

Understand Peer AMF Selection Mechanism for 4G/5G Handover on MME via N26 Interface

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Introduction

This document describes how MME (Mobility Management Entity) selects a peer AMF (Access and Mobility Management Function) for N26 interface.

Minimum Configuration

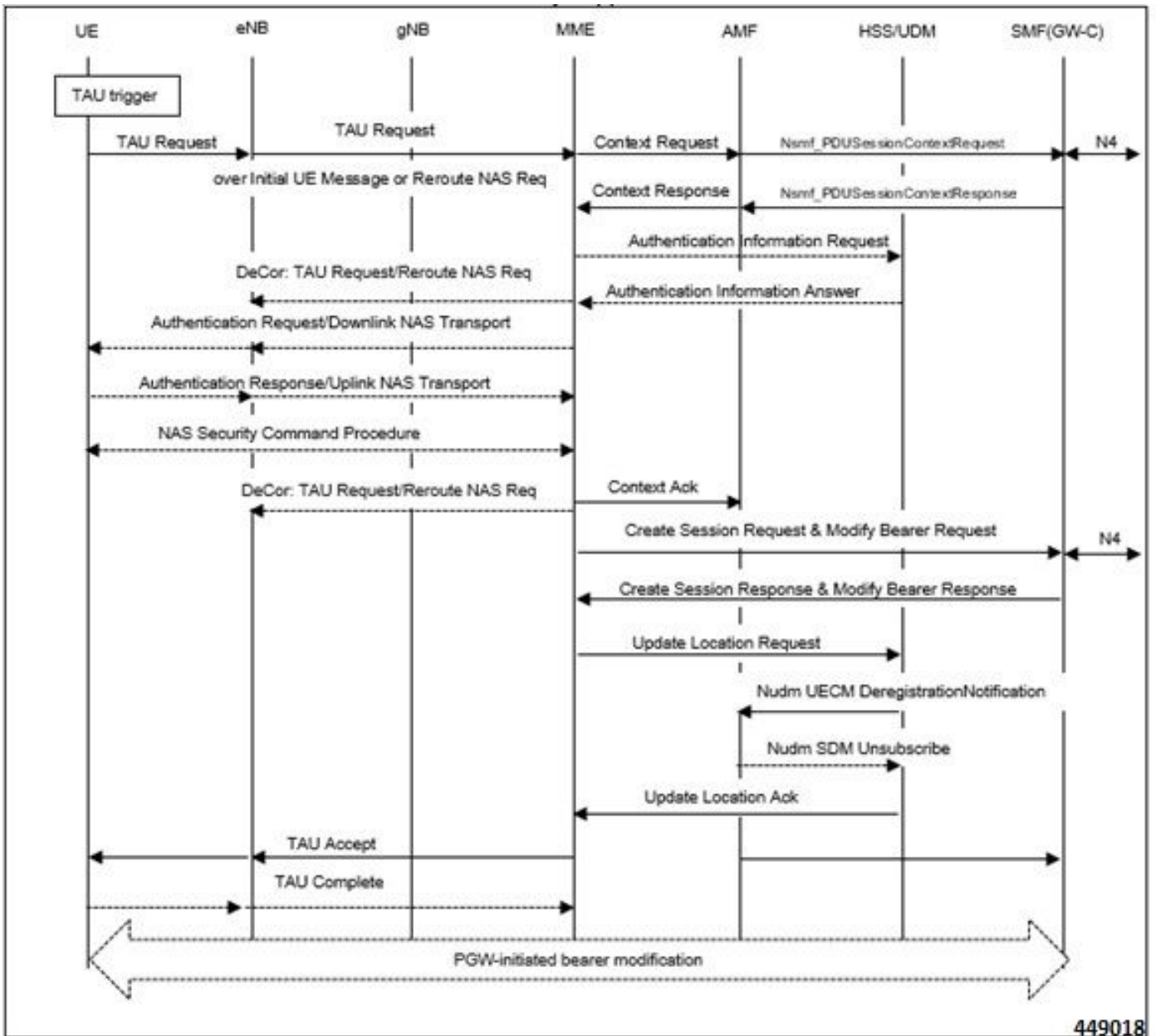
To make N26 interface work on MME, **n1-mode 5gs-interworking-with-n26** needs to be configured under mme-service or call-control-profile.

```
configure context context_name mme service service_name [no] n1-mode 5gs-interworking-with-n26
```

```
configure call-control-profile profile_name [ no | remove] n1-mode 5gs-interworking-with-n26
```

5G to 4G Idle Mode Handover

In this case, the handover is triggered by TAU (Tracking Area Update) as depicted in this call flow diagram.



