

A-MSISDN Functionality

It is possible to configure the MME to support the Additional Mobile Subscriber ISDN (A-MSISDN) flag in the Features List AVP of the Update Location Request (ULR) messages.

This chapter looks at the MME's A-MSISDN functionality.

- Feature Description, on page 1
- How It Works, on page 1
- Configuring A-MSISDN Functionality, on page 2
- Monitoring and Troubleshooting the A-MSISDN Functionality, on page 3

Feature Description

The MME includes the Additional Mobile Subscriber ISDN (A-MSISDN) flag in the Features List AVP of the Update Location Request (ULR) messages that are sent over the S6a interface to the Home Subscriber Server (HSS) at the time a UE Attaches. In response, if an A-MSISDN is available then the HSS sends a provisioned A-MSISDN and an MSISDN in the Subscription Data AVP in Update Location Answer (ULA) and IDR messages.

How It Works

When A-MSISDN is configured to enable this functionality, then the MME will advertise support for A-MSISDN in S6a ULR messages by setting bit 31 in the Feature List Id 1 AVP. Upon receiving s6a ULA/IDR messages from the HSS, the MME will

- store received A-MSISDN value from the Subscription Data AVP in the UE context.
- use A-MSISDN as C-MSISDN in "SRVCC PS to CS Request" and "Forward Relocation Request" messages.
- store received C-MSISDN as A-MSISDN in the UE context.

Support for A-MSISDN functionality enables the MME to use the A-MSISDN as a Correlation MSISDN (C-MSISDN) during SRVCC PS-to-CS handovers. For information on the purpose of the C-MSISDN, refer to 3GPP TS 23.003.

If the MME sends an A-MSISDN flag in the ULR, then the MME

- can receive only one or both MSISDN and A-MSISDN in ULA/IDR messages.
- can send MSISDN or A-MSISDN as C-MSISDN.

The MME's A-MSISDN functionality is applicable for ULR/ULA, IDR/IDA, and DSR/DSA command pairs sent over S6a interface.

The MME also supports the A-MSISDN withdrawal bit received in DSR Flags AVP. Receipt of this bit triggers the MME to delete an A-MSISDN from the UE context.

Limitations

A-MSISDN support is not present for the S6d interface. This means that A-MSISDN will not be available to the MME when SGSN/MME-combo optimization is enabled and subscription data received by the SGSN is re-used by the MME.

Location services using A-MSISDN are not supported (PLR/LRR).

Lawful Intercept (LI) and Monitor Subscriber functions based on A-MSISDN as the identifier are not supported.

Standards Compliance

The MME's support of A-MSISDN complies with 3GPP 29.274 v11.10.0.

Configuring A-MSISDN Functionality

Enabling A-MSISDN is a two step process:

- First, configure A-MSISDN support on the MME.
- Second, configure the MME to support 3GPP Release 11 AVPs.

Both configuration steps are described below and both must be completed to fully enable A-MSISDN functionality.

Configuring A-MSISDN Support

By default, A-MSISDN is not supported. Use the following configuration sequence to enable the MME to support A-MSISDN functionality and to advertise that support to the HSS.

```
configure
  call-control-profile profile_name
    a-msisdn
     remove a-msisdn
    end
```

Notes:

- **a-msisdn** Enables the MME to notify the HSS of support for Additional-MSISDN for the PLMN associated with this call-control profile.
- **remove** Disables support for A-MSISDN functionality and returns the MME to default state.
- Configure the 3GPP R11 support with the **diameter update-dictionary-avps** command in the HSS Peer Service configuration mode to complete the configuration required to support A-MSISDN.

Verifying the A-MSISDN Support Configuration

Use the output generated by the **show call-control-profile full all** command to verify the configuration status of the A-MSISDN functionality:

```
Call Control Profile Name = cp1
  SAMOG Web-Authorization Mutiple Device Support : NO
  ...
    Super Charger                              : Disabled
    P-CSCF Restoration                         : Enabled
    A-MSISDN                                   : Enabled
    Sending Radio Access Technology (RAT) IE   : Enabled
```

Configuring 3GPP Release 11 AVP Support

The following configuration sequence enables the MME to support AVPs available in Release 11 3GPP 29.272.

```
configure
   context context_name
     hss-peer-service service_name
       diameter update-dictionary-avps { 3gpp-r10 | 3gpp-r11 | 3gpp-r9 }

       no diameter update-dictionary-avps
       end
```

Notes:

- **3gpp-r11** Configures the MME to support signaling additional AVPs to an HSS in support of Release 11 of 3GPP 29.272. Using this keyword is necessary to enable the MME to fully support inclusion of the Additional Mobile Station ISDN (A-MSISDN) flag of the Feature List AVP in Update Location Request (ULR) messages sent over the S6a interface to the HSS at the time a UE Attaches.
- **no** Sets the command to the default value where Release 8 (standard) dictionary is used for backward compatibility of previous releases.

Monitoring and Troubleshooting the A-MSISDN Functionality

Show Command(s) and/or Outputs

The show commands in this section are available in support of the MME's A-MSISDN functionality.

show mme-service session full all

The A-MSISDN field in the generated output indicates an A-MSISDN value if the A-MSISDN is received from the HSS. If no value is received from the HSS, then the value displayed will be **n/a**.

```
show mme-service session full all
  SessMgr Instance: 1          ImsiMgr Instance: 1
  MSID: 123456789012345         Callid: 00004e21
  MME Service: mmesvc
  MME HSS Service: mme1
  SGTPC Service: sgtp1
  EGTP S11 Service: egtp_mme
  MME S1 Address: 192.80.80.2
```

```
EGTP S11 Address: 192.80.80.16
ME Identity: n/a   GUTI: 123:456:32777:2:3221225473
MSISDN: 888012345679001
A-MSISDN : 988012345679002
```

The following show commands will also generate outputs that display the A-MSISDN value if it has been received from the HSS. If nothing is received, then the value will be **n/a**:

- show mme-service db record call-id *call-id*
- show mme-service db record imsi *imsi*
- show mme-service db record guti plmn *plmn* group-id *group-id* code *code* m-tmsi *m-tmsi*