geographical area that the MultiSC belongs to.</p>
epsAdminDisable	Boolean {true, false}	Optional	<p>This parameter indicates whether the Administrative User Disable function is assigned to the EPS user.</p>
epsNam	Integer minInclusive value="0" maxInclusive value="2"	Optional	<p>Network Access Mode of EPS service</p> <p>0 = Both GPRS and non-GPRS</p> <p>1 = Non-GPRS</p> <p>2 = GPRS</p>



Parameter	Type	Occurrence	Description
epsAaaMIP6FeatureVector	String Enumeration value ="NO_CAPABILITY" Enumeration value ="MIP6_INTEGRATED" Enumeration value ="LOCAL_HOME_AGENT_ASSIGNMENT" Enumeration value ="PMIP6_SUPPORTED" Enumeration value ="IP4_HOA_SUPPORTED" Enumeration value ="LOCAL_MAG_ROUTING_SUPPORTED" Enumeration value ="ASSIGN_LOCAL_IP" Enumeration value ="MIP4_SUPPORTED" Enumeration value ="OPTIMIZED_IDLE_MODE_MOBILITY" Enumeration value ="GTPv2_SUPPORTED"	Optional	<p>This attribute indicates the authorized IP mobility capabilities of the non-3GPP access network from HSS to 3GPP AAA.</p> <ul style="list-style-type: none"> • (NO_CAPABILITY), all Mobile IPv6 functions are void. If NO_CAPABILITY is present, other values will be ignored. As a result the value of epsAaaMIP6FeatureVector will be NO_CAPABILITY. • (MIP6_INTEGRATED), it means that the Mobile IPv6 integrated scenario bootstrapping functionality is supported. For details, refer to Reference [9]. • (LOCAL_HOME_AGENT_ASSIGNMENT), it indicates that a local home agent outside the home realm is requested or the assignment of local Home Agents(HAs) is authorized by the Diameter server. For details, refer to Reference [10]. • (PMIP6_SUPPORTED), It indicates to the 3GPP AAA Server that it supports PMIPv6. For details, refer to Reference [9]. • (IP4_HOA_SUPPORTED), it indicates that the Mobile Access Gateway (MAG) implements a minimal functionality of a DHCP server (and a relay) and is able to deliver IPv4-MN-HoA to the Mobile Node (MN). For details, refer to Reference [11]. • (LOCAL_MAG_ROUTING_SUPPORTED), direct routing of IP packets between MNs anchored to the same MAG is supported. For details, refer to Reference [11]. • (ASSIGN_LOCAL_IP), it indicates to the non-3GPP access network that the non-3GPP access network shall assign to the user a local IP address (for Host Based Mobility (HBM)). For details, refer to Reference [9]. • (MIP4_SUPPORTED), it indicates to the 3GPP AAA Server that it supports MIPv4 FA-CoA mode. For details, refer to Reference [9]. • (OPTIMIZED_IDLE_MODE_MOBILITY), it indicates if the PDN GW information needs to be updated for the case of idle mode mobility from E-UTRAN to HRPD access. For details, refer to Reference [9]. • (GTPv2_SUPPORTED), it indicates to the 3GPP AAA Server that it supports GTPv2. For details, refer to Reference [9].
epsMdtUserConsent	Integer minInclusive value="0" maxInclusive value="1"	Optional	This attribute indicates whether the user has given his consent for MDT activation or not.



- (1) This parameter is applicable for HSS 1.6 and onwards.
- (2) This parameter is applicable for HSS 11B.
- (3) This parameter is applicable for HSS 12A and onwards.

3.3 Examples

Request Example

Example 4 shows an example of a `GetEPSMultiSC` request.

```
<soapenv:Envelope
  xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:cai3="http://schemas.ericsson.com/cai3gl.2/"
  xmlns:hss="http://schemas.ericsson.com/ma/HSS/">
  <soapenv:Header>
    <cai3:SessionId>d78e0fd9ff6c436984bd4d998633487a
    </cai3:SessionId>
  </soapenv:Header>
  <soapenv:Body>
    <cai3:Get>
      <cai3:MOType>EPSMultiSC@http://schemas.ericsson.com/ma/HSS/
      </cai3:MOType>
      <cai3:MOId>
        <hss:imsi>123456</hss:imsi>
      </cai3:MOId>
    </cai3:Get>
  </soapenv:Body>
</soapenv:Envelope>
```

