



## Failure Counters for CSFB MT Counters

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### Feature Summary and Revision History

#### Summary Data

|  |  |
|--|--|
| Applicable Product(s) or Functional Area | MME  |
| Applicable Platform(s)                   | <ul style="list-style-type: none"><li>• ASR 5500</li><li>• VPC-DI</li><li>• VPC-SI</li></ul>   |
| Feature Default                          | Enabled  |
| Related Changes in This Release          | Not applicable   |
| Related Documentation                    | <ul style="list-style-type: none"><li>• <i>MME Administration Guide</i></li><li>• <i>Statistics and Counters Reference</i></li></ul> |

#### Revision History

| Revision Details | Release |
|------------------|---------|
| First Introduced | 21.23   |

## Feature Description

The Failure Counters for CSFB MT Counters provides a new set of bulkstat counters and modifications to the current Mobile Terminating (MT) Voice-based Circuit Switch Fallback (CSFB) error counters.

The current "csfb-nw-voice-failures" and "csfb-nw-voice-success" counters only capture general failures during the MT CSFB procedures, so it has been requested to extend the MT Voice CSFB counters to capture more specific error scenarios.

This allows the operator to have a more detailed picture of where the errors are occurring in the MT Voice CSFB based procedures.

## Monitoring and Troubleshooting

This section provides information on the show commands and Bulk statistics counters.

### Show Command and Output

#### **show mme-service statistics csfb-mt-mo-voice-counters**

The output of MT Voice CSFB Statistics displays the following new fields:

- MT Voice CSFB Statistics:
  - Attempts/SGSap Paging Requests
  - S1 eNB Paging Timeouts
  - Extended Service Request Rejects
  - SGSap Service Abort Requests
  - S1 UE Init Ctxt Req Setup Fails
  - CS Service Notifications Fails
  - S1 UE Context Modification Fails
  - Miscellaneous Non CSFB UE Ctxt Rel
  - Miscellaneous failures
  - No PS HO Successes

#### **show mme-service statistics mme-service <mme\_service\_name> csfb-mt-mo-voice-counters**

The output of MT Voice CSFB Statistics displays the following new fields:

- MT Voice CSFB Statistics:
  - Attempts/SGSap Paging Requests
  - S1 eNB Paging Timeouts

- Extended Service Request Rejects
- SGSap Service Abort Requests
- S1 UE Init Ctxt Req Setup Fails
- CS Service Notifications Fails
- S1 UE Context Modification Fails
- Miscellaneous Non CSFB UE Ctxt Rel
- Miscellaneous failures
- No PS HO Successes

**show mme-service statistics csfb-mt-mo-voice-counters verbose**

The output of MT Voice CSFB Statistics displays the following new fields:

- MT Voice CSFB Statistics:
  - Attempts/SGSap Paging Requests
  - S1 eNB Paging Timeouts
  - Extended Service Request Rejects
  - SGSap Service Abort Requests
  - S1 UE Init Ctxt Req Setup Fails
  - CS Service Notifications Fails
  - S1 UE Context Modification Fails
  - Miscellaneous Non CSFB UE Ctxt Rel
  - Miscellaneous failures
  - No PS HO Successes
- CSFB Statistics:
  - UE Initiated Voice Procedures:
    - Attempted
    - Success
    - Failures
  - UE Initiated Priority Voice Procedures:
    - Attempted
    - Success
    - Failures

- NW Initiated Voice Procedures:
  - Attempted
  - Success
  - Failures
- NW Initiated Priority Voice Procedures:
  - Attempted
  - Success
  - Failures
- UE Initiated SMS Procedures:
  - Attempted
  - Success
  - Failures
- NW Initiated SMS Procedures:
  - Attempted
  - Success
  - Failures
- UE Initiated IMSI Detaches:
  - Attempted
  - Success
  - Failures
- NW Initiated IMSI Detaches:
  - Attempted
  - Success
  - Failures
- CS Service Notification

## Bulk Statistics

The following set of new MT Voice CSFB bulkstat counters are added in current bulkstat statistic recording mechanism:

Table 1: MT Voice CSFB bulkstat counters

| Bulk Statistics Counter                     | Description   |
|---|---|
| csfb-mt-voice-sgs-paging-request            | This counter records all non-retransmitted SGS Paging Requests rx'd from MSC (i.e. The starting point of all the MT CSFB Voice procedures both Idle and Active modes)   |
| csfb-mt-voice-failure-paging-timeout        | This counter records max re-transmission timeout failure when eNB/UE do not respond to MME paging request (Idle mode error)   |
| csfb-mt-voice-failure-miscellaneous         | This counter records miscellaneous internal errors such as software errors, internal non-delivery errors, internal aborts, message validation errors, collision with start of MO Voice CSFB procedure etc (i.e. Errors not directly linked to the 3GPP spec procedures) |
| csfb-mt-voice-failure-ext-srv-req-reject    | This counter records the failure when the cause code in the Extended Service Request is NOT CSFB Accept (Idle and Active modes)   |
| csfb-mt-voice-failure-init-ctxt-setup       | This counter records any Initial Context Setup Response failures encountered during the Idle mode scenario  |
| csfb-mt-voice-failure-cs-notification       | This counter records non-delivery/max-retransmission timeout of the CS NOTIFICATION to the UE (Active mode scenario)  |
| csfb-mt-voice-failure-ue-ctxt-mod           | This counter records any UE Context Modification failures (either timeout or failure response - Active mode)  |
| csfb-mt-voice-failure-sgs-service-abort-req | This counter records any procedure aborts based on the MT Voice Cancelled flag which is set when rx'ing the SGS service Abort Request from the MSC/VLR  |
| csfb-mt-voice-failure-ue-ctxt-rel-misc      | This counter records any other S1 UE Context Release error or cause code that doesn't equal "cs-fallback-triggered = 23" but not the other cause codes stated above (Active mode no HO)   |
| csfb-mt-voice-success-ue-ctxt-rel           | This counter records the final success when a S1 UE Context Release response has cause-code "cs-fallback-triggered=23" (Active mode no HO). Successful end-point of the MT CSFB Voice with no HO  |

