Retrieving IMEI from the UE

Feature Summary and Revision History

Summary Data

Table 1: Summary Data

Applicable Product(s) or Functional Area	AMF
Applicable Platform(s)	SMI
Feature Default Setting	Enabled – Always-on
Related Documentation	Not Applicable

Revision History

Table 2: Revision History

Revision Details	Release
First introduced.	2022.02.0

Feature Description

Completion of the registration procedure includes retrieving the International Mobile Equipment Identity (IMEI) or International Mobile Equipment Identity – Software Version (IMEI-SV) from the UE. The AMF

retrieves the IMEI or IMEI-SV from the UE by sending the Identity Request or Security Mode Command message. The AMF communicates the retrieved IMEI or IMEI-SV to its peer NFs.

For more information, refer to the UCC 5G AMF Configuration and Administration Guide > Retrieving IMEI from the UE chapter.

For more information, refer to the Retrieving IMEI from the UE, on page 1 chapter.

How it Works

This section describes how this feature works.

Call Flows

This section describes the key call flows for this feature.

Registration Procedure Call Flow

This section describes the Registration Procedure call flow.

During the initial registration procedure, the PEI is obtained from the UE. The AMF operator may check the PEI with an EIR. After receiving the PEI (IMEI-SV), the AMF communicates it to the UDM, SMF, and PCF. The UDM stores the PEI in the UDR by sending the Nudr_SDM_Update message.

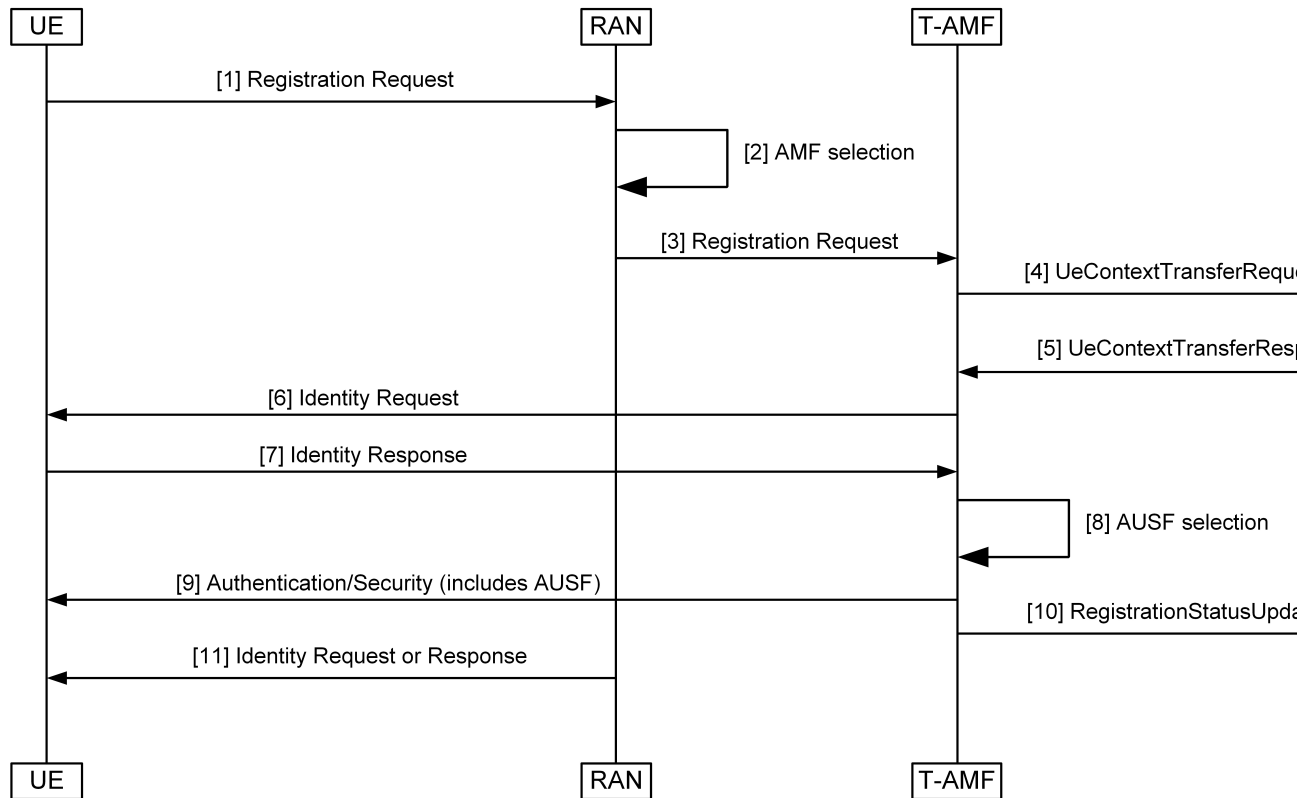**Figure 1: Registration Procedure Call Flow**