Example 4 Get EPSMultiSC Request Message

Response Example

Example 5 shows an example of a `GetEPSMultiSC` response message.



```
<soapenv:Envelope
  xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:cai3g="http://schemas.ericsson.com/cai3g1.2/">
  <soapenv:Header>
    <cai3g:SessionId>d78e0fd9ff6c436984bd4d998633487a</cai3g:SessionId>
  </soapenv:Header>
  <soapenv:Body>
    <ns2:GetResponse xmlns:ns2=
      "http://schemas.ericsson.com/cai3g1.2/">
      <ns2:MOAttributes>
        <ns:GetResponseEPSMultiSC xmlns:ns=
          "http://schemas.ericsson.com/ma/HSS/">
          <ns:imsi>123456</ns:imsi>
          <ns:epsProfileId>UserProfile1</ns:epsProfileId>
          <ns:epsOdb>NONE</ns:epsOdb>
          <ns:epsRoamingAllowed>true</ns:epsRoamingAllowed>
          <ns:epsIndividualApnOperatorIdentifierReplacement>mnc012.mcc345.gprs
          </ns:epsIndividualApnOperatorIdentifierReplacement>
          <ns:epsIndividualDefaultContextId>11</ns:epsIndividualDefaultContextId>
          <ns:epsIndividualContextId>11</ns:epsIndividualContextId>
          <ns:epsIndividualContextId>22</ns:epsIndividualContextId>
          <ns:epsIndividualContextId>33</ns:epsIndividualContextId>
          <ns:epsIndividualContextId>44</ns:epsIndividualContextId>
          <ns:epsIndividualSubscribedChargingCharacteristic>3
          </ns:epsIndividualSubscribedChargingCharacteristic>
          <ns:epsIndividualRauTauTimer>3600</ns:epsIndividualRauTauTimer>
          <ns:mmeAddress>mme.ericsson.com</ns:mmeAddress>
          <ns:epsLocationState>LOCATED</ns:epsLocationState>
          <ns:epsAaaOdb>ODB-ALL</ns:epsAaaOdb>
          <ns:epsAaaIndividualDefaultContextId>555</ns:epsAaaIndividualDefaultContextId>
          <ns:epsAaaIndividualContextId>555</ns:epsAaaIndividualContextId>
          <ns:epsAaaIndividualContextId>666</ns:epsAaaIndividualContextId>
          <ns:epsAaaIndividualContextId>777</ns:epsAaaIndividualContextId>
          <ns:epsAaaIndividualMappingContextId>2$555</ns:epsAaaIndividualMappingContextId>
          <ns:zoneid>128</ns:zoneid>
          <ns:epsAdminDisable>true</ns:epsAdminDisable>
          <ns:epsNam>0</ns:epsNam>
          <ns:epsAaaMIP6FeatureVector>MIP6_INTEGRATED</ns:epsAaaMIP6FeatureVector>
          <ns:epsMdtUserConsent>0</ns:epsMdtUserConsent>
        </ns:GetResponseEPSMultiSC>
      </ns2:MOAttributes>
    </ns2:GetResponse>
  </soapenv:Body>
</soapenv:Envelope>
```

Example 5 Get EPSMultiSC Response Message

The LTE subscriber with IMSI 123456 is printed.





4 Set EPSMultiSC

This section covers the EPS command `SetEPSMultiSC`.

If the command is partly executed, depending on the exact request, it can be resolved by resending the same command. If the problem persists, the EPS service must be deleted and recreated again.

MOType

`EPSMultiSC@http://schemas.ericsson.com/ma/HSS/`

4.1 Request Data

4.1.1 Parameters

MOId

Table 7 Set EPSMultiSC MOId

Parameter	Type	Occurrence	Description
imsi	String minLength value="6" maxLength value="15" Pattern value="[0-9]*"	Mandatory	The IMSI number of the subscriber

MOAttributes

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



Figure 3 Parameters in Set EPSMultiSC



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

Table 8 Set EPSMultiSC Parameters

Parameter	Type	Occurrence	Description
imsi	String minLength value="6" maxLength value="15" Pattern value="[0-9]*"	Mandatory	The IMSI number of the subscriber
msisdn	String minLength value="5" maxLength value="15" <xs:pattern value="[0-9]*"	Optional	Mobile Subscriber Integrated Services Digital Network (ISDN) (MSISDN). Used for charging purposes.
epsProfileId	String maxLength value="255"	Optional	Contains reference to the EPS profile assigned to the MultiSC. The content of the EPS profile is defined through a configuration interface; refer to Reference [4].
epsOdb	String Enumeration value = "NONE" Enumeration value = "ODB-ALL" Enumeration value = "ODB-HPLMN-APN" Enumeration value = "ODB-VPLMN-APN"	Optional	Contains the EPS Operator Determined Barring (ODB) indicator to be applied to the MultiSC: <ul style="list-style-type: none"> • (NONE), the MultiSC has access to all EPS packet-oriented services • (ODB-ALL), all EPS packet-oriented services are barred for the MultiSC • (ODB-HPLMN-APN), EPS packet-oriented services are barred for the MultiSC from access points that are within the home PLM network, while the MultiSC is roaming in a visited PLM network • (ODB-VPLMN-APN), EPS packet-oriented services are barred for the MultiSC from access points that are within the roamed visited PLM network
epsRoamingAllowed	Boolean {true, false}	Optional	Tells if the MultiSC is allowed to roam and has access to the EPS service.
epsLocationState	String Enumeration value = "UNKNOWN"	Optional	Contains the MultiSC location state. When <code>epsLocationState</code> is set to "UNKNOWN", <code>EpsVplmnId</code> (Visited Public Land Mobile Network Identity) is deleted by Dynamic Activation according to HSS validator response if <code>EpsVplmnId</code> is not empty.

