Periodic Registration Support

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.	2021.04.0

Feature Description

The Access and Mobility Management Function (AMF) supports periodic registration to the UE to confirm its availability. The procedure is controlled in the UE by the periodic registration update timer, T3512.

The timer that is run in the AMF is called the Mobile Reachability timer. It is configurable but is different from T3512. T3512 is the configured in the UE, and the Mobile Reachability (MR) Timer is set to 4 minutes higher than T3512

The MR timer in the AMF is restarted every time the UE moves to Idle, and stopped when the AMF receives any message from the UE.

When the MR timer expires, the AMF stops paging the UE.

The periodic registration timer (T3512) is supported as per 3GPP TS 24.501 v15.0.0. Currently, in AMF, the T3512 timer expiry supports implicit deregistration.

T3512 Timer Start

The T3512 timer value is read from configuration. If the value is not configured, then the default value of 54 minutes is used.

The T3512 timer starts for a subscriber when the UE moves to IDLE state (releases N2 connection).

The value of the T3512 timer is sent by the AMF to the UE in the Registration Accept message. The UE registers periodically as per the T3512 timer interval.

T3512 Timer Stop

The T3512 timer value stops when the UE moves to CONNECTED state (establishes an N2 connection).

Sending T3512 Value in Registration Accept

The AMF sends the T3512 timer value in the Registration Accept message and the UE uses this value to send periodic registration information.

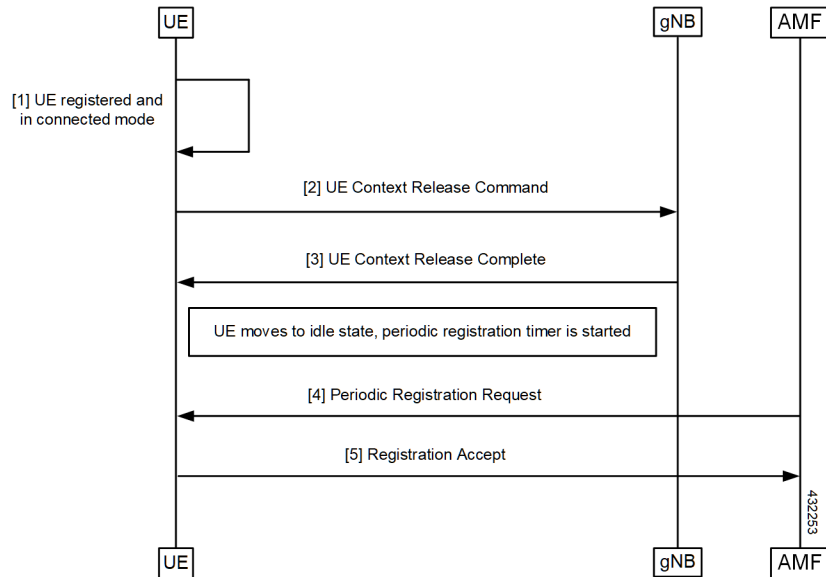# How it Works

This section describes how this feature works.

Call Flows

This section describes the key call flows of Priodic Registration feature.

Periodic Registration without Authentication Call Flow

This section describes the Periodic Registration without Authentication call flow.

Figure 1: Periodic Registration without Authentication Call Flow

Table 3: Periodic Registration without Authentication Call Flow Description

Step	Description
1	UE registerd with the network and it is in connected mode.
2, 3	UE sends context Release command to gNB and receives response from it.
4, 5	When UE moves to IDLe state, a periodic timer started and AmF sends periodic registration request to UE and receives registration accept from UE.

Periodic Registration with Authentication Call Flow

This section describes the Periodic Registration with Authentication call flow.