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5G to 4G Idle Mode Handover

To make it successful, these conditions need to be met.

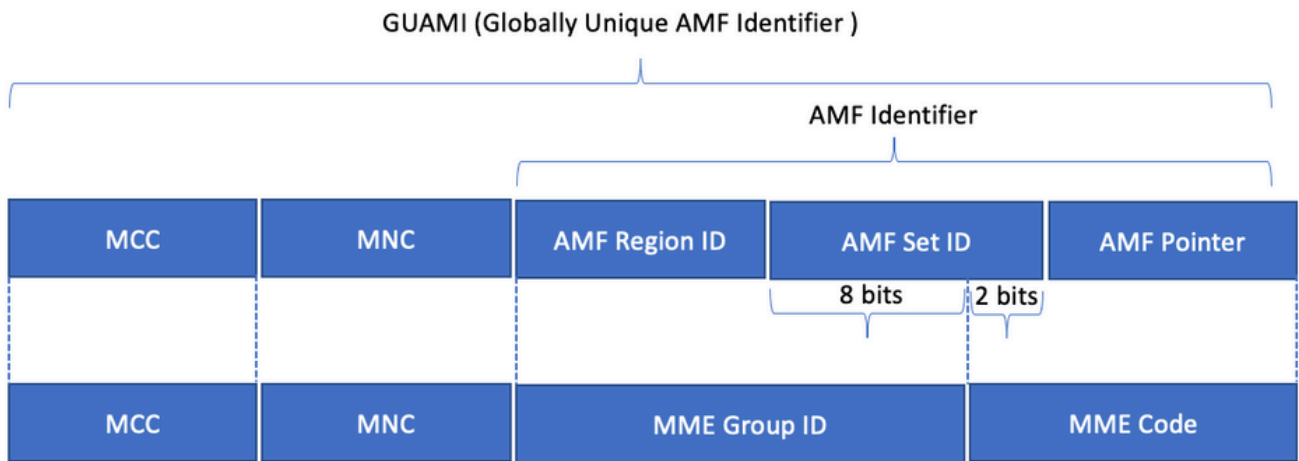
- N1-mode in UE Network Capability is set as 1
- Old Global Unique Temporary Identifier (GUTI) Type is Native GUTI
- UE Status IE is 5GMM-REGISTERED

```

UE n/w capability
(0xe0e00000032cb000)
Old GUTI Type
Native GUTI
UE status
N1 Mode reg:1
S1 Mode reg:0

```

And peer AMF is selected based on GUTI which is mapped to Globally Unique AMF Identifier (GUAMI), defined by 3GPP TS 23.003. This picture visualizes the mapping for ease of understanding.