Parameter	Type	Occurrence	Description
epsIndividualApnOperatorIdentifierReplacement	String maxLength value="255"	Optional	<p>Specifies, individually for the EPS MultiServiceConsumer, the domain name to replace the APN Operator Identifier when constructing the PDN Gateway (GW) FQDN upon which to perform a DNS resolution.</p> <p>If defined, during traffic the value overrides the value in the corresponding attribute of the associated configured Profile.</p> <p>Domain name in the format of <code>mnc<MNC>.mcc<MCC>.gprs</code>, optionally preceded by one or more labels each separated by a dot. <MNC> and <MCC> are digits.</p> <p>Example: <code>mnc012.mcc345.gprs</code></p>
epsIndividualDefaultContextId	Unsigned integer	Optional ⁽¹⁾	<p>Specifies, individually for the EPS MultiServiceConsumer, a default APN configuration among the allowed ones.</p> <p>The allowed ones are either those in the Individual Context Id list, if defined. Otherwise, it is those allowed APN configurations of the associated configured Profile.</p> <p>It is not possible for a wildcard APN to be the Default Context Id for an EPS MultiServiceConsumer</p> <p>If defined, during traffic the value overrides the value in the corresponding attribute of the associated configured Profile.</p>
epsIndividualContextId	Unsigned integer	Optional	<p>Specifies, individually for the EPS MultiServiceConsumer, the allowed APN configurations.</p> <p>If one, or more Individual Context Identifiers are defined for the EPS MultiServiceConsumer there must also be an individual Default Context Id defined that corresponds to one of these allowed APNs.</p> <p>The entry that corresponds to the Default Context Id cannot be removed.</p> <p>If defined, during traffic the value(s) overrides the value(s) in the corresponding Context Id list in the associated configured Profile.</p> <p>If parts of this attribute are added or deleted, the full set of values must be provided.</p>
epsIndividualSubscribedChargingCharacteristic	Integer	Optional	<p>Specifies, individually for the EPS MultiServiceConsumer the subscribed charging profile assigned to the subscriber.</p> <p>If defined, during traffic the value overrides the value in the corresponding attribute of the associated configured Profile.</p>



Parameter	Type	Occurrence	Description
epsIndividualAmbrMaximalUplinkIpFlow	Unsigned integer	Optional	Specifies, individually for the EPS MultiServiceConsumer, the AMBR IP-CAN session level QoS parameter and it indicates the maximum requested bandwidth in bits per second for an uplink IP flow. If defined, during traffic the value overrides the value in the corresponding attribute of the associated configured Profile.
epsIndividualAmbrMaximalDownlinkIpFlow	Unsigned integer	Optional	Specifies, individually for the EPS MultiServiceConsumer, the AMBR IP-CAN session level QoS parameter and it indicates the maximum requested bandwidth in bits per second for a downlink IP flow. If defined, during traffic the value overrides the value in the corresponding attribute of the associated configured Profile.
epsIndividualRatFrequencyPriorityId	Unsigned integer	Optional	Specifies, individually for the EPS MultiServiceConsumer, the Subscriber Profile Identity for Radio Access Technology (RAT)/Frequency Priority. If defined, during traffic the value overrides the value in the corresponding attribute of the associated configured Profile.
epsIndividualMappingContextId	String Multi-value attribute structured with separator "\$" EPSContextId: uint8 APNContextId: uint32	Optional	This attribute specifies, individually for the EPS MultiServiceConsumer, the mapping between the APN Context Ids allowed for this user and an EPS Context Id used for traffic purposes. This allows to map the APN Context Ids at configuration level to EPS user-specific value. If it is not defined the applicable value for the EPS MultiServiceConsumer during the traffic, is the one set in the EpsIndContextId. If it is present, then EpsIndContextId is not taken into account. Format: EPSContextId\$APNContextId For example, "2\$4563"
epsIndividualUeUsageType	Integer minInclusive value="0" maxInclusive value="255"	Optional	This attribute indicates the usage characteristics of the UE that enables the selection of a specific Dedicated Core Network (DCN). If it is not defined, the applicable value for the DCN is the one set in the associated configured Profile (EpsProfileId) in the FE.
epsIndividualRatTimer	Integer minInclusive value="0" maxInclusive value="4294967295"	Optional	This attribute indicates the subscribed periodic RAU/TAU timer value in seconds. If not defined, the applicable value for the EPS MultiServiceConsumer during traffic is the one set in the associated configured Profile (epsProfileId) or fallback Profile if used.

