

Implementation of N2 Failure Handling Logic

Table 1: Feature History

Feature Name	Release Information	Description
Configuration based N2 failure handling	2026.02.0	

Feature Name	Release Information	Description
		You can now improve VoNR call success rates by configuring the Session Management Function (SMF) to automatically retry N2 modify procedures after specific failure causes. This feature introduces a new CLI configuration under the access profile. You specify the N2 message type, the failure cause codes, and the retry parameters, including the delay interval and maximum number of retry attempts. When the SMF receives a configured failure, it suspends the current procedure, initiates a timer based on your settings, and automatically retransmits the N2 message upon timer expiry. Command introduced: The following command structure is added to the `profile access configuration mode`: **n2 message-handling message-type [pdu-sess-rsrc-mod-resp] condition** *condition_id* **cause** *cause_list* **action retry attributes retry-after** *retry_interval* **max-retry** *max_retry* **Default Setting**: Disabled – Configuration Required

- N2 Interface Failure Handling and Retry Mechanism, on page 2
- Configure N2 Failure Handling, on page 3
- Limitations for N2 Failure Handling , on page 3

N2 Interface Failure Handling and Retry Mechanism

This feature addresses scenarios where call failures occur due to gNB rejecting N2 modify requests with certain cause codes, such as “interaction with other procedures.” By enabling configurable retries, the SMF can attempt to recover from transient failures and enhance average failure rate for VoNR/VoLTE operations.

Configuration based N2 failure handling:

- allows users to configure the SMF to handle specific N2 failure causes by retrying N2 messages,

- provides flexibility to set delay and retry attempts per failure cause, and
- improves service continuity during procedures such as handover or voice bearer creation.

Configure N2 Failure Handling

Enable and customize the SMF's behavior for retrying N2 modify messages based on specific failure causes.

Use this task to configure the SMF to retry N2 messages when failures are detected with user-specified cause codes. This helps maintain connectivity and service reliability, especially during handovers or when transient errors occur.

Procedure

Step 1 Enter configuration mode to slect the desired access profile.

profile access *access_profile_name*

Step 2 Enter the N2 message-handling configuration context to specify the N2 message type (example., pdu-sess-rsrc-mod-resp).

n2 message-handling message-type pdu-sess-rsrc-mod-resp

Step 3 Define conditions with cause codes and actions.

n2 message-handling message-type [pdu-sess-rsrc-mod-resp] { condition *condition_id* **| cause** *cause_list* **| action retry attributes { retry-after** *retry_value* **| max-retry** *retry_value* **} }**

Example:

```
profile access accProf
n2 message-handling message-type [pdu-sess-rsrc-mod-resp] condition [id] cause [ list ] action retry
 attributes retry-after <> max-retry <>
exit
```

- **condition**: Specify condition identifiers relevant to the message type (range: 1–10).
- **cause**: Specify cause codes or cause lists associated with failure handling (range: 1–65).
- **action**: Specify actions to take upon encountering specified causes (range: 1–65).
- **retry-after**: Specify delay in milliseconds before retry (range: 100-5000 and default value is 300).
- **max-retry**: Specify how many retry attempts before terminating the operation (range: 1-5 and default value is 3).

Step 4 Commit the configuration.

Limitations for N2 Failure Handling

The following points outline the key limitations that govern the behavior of this feature.

- SMF only supports the message type `pdu-sess-rsrc-mod-resp` and action `retry`.

- Since the modify procedure's guard timer does not reset upon a retry, ensure that the retry timer and maximum retry count are configured appropriately to prevent the procedure from terminating prematurely.
- gNB is assumed not to forward N1 to UE for cases where N2 is rejected with the configured cause.
- SMF does not support roaming scenarios for N2 failure handling.