Mapping between GUTI and GUAMI

For example, if TAU contains the GUTI like this:

```

Old GUTI
GUTI
PLMN
(123:456)
MME GROUP ID
(0x6400)
MME CODE
(0x1)
M-TMSI
(0x100)

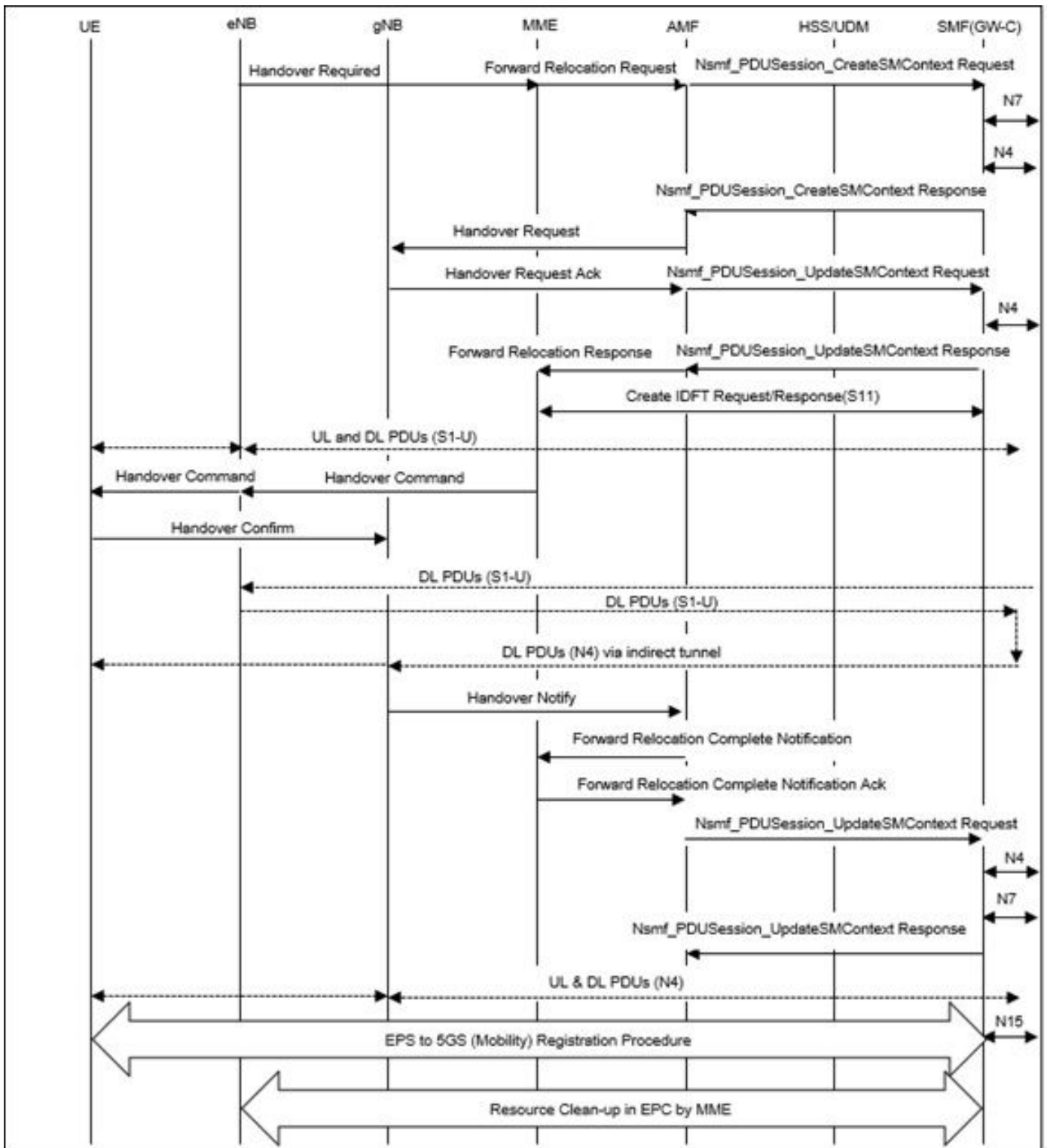
```

The peer amf configuration on MME is this:

```
peer-amf guami mcc 123 mnc 456 region-id 100 set-id 0 pointer 1 address <IP address>
```

4G to 5G S1-based Handover

In this case, the handover is triggered by Handover Required message from eNB as depicted in this call flow diagram.



4G to 5G S1-based Handover

To make it successful, these conditions need to be met:

- Handover Type is set as EPSto5GS(5)
- Target ID with Global gNB ID and selected 5GS TAI information

IE : 3
 Protocol IE ID : HandoverType (1)
 Criticality
 | 00.. | Reject (0)
 HandoverType Value :
 | .000 0001 | Length Determinant : 1
 Value :

```

| 1... .... | Ext bit : 1
| ..00 0000 | eps-to-5gs (5)
IE : 5
Protocol IE ID : TargetID (4)
Criticality
| 00.. .... | Reject (0)
TargetID Value :
| .001 0001 | Length Determinant : 17
Value :
| 1... .... | Ext bit : 1
| ..00 0000 | Choice index : 0 (in extension addition)
TargetNgRanNode-ID
| .000 1111 | Length Determinant : 15
| 0... .... | Ext bit : 0
Bit map :
| .0.. .... | IE Extensions : Not present
Global RAN Node ID
| ..0. .... | Ext bit : 0
| ...0 .... | Choice index : 0
gNB
| .... 0... | Ext bit : 0
Bit map :
| .... .0.. | IE Extensions : Not present
Global gNB ID
| .... ..0. | Ext bit : 0
Bit map :
| .... ...0 | IE Extensions : Not present
PLMN Identity
0x214365
gNB ID
| 0... .... | Ext bit : 0
Choice index : 0
gNB ID
| .000 1... | Length Determinant : 23
| 1000 0000 | + 15 bits : 0x400000
Selected TAI
| .... ...0 | Ext bit : 0
Bit map :
| 0... .... | IE Extensions : Not present
PLMN Identity
0x214365
5GSTAC
0x000033

```

Peer AMF configuration on MME looks like this to handle the handover request:

```
peer-amf tai-match priority 1 mcc 123 mnc 456 tac 51 address <IP address>
```

Related Information

- https://www.cisco.com/c/en/us/td/docs/wireless/asr_5000/21-19_6-13/RCR/21-19_6-13-change-reference/m_n26-interface-support.html
- <https://portal.3gpp.org/desktopmodules/Specifications/SpecificationDetails.aspx?specificationId=729>