Parameter	Type	Occurrence	Description
epsRoamingRestriction	Boolean {true, false}	Optional	<p>Contains information whether there are roaming restrictions for this MultiSC or not. If TRUE, the attribute <code>epsRoamingAllowed</code> applies; if FALSE, roaming restriction is turned off for the EPS MultiSC.</p> <p>If not defined the roaming allowed for the EPS MultiSC during traffic is defined by <code>epsRoamingAllowed</code>.</p>
epsRegionalRoamingServiceAreaId	Unsigned Integer minInclusive value="1" maxInclusive value="65535"	Optional	<p>This attribute indicates the Roaming Service Area assigned to the EPS user for Roaming Service Restriction support. It must be pointing to an existing HSS-EsmRoamingServiceAreaId configured in the HSS-FE.</p> <p>To remove the value of this attribute, send a set operation (Set-Delete), and include the attribute with empty value.</p>
epsAccessRestriction ⁽³⁾	String Enumeration value = "E-UTRAN-DENIED" Enumeration value = "NON-3GPP-ACC-DENIED" Enumeration value = "ALL-DENIED"	Optional	<p>Specifies those accesses types restricted for the EPS MultiSC.</p> <p>If not defined all accesses types are allowed.</p> <ul style="list-style-type: none"> • (E-UTRAN-DENIED), the MultiSC is not to be given E-UTRAN access • (NON-3GPP-ACC-DENIED), the MultiSC is not to be given non-3GPP access • (ALL-DENIED), the MultiSC is not to be given access at all.



Parameter	Type	Occurrence	Description
epsExtendedAccessRestriction ⁽⁴⁾	Unsigned Integer Values depending on the bit mask: <ul style="list-style-type: none"> • Bit 0: UTRAN Not Allowed • Bit 1: GERAN Not Allowed • Bit 2: GAN Not Allowed • Bit 3: I-HSPA-Evolution Not Allowed • Bit 4: E-UTRAN Not Allowed • Bit 5: HO-To-Non-3GPP Access Not Allowed • Bit 6: EUTRAN-NB-IoT Not Allowed All combinations of the previous settings are possible. minInclusive value="0" maxInclusive value="127"	Optional	This parameter specifies those access types restricted for the EPS MultiSC. If this parameter is not defined or set to 0, all access types are allowed. <ul style="list-style-type: none"> • 16 - E-UTRAN-DENIED, the MultiSC is not to be given the E-UTRAN access • 32 - Hand over to the Non-3GPP access is restricted. The rest of accesses are allowed. • 64 - IoT feature traffic is not allowed. • 127 – All possible accesses are denied, no access to the MultiSC.
epsAaaRegistrationState	String Enumeration value = "NOT_REGISTERED"	Optional	Indicates the non-3GPP EPS user registration state. When epsAaaRegistrationState is set to "NOT_REGISTERED", EpsAaaVplmnId (Visited Public Land Mobile Network Identity) is deleted by Dynamic Activation according to HSS validator response if EpsAaaVplmnId is not empty.
epsUserIpV4Address	String maxLength value="255"	Optional	Contains the static IPv4 addresses allocated to the MultiSC per APN Context ID. Static PDN GW assignment is a prerequisite for static IP address assignment. Structured with separator "\$" (ContextID\$IP Address). The APN Context ID must be defined for this MultiSC in epsIndividualContextId/epsAaaIndividualContextId attribute, if epsIndividualContextId/epsAaaIndividualContextId attribute is defined for the MultiSC.



Parameter	Type	Occurrence	Description
epsUserIpV6Address	String maxLength value="255"	Optional	<p>Contains the static IPv6 addresses and IPv6 prefixes allocated to the user per APN Context ID.</p> <p>Static PDN GW assignment is a prerequisite for static IP address assignment</p> <p>Structured with separator "\$" (ContextID\$IP Address).</p> <p>The APN Context ID must be defined for this MultiSC in <code>epsIndividualContextId/epsAaaIndividualContextId</code> attribute, if <code>epsIndividualContextId/epsAaaIndividualContextId</code> attribute is defined for the MultiSC.</p>
epsTenantId	Integer Integer minInclusive value="1" maxInclusive value="100"	Optional	<p>Indicates the identifier of the Tenant Configuration associated to the EPS MultiSC.</p> <p>It can only take values in the range [1-100].</p>
epsSessionTransfer Number	String minLength value ="5" maxLength value ="15" Pattern value="[0-9]*"	Optional	<p>This parameter indicates the STN in international number format for the STN-SR, which is used for SRVCC call transfer to be downloaded to the MME.</p>
epsMultimediaPriorit yService	Unsigned Integer Values depending on the bit mask: <ul style="list-style-type: none">• Bit 0: the MPS-CS-Priority. It subscribes the UE to the <code>eMLPP</code> or <code>1xRTT</code> priority service in the CS domain.• Bit 1: the MPS-EPS-Priority. It subscribes the UE to the priority service in the EPS domain.	Optional	<p>This parameter indicates whether the EPS user is subscribed to the priority service in the EPC network.</p>
epsZoneCodeSetId	Unsigned Integer	Optional	<p>This parameter indicates the zone code set assigned to the EPS user for regional services supports. It must point to an existing <code>HSS-ZoneCodeSetId</code> in the HSS-FE configuration.</p>