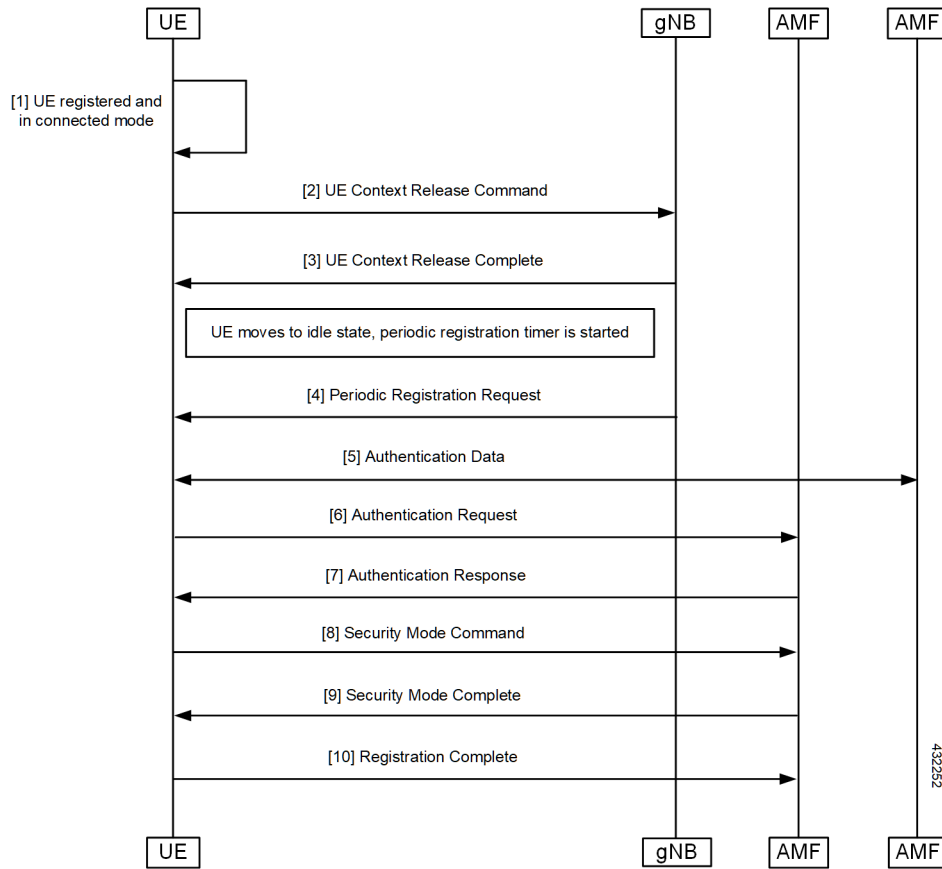*Figure 2: Periodic Registration with Authentication Call Flow*

Table 4: Periodic Registration with Authentication Call Flow Description

Step	Description
1	Periodic Registration with Authentication UE registerd with the network and it is in connected mode.
2, 3	UE sends context Release command to gNB and receives response from it.
4	When UE moves to IDLe state, a periodic timer started and gNB sends periodic registration request to UE .
5	Authentication data exchanged between UE and AMF.
6, 7	UE sends authentication request to AMF and receives respose from it.
8, 9	UE sends security mode command to AMF and receives security mode complete command from it.
10	UE sends Registration complete message to gNB.

Feature Configuration

Configuring this feature involves the following steps.

Configuring the T3512 Timer

To configure the T3512 timer, use the following configuration.

```
config
  amf-global
    call-control-policy policy_name
      timers t3512 value value_in_seconds
      end
```

NOTES:

- **call-control-policy** *policy_name*—Specify the UE call control polocy name.

- **timers t3512 value** *value_in_seconds*—Specify the T3512 timer value in seconds. It's an unsigned integer in the range from 0-35712000.

Configuring Authentication Enable

To enable the authentication, use the following configuration.

```
configure
  amf-global
    call-control-policy policy_name
      enable-auth-periodic-reg [ false | true ]
      end
```

NOTES:

- **call-control-policy** *policy_name*—Specify the UE call control polocy name.

- **enable-auth-periodic-reg [false | true]**—Allows to set enabling authenticated periodic registration request as true or false.

OAM Support

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

Bulk Statistics Support

The following statistics are supported for the periodic registration feature

- periodic_registration_request - The number of Periodic Registration Request messages received.

- NumPeroidicRegTimerExpiry - The number of Periodic Registration timer expires.