Table 3: Registration Procedure Call Flow Description

Step	Description
1	The UE sends a Registration Request to the RAN.
	The Registration Request message includes PEI as part of N2 information. If the PEI is not available, the AMF sends an Identity Request message to retrieve IMEI-SV.
2	The RAN performs the AMF selection procedure.
3	The RAN sends the Registration Request to the T-AMF.
4	The T-AMF sends a UeContextTransferRequest to the S-AMF.
5	The S-AMF responds to the AMF with UeContextTransferResponse.
6	The T-AMF sends the Identity Request message to the UE.
7	The UE sends the Identity Response message to the T-AMF.
8	The T-AMF performs the AUSF selection procedure.
9	The T-AMF sends the Authentication or Security message to the UE.
10	The T-AMF sends the RegistrationStatusUpdate message to the S-AMF.
11	The T-AMF sends the Identity Request or Response (PEI) message to the UE.
	The AMF initiates the Identity Request procedure by sending an Identity Request message to the UE to retrieve the PEI when:
	• The UE does not provide the PEI.
	• The UE cannot retrieve the PEI from the old AMF.
	The AMF transfers an encrypted PEI unless the UE performs an Emergency Registration. For Emergency Registration, the UE includes the PEI in the Registration Request so that the PEI retrieval step is skipped.

Idle or Connected Mode Mobility Call Flow

This section describes the Idle or Connected Mode Mobility call flow.

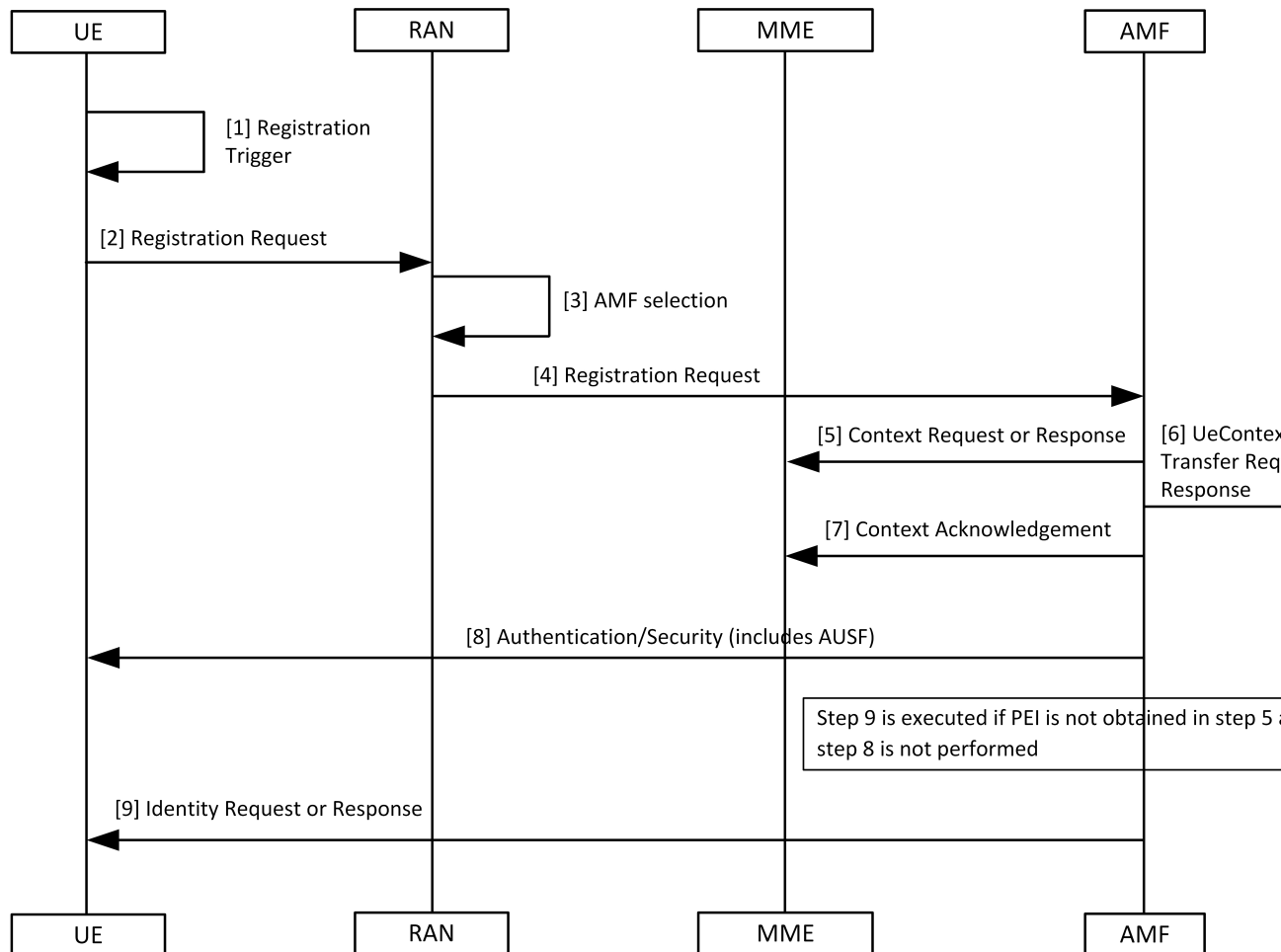Figure 2: Idle or Connected Mode Mobility Call Flow