Parameter	Type	Occurrence	Description
epsCommonMsisdn ⁽⁵⁾	String minLength value ="5" maxLength value ="15" Pattern value="[0-9]*"	Optional	This Common MSISDN is associated to multiple LTE subscriptions, that is, to allow the provisioning of multiple subscriptions in LTE with the same MSISDN.
commonMsisdn ⁽⁵⁾	String minLength value ="5" maxLength value ="15" Pattern value="[0-9]*"	Optional	This Common MSISDN is associated to multiple LTE subscriptions, that is, to allow the provisioning of multiple subscriptions in LTE with the same MSISDN.
epsAaaOdb	String Enumeration value ="NONE" Enumeration value ="ODB-ALL"	Optional	Contains the EPS Operator Determined Barring (ODB) indicator for non-3GPP access to be applied to the MultiSC: <ul style="list-style-type: none">• (NONE), the MultiSC has access to all EPS packet-oriented services.• (ODB-ALL), all EPS packet-oriented services are barred for the MultiSC.
epsAaaIndividualDefaultContextId	Unsigned integer	Optional	Specifies, individually for the EPS <i>MultiServiceConsumer</i> , a default non-3GPP APN configuration among the allowed ones. The allowed ones are either those in the Individual Context Id list, if defined. Otherwise, it is those allowed APN configurations of the associated configured Profile. It is not possible for a wildcard APN to be the Default Context Id for an EPS <i>MultiServiceConsumer</i> . If defined, during traffic the value overrides the value in the corresponding attribute of the associated configured Profile.
epsAaaIndividualContextId	Unsigned integer	Optional	Specifies, individually for the EPS <i>MultiServiceConsumer</i> , the allowed non-3GPP APN configurations. If one, or more Individual Context Identifiers are defined for the EPS <i>MultiServiceConsumer</i> there must also be an individual Default Context Id defined that corresponds to one of these allowed APNs. The entry that corresponds to the Default Context Id cannot be removed. If defined, during traffic the value overrides the value in the corresponding Context Id list in the associated configured Profile.



Parameter	Type	Occurrence	Description
epsAaaIndividualMappingContextId	String Multi-value attribute structured with separator "\$" EPSContextId: uint8 APNContextId: uint32	Optional	<p>Specifies, individually for the EPS <code>MultiServiceConsumer</code>, the mapping between the non-3GPP APN Context Ids allowed for this user and an EPS Context Id used for traffic purposes. This allows to map the APN Context Ids at configuration level to EPS user-specific value.</p> <p>If it is not defined the applicable value for the EPS <code>MultiServiceConsumer</code> during the traffic, is the one set in the <code>EpsAaaIndContextId</code>.</p> <p>If it is present, then <code>EpsAaaIndContextId</code> is not taken into account.</p> <p>Format: <code>EPSContextId\$APNContextId</code></p> <p>For example, "2\$4563"</p>
epsAdminDisable	Boolean {true, false}	Optional	This parameter indicates whether the Administrative User Disable function is assigned to the EPS user.
epsNam	Integer minInclusive value="0" maxInclusive value="2"	Optional	<p>Network Access Mode of EPS service</p> <p>0 = Both GPRS and non-GPRS</p> <p>1 = Non-GPRS</p> <p>2 = GPRS</p>



Parameter	Type	Occurrence	Description
epsAaaMIP6FeatureVector	String Enumeration value ="NO_CAPABILITY" Enumeration value ="MIP6_INTEGRATED" Enumeration value ="LOCAL_HOME_AGENT_ASSIGNMENT" Enumeration value ="PMIP6_SUPPORTED" Enumeration value ="IP4_HOA_SUPPORTED" Enumeration value ="LOCAL_MAG_ROUTING_SUPPORTED" Enumeration value ="ASSIGN_LOCAL_IP" Enumeration value ="MIP4_SUPPORTED" Enumeration value ="OPTIMIZED_IDLE_MODE_MOBILITY" Enumeration value ="GTPv2_SUPPORTED"	Optional	<p>This attribute indicates the authorized IP mobility capabilities of the non-3GPP access network from HSS to 3GPP AAA.</p> <ul style="list-style-type: none"> • (NO_CAPABILITY), all Mobile IPv6 functions are void. If NO_CAPABILITY is present, other values will be ignored. As a result the value of epsAaaMIP6FeatureVector will be NO_CAPABILITY. • (MIP6_INTEGRATED), it means that the Mobile IPv6 integrated scenario bootstrapping functionality is supported. For details, refer to Reference [9]. • (LOCAL_HOME_AGENT_ASSIGNMENT), it indicates that a local home agent outside the home realm is requested or the assignment of local Home Agents(HAs) is authorized by the Diameter server. For details, refer to Reference [10]. • (PMIP6_SUPPORTED), It indicates to the 3GPP AAA Server that it supports PMIPv6. For details, refer to Reference [9]. • (IP4_HOA_SUPPORTED), it indicates that the Mobile Access Gateway (MAG) implements a minimal functionality of a DHCP server (and a relay) and is able to deliver IPv4-MN-HoA to the Mobile Node (MN). For details, refer to Reference [11]. • (LOCAL_MAG_ROUTING_SUPPORTED), direct routing of IP packets between MNs anchored to the same MAG is supported. For details, refer to Reference [11]. • (ASSIGN_LOCAL_IP), it indicates to the non-3GPP access network that the non-3GPP access network shall assign to the user a local IP address (for Host Based Mobility (HBM)). For details, refer to Reference [9]. • (MIP4_SUPPORTED), it indicates to the 3GPP AAA Server that it supports MIPv4 FA-CoA mode. For details, refer to Reference [9]. • (OPTIMIZED_IDLE_MODE_MOBILITY), it indicates if the PDN GW information needs to be updated for the case of idle mode mobility from E-UTRAN to HRPD access. For details, refer to Reference [9]. • (GTPv2_SUPPORTED), it indicates to the 3GPP AAA Server that it supports GTPv2. For details, refer to Reference [9].
epsMdtUserConsent ⁽²⁾	Integer minInclusive value="0" maxInclusive value="1"	Optional	This attribute indicates whether the user has given his consent for MDT activation or not.

- (1) If the Individual Context Identifier List is defined for the EPS MultiServiceConsumer there must also be an individual Default Context Id defined that belong to the allowed APNs in `epsIndividualContextId`.
- (2) This parameter is applicable for HSS 1.6 and onwards.
- (3) This parameter is applicable for HSS 11B.
- (4) This parameter is applicable for HSS 12A and onwards.
- (5) There is a choice to use the `commonMsisdn` or the `epsCommonMsisdn` attribute. Both are supported for *Create* and *Set* operations. The recommended option is to use `commonMsisdn`, since `epsCommonMsisdn` for *Create* and *Set* operations are phased out in a later release.

The following attributes, `epsAccessRestriction`, and `epsExtendedAccessRestriction` included in the table above, are mutually exclusive. This means that only one can be used.

The `epsExtendedAccessRestriction` is needed to make use of the new alternatives for this parameter from HSS 12A and onwards. If for example the CAI3G interface is not updated and only the HSS 11B alternatives for access restriction is used, then PG is to be configured to run in HSS 11B using the `epsAccessRestriction` attribute.

To know which one to use there is a configuration parameter, `ExARD` in the activation logic function that must be set to indicate which one of these attributes that are valid to use. If the `ExARD` parameter is set to `true`, use the `ExtendedAccessRestriction` attribute in the inbound interface to provision HSS 12A and onwards. If it is set to `false`, use the `AccessRestriction` attribute in the inbound interface to provision HSS 11B.

In Example 6, for HSS 11B, `<hss:epsAccessRestriction>NON-3GPP-ACC-DENIED</hss:epsAccessRestriction>` is used. If this example was to be sent towards HSS 12A or later, `<hss:epsExtendedAccessRestriction>32</hss:epsExtendedAccessRestriction>` would be used instead.

For more information, see *Configuration Manual for Resource Activation*, Reference [6], and *User Guide for Resource Activation*, Reference [7].

The following attributes included in the table above, `epsAaaIndividualDefaultContextId`, `epsAaaIndividualContextId`, `epsAaaIndividualMappingContextId`, `epsIndividualApnOperatorIdentifierReplacement`, `epsIndividualDefaultContextId`, `epsIndividualContextId`, `epsIndividualSubscribedChargingCharacteristic`, `epsIndividualAmbrMaximalUplinkIpFlow`, `epsIndividualAmbrMaximalDownlinkIpFlow`, `epsIndividualRatFrequencyPriorityId`, `epsIndividualMappingContextId`, and `epsIndividualRauTauTimer` are Flexible Profile attributes. If they carry a value, then the value overrides the value in the corresponding attribute of the associated configured Profile. If the wish is to use the latter value after previously having set the individual attribute, a new set operation (Set-Delete) is to be sent including the attribute with empty value. Such operation ends the individual attribute.

A Set-Delete operation on attributes of type Integer requires additional input in the request stated as follows.



- 1 The Heading is to include the path, marked in **bold** in the following example:

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/\n/soap/envelope/"\nxmlns:cai3="http://schemas.ericsson.com/cai3g1.2/"\nxmlns:hss="http://schemas.ericsson.com/ma/HSS/"\nxmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
```

- 2 The definition, marked with **bold** in the following example, is to be included in the affected attribute.

```
<hss:epsIndividualDefaultContextId xsi:nil="true">\n</hss:epsIndividualDefaultContextId>
```

4.2 Examples

Request Example

Example 6 shows an example of a SetEPSMultiSC request message.