Table 4: Idle or Connected Mode Mobility Call Flow Description

Step	Description
1	The UE sends a Registration Trigger.
2	The UE sends a Registration Request to the RAN.
3	The RAN performs an AMF selection.
4	The RAN sends a Registration Request to the AMF.
5	The AMF sends a Context Request or Response message to the MME.
6	The AMF sends a UeContextTransfer Request or Response to the Old AMF.
7	The AMF sends the Context Acknowledgement message to the MME.
8	The AMF sends an Authentication or Security message to the UE.

Step	Description
9	The AMF sends the Identity Request or Response message to the UE.

Standards Compliance

This feature complies with the following standards specifications:

- *3GPP 29.502 "5G System; Session Management Services; Stage 3"*

- *3GPP 29.503 "5G System; Unified Data Management Services; Stage 3"*

- *3GPP 23.502 "Procedures for the 5G System (5GS)"*

- *3GPP 24.501 "Non-Access-Stratum (NAS) protocol for 5G System (5GS); Stage 3"*

- *3GPP 23.003 "Numbering, addressing and identification"*

Viewing the Retrieved IMEI

To view the IMEI or IMEI-SV that AMF retrieved:

```
show subscriber supi 123456789012345
subscriber-details
{
  "subInfo": {
    "Genericinfo": {
      "RanUeNGAPID": 12346,
      "AmfUeNGAPID": 201328650,
      "NGAPConnID": 21472,
      "Supi": "123456789012345",
      "Imei": "imei-352099001761480",
      "UeId": "supi:123456789012345",

show subscriber supi 123456789012345
subscriber-details
{
  "subInfo": {
    "Genericinfo": {
      "RanUeNGAPID": 12346,
      "AmfUeNGAPID": 201328650,
      "NGAPConnID": 21472,
      "Supi": "123456789012345",
      "Imei": "imeisv-3520990017614856",
      "UeId": "supi:123456789012345",
```

OAM Support

This section describes operations, administration, and maintenance support for this feature.

Bulk Statistics Support

The following statistic is supported for the Retrieving IMEI from the UE feature:

n1_service_stats

Description: The AMF UE service statistics.

Sample Query:
```
n1_service_stats{message_type="IdentityRequest_Imeisv",status="success",reason="key
Mismatch",slice_data="2-333333"}
```

Labels:

- Label: `message_type`

  Label Description: The message type associated with a UE service.

  Example: IdentityRequest_Imeisv, N1SecurityModeComplete, N1AuthenticationRsp, N1SecurityModeCommand, N1AuthenticationReq, N1AuthFail_SyncFailure, N1AuthenticationReject, N1AuthFail_MacFailure, IdentityRequest_Imei, IdentityRequest_Suci, N1DeRegAccept_UeTerminatedDereg, N1UeConfigurationUpdCmd.

- Label: `status`

  Label Description: Overall status.

  Example: success, failures, attempted

- Label: `reason`

  Label Description: The reason associated with an UE service.

  Example: Suspend, Suspend for Async, Unable to get rsp, Unable to retrieve msg from rsp, Supi mismatch, Internal Error, Sync Failed, Timeout, Others, No Security Context from Peer, Peer Provided Sec Context Failed, NgKsi Already In Use, Scheduled ipc action in background, Unable to retrieve identity rsp, Unable to get Supi, key Mismatch

- Label: `slice_data`

  Label Description: Slice data.

  Example: 2-333333