```

<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:cai3="http://schemas.ericsson.com/cai3gl.2/" xmlns:hss="http://
schemas.ericsson.com/ma/HSS/">
  <soapenv:Header>
    <cai3:SessionId>d78e0fd9ff6c436984bd4d998633487a</cai3:SessionId>
  </soapenv:Header>
  <soapenv:Body>
    <cai3:Set>
      <cai3:MOType>EPSPMultiSC@http://schemas.ericsson.com/ma/HSS/</cai3:MOType>
      <cai3:MOId>
        <hss:imsi>123456</hss:imsi>
      </cai3:MOId>
      <cai3:MOAttributes>
        <hss:SetEPSPMultiSC imsi="123456">
          <hss:msisdn>54321</hss:msisdn>
          <hss:epsProfileId>UserProfile1</hss:epsProfileId>
          <hss:epsOdb>NONE</hss:epsOdb>
          <hss:epsRoamingAllowed>true</hss:epsRoamingAllowed>
          <hss:epsLocationState>UNKNOWN</hss:epsLocationState>
          <hss:epsIndividualApnOperatorIdentifierReplacement>mnc012.mcc345.gprs
          </hss:epsIndividualApnOperatorIdentifierReplacement>
          <hss:epsIndividualDefaultContextId>11</hss:epsIndividualDefaultContextId>
          <hss:epsIndividualContextId>11</hss:epsIndividualContextId>
          <hss:epsIndividualContextId>22</hss:epsIndividualContextId>
          <hss:epsIndividualContextId>33</hss:epsIndividualContextId>
          <hss:epsIndividualContextId>44</hss:epsIndividualContextId>
          <hss:epsIndividualSubscribedChargingCharacteristic>3
          </hss:epsIndividualSubscribedChargingCharacteristic>
          <hss:epsIndividualAmbrMaximalUplinkIpFlow>1024
          </hss:epsIndividualAmbrMaximalUplinkIpFlow>
          <hss:epsIndividualAmbrMaximalDownlinkIpFlow>10240
          </hss:epsIndividualAmbrMaximalDownlinkIpFlow>
          <hss:epsIndividualRatFrequencyPriorityId>12
          </hss:epsIndividualRatFrequencyPriorityId>
          <hss:epsIndividualRauTauTimer>3600</hss:epsIndividualRauTauTimer>
          <hss:epsRoamingRestriction>false</hss:epsRoamingRestriction>
          <hss:epsRegionalRoamingServiceAreaId>12345
          </hss:epsRegionalRoamingServiceAreaId>
          <hss:epsAccessRestriction>NON-3GPP-ACC-DENIED</hss:epsAccessRestriction>
          <hss:epsAaaRegistrationState>AAA_ASSIGNED</hss:epsAaaRegistrationState>
          <hss:epsUserIpV4Address>1396$10.64.7.12</hss:epsUserIpV4Address>
          <hss:epsUserIpV6Address>2$2001:0db8:0::0:1428:07ab/64
          </hss:epsUserIpV6Address>
          <hss:epsTenantId>15</hss:epsTenantId>
          <hss:epsAaaOdb>NONE</hss:epsAaaOdb>
          <hss:epsAaaIndividualDefaultContextId>555</hss:epsAaaIndividualDefaultContextId>
          <hss:epsAaaIndividualContextId>555</hss:epsAaaIndividualContextId>
          <hss:epsAaaIndividualContextId>666</hss:epsAaaIndividualContextId>
          <hss:epsAaaIndividualContextId>777</hss:epsAaaIndividualContextId>
          <hss:epsAaaIndividualMappingContextId>2$555</hss:epsAaaIndividualMappingContextId>
          <hss:epsAaaIndividualMappingContextId>3$666</hss:epsAaaIndividualMappingContextId>
          <hss:epsAaaIndividualMappingContextId>4$777</hss:epsAaaIndividualMappingContextId>
          <hss:epsAdminDisable>true</hss:epsAdminDisable>
          <hss:epsNam>0</hss:epsNam>
          <hss:epsAaaMIP6FeatureVector>PMIP6_SUPPORTED</hss:epsAaaMIP6FeatureVector>
          <hss:epsMdtUserConsent>0</hss:epsMdtUserConsent>
        </hss:SetEPSPMultiSC>
      </cai3:MOAttributes>
    </cai3:Set>
  </soapenv:Body>
</soapenv:Envelope>

```

Example 6 Set EPSPMultiSC Request Message

The LTE subscriber with IMSI 123456 has been updated.

Response Example

Example 7 shows an example of a SetEPSPMultiSC response message.



```
<S:Envelope
  xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:cai3g="http://schemas.ericsson.com/cai3g1.2/">
  <S:Header>
    <cai3g:SessionId>d78e0fd9ff6c436984bd4d998633487a
    </cai3g:SessionId>
  </S:Header>
  <S:Body>
    <ns2:SetResponse xmlns:ns2=
      "http://schemas.ericsson.com/cai3g1.2/" />
  </S:Body>
</S:Envelope>
```

Example 7 *Set EPSMultiSC Response Message*





5 Delete EPSMultiSC

This section covers the EPS command `DeleteEPSMultiSC`.

This command is always capable of removing an EPS service, even if a previous `Create` or `Delete` has failed.

MOType

`EPSMultiSC@http://schemas.ericsson.com/ma/HSS/`

5.1 Request Data

5.1.1 Parameters

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

MOId

Table 9 Delete EPSMultiSC MOId

Parameter	Type	Occurrence	Description
imsi	String minLength value="6" maxLength value="15" Pattern value="[0-9]*"	Mandatory	The IMSI number of the subscriber

MOAttributes

N/A

5.2 Example

Request Example

Example 8 shows an example of a `DeleteEPSMultiSC` request message.

```
<soapenv:Envelope
  xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:cai3="http://schemas.ericsson.com/cai3gl.2/"
  xmlns:hss="http://schemas.ericsson.com/ma/HSS/">
  <soapenv:Header>
    <cai3:SessionId>d78e0fd9ff6c436984bd4d998633487a</cai3:SessionId>
  </soapenv:Header>
  <soapenv:Body>
    <cai3:Delete>
      <cai3:MOType>EPSPMultiSC@http://schemas.ericsson.com/ma/HSS/</cai3:MOType>
      <cai3:MOId>
        <hss:imsi>123456</hss:imsi>
      </cai3:MOId>
    </cai3:Delete>
  </soapenv:Body>
</soapenv:Envelope>
```

Example 8 Delete EPSPMultiSC Request Message

The LTE subscriber with IMSI 123456 is deleted.

Response Example

Example 9 shows an example of a DeleteEPSPMultiSC response message.

```
<S:Envelope
  xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:cai3g="http://schemas.ericsson.com/cai3gl.2/">
  <S:Header>
    <cai3g:SessionId>d78e0fd9ff6c436984bd4d998633487a</cai3g:SessionId>
  </S:Header>
  <S:Body>
    <ns2:DeleteResponse xmlns:ns2=
      "http://schemas.ericsson.com/cai3gl.2/">
      <ns2:MOId>
        <hss:imsi xmlns:hss=
          "http://schemas.ericsson.com/ma/HSS/">123456
        </hss:imsi>
      </ns2:MOId>
    </ns2:DeleteResponse>
  </S:Body>
</S:Envelope>
```

Example 9 Delete EPSPMultiSC Response Message



6 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 EPS specific error codes are described in this section. These error codes are included in the Fault type `EPSFault`.

For generic error codes, and information about the different Fault types, see *CAI3G Implementation*, Reference [8].

6.1 Subordinate EPS Error Codes

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

Table 10 Subordinate EPS Error Codes

Error Code	Error Message	Description	MO	Operation
12006	DATABASE LOCKED FOR BACKUP	Database locked for backup	EPSMultiSC	C/S/D
12013	OPERATION FAILED. ROLL BACK HAS BEEN PERFORMED SUCCESSFULLY	This information varies depending on the actual error.	EPSMultiSC	C
12014	OPERATION FAILED. ROLL BACK WAS UNSUCCESSFUL	This information varies depending on the actual error.	EPSMultiSC	C
13001	SERVICE NOT DEFINED	EPS service is not defined for IMSI	EPSMultiSC	S/G/D
13002	SERVICE ALREADY DEFINED	IMSI defined and EPS service exist	EPSMultiSC	C
13003	IDENTITY MISMATCH	MSISDN joint to other IMSI	EPSMultiSC	C/S
		MSISDN already provided	EPSMultiSC	S
		IMSI changeover ongoing	EPSMultiSC	C
13006	INCONSISTENT DATA IN CUDB	This information varies depending on the actual error.	EPSMultiSC	C/S/G/D
14001	CONSTRAINT VIOLATION	MO Attributes which are incompatible ⁽¹⁾ .	EPSMultiSC	C/S

(1) See Reference [5] for information about what constraint that is checked.



6.2 CAI3G Error Message Example

The following, shown in Example 10, is an example of a CAI3G error message:

```
<S:Envelope xmlns:S="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:cai3g="http://schemas.ericsson.com/cai3g1.2/">
  <S:Header>
    <cai3g:SessionId>37495e1842d945cfb997526c20a18650</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>
            <EPSFault:EPSFault xmlns="http://schemas.ericsson.com/pg/1.0"
xmlns:EPSFault="http://schemas.ericsson.com/pg/1.0">
              <errorcode>13002</errorcode>
              <errormessage>SERVICE ALREADY DEFINED</errormessage>
              <errordetails>IMSI defined and EPS service exists -
[Processed by PG Node: CL23-PL-6]</errordetails>
            </EPSFault:EPSFault>
          </details>
        </Cai3gFault:Cai3gFault>
      </detail>
    </ns2:Fault>
  </S:Body>
</S:Envelope>
```

Example 10 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*, 3/155 19-FAY 302 0003 Uen
- [3] *Library Overview*, 18/1553-CSH 109 628 Uen
- [4] *EPS Subscriber Data Handling in ESM*, 3/155 34-APR 901 0321/3 Uen
- [5] *Front End Provisioning Datamodel Description in HSS*, 3/155 19-2/CSH 150 0063/7 Uen
- [6] *Configuration Manual for Resource Activation*, 2/1543-CSH 109 628 Uen
- [7] *User Guide for Resource Activation*, 1/1553-CSH 109 628 Uen
- [8] *CAI3G Implementation*, 26/155 19-CSH 109 628 Uen

Online References

- [9] *ETSI TS 129 273*http://www.etsi.org/deliver/etsi_ts/129200_129299/129273/12.05.00_60/ts_129273v120500p.pdf
- [10] *Diameter Mobile IPv6*<http://www.rfc-base.org/txt/rfc-5447.txt>
- [11] *Diameter Proxy Mobile IPv6*<http://www.rfc-base.org/txt/rfc-5779.txt>