3GPP TSG-RAN WG3 Meeting #125 R3-244766

**Maastricht, Netherlands, 19 - 23 August, 2024**

**Agenda item: 10.4**

**Source: Samsung**

**Title: (TP for TS36.423) on MRO for SCG failure**

**Document for: Discussion and Decision**

# **1 Introduction**

The contribution provided a TP for TS36.423 on MRO for SCG failure.

# **TP for BLCR TS36.423**

<<<<<<<<<<<<<<<<<<<< First Change >>>>>>>>>>>>>>>>>>>>

7 Functions of X2AP

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The mapping between the above functions and X2 EPs is shown in the table below.

**Table 7-1: Mapping between X2AP functions and X2AP EPs**

| **Function** | **Elementary Procedure(s)** |
| --- | --- |
| Mobility Management | a) Handover Preparation b) SN Status Transfer c) UE Context Release  d) Handover Cancel  e) Handover Success  f) Conditional Handover Cancel |
| Dual Connectivity | a) SeNB Addition Preparation  b) SeNB Reconfiguration Completion  c) MeNB initiated SeNB Modification Preparation  d) SeNB initiated SeNB Modification  e) MeNB initiated SeNB Release  f) SeNB initiated SeNB Release  g) SeNB Counter Check |
| E-UTRA-NR Dual Connectivity | a) SgNB Addition Preparation  b) SgNB Reconfiguration Completion  c) MeNB initiated SgNB Modification Preparation  d) SgNB initiated SgNB Modification  e) SgNB change  f) MeNB initiated SgNB Release  g) SgNB initiated SgNB Release  h) SgNB Counter Check  i) RRC transfer  j) EN-DC X2 Setup  k) EN-DC Configuration Update  l) EN-DC Cell Activation  m) SgNB Activity Notification  n) EN-DC X2 Removal  o) gNB Status Indication  p) EN-DC Resource Status Reporting Initiation  q) EN-DC Resource Status Reporting  r) F1-C Traffic Transfer |
| Load Management | a) Load Indication  b) Resource Status Reporting Initiation  c) Resource Status Reporting |
| Reporting of General Error Situations | Error Indication |
| Resetting the X2 | Reset |
| Setting up the X2 | X2 Setup |
| eNB Configuration Update | a) eNB Configuration Update  b) Cell Activation |
| Mobility Parameters Management | Mobility Settings Change |
| Mobility Robustness Optimisation | a) Radio Link Failure Indication  b) Handover Report  c) SCG Failure Information Report  d) SCG Failure Transfer |
| Energy Saving | a) eNB Configuration Update  b) Cell Activation |
| X2 Release | X2 Release |
| Message Transfer Registration | X2AP Message Transfer |
| Removing the X2 | X2 Removal |
| Inter-eNB UE Context Retrieval | a) Retrieve UE Context  b) Data Forwarding Address Indication |
| Secondary RAT Data Usage Report | Secondary RAT Data Usage Report |
| E-UTRA - NR Spectrum Sharing | E-UTRA - NR Cell Resource Coordination |
| EN-DC Configuration Transfer | EN-DC Configuration Transfer |
| UE Radio Capability ID Mapping | UE Radio Capability ID Mapping |

8 X2AP procedures

8.1 Elementary procedures

In the following tables, all EPs are divided into Class 1 and Class 2 EPs.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*skip unchanged part \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

**Table 8.1-2: Class 2 Elementary Procedures**

| **Elementary Procedure** | **Initiating Message** |
| --- | --- |
| Load Indication | LOAD INFORMATION |
| Handover Cancel | HANDOVER CANCEL |
| SN Status Transfer | SN STATUS TRANSFER |
| UE Context Release | UE CONTEXT RELEASE |
| Resource Status Reporting | RESOURCE STATUS UPDATE |
| Error Indication | ERROR INDICATION |
| Radio Link Failure Indication | RLF INDICATION |
| Handover Report | HANDOVER REPORT |
| X2 Release | X2 RELEASE |
| X2AP Message Transfer | X2AP MESSAGE TRANSFER |
| SeNB Reconfiguration Completion | SENB RECONFIGURATION COMPLETE |
| MeNB initiated SeNB Release | SENB RELEASE REQUEST |
| SeNB Counter Check | SENB COUNTER CHECK REQUEST |
| SgNB Reconfiguration Completion | SGNB RECONFIGURATION COMPLETE |
| SgNB Counter Check | SGNB COUNTER CHECK REQUEST |
| RRC Transfer | RRC TRANSFER |
| Secondary RAT Data Usage Report | SECONDARY RAT DATA USAGE REPORT |
| SgNB Activity Notification | SGNB ACTIVITY NOTIFICATION |
| Data Forwarding Address Indication | DATA FORWARDING ADDRESS INDICATION |
| gNB Status Indication | GNB STATUS INDICATION |
| EN-DC Configuration Transfer | EN-DC CONFIGURATION TRANSFER |
| Trace Start | TRACE START |
| Deactivate Trace | DEACTIVATE TRACE |
| Handover Success | HANDOVER SUCCESS |
| Conditional Handover Cancel | CONDITIONAL HANDOVER CANCEL |
| Early Status Transfer | EARLY STATUS TRANSFER |
| EN-DC Resource Status Reporting | EN-DC RESOURCE STATUS UPDATE |
| Cell Traffic Trace | CELL TRAFFIC TRACE |
| F1-C Traffic Transfer | F1-C TRAFFIC TRANSFER |
| Access and Mobility Indication | ACCESS AND MOBILITY INDICATION |
| Conditional PSCell Change Cancel | CONDITIONAL PSCELL CHANGE CANCEL |
| RACH Indication | RACH INDICATION |
| SCG Failure Information Report | SCG FAILURE INFORMATION REPORT |
| SCG Failure Transfer | SCG FAILURE TRANSFER |

<<<<<<<<<<<<<<<<<<<< Next Change >>>>>>>>>>>>>>>>>>>>

8.7.x SCG Failure Information Report

8.7.x.1 General

The purpose of the SCG Failure Information Report procedure is to provide SCG mobility related information to an en-gNB.

The procedure uses UE-associated signalling.

8.3.x.2 Successful Operation

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**Figure 8.7.x.2-1: SCG Failure Information Report, successful operation**

The MeNB initiates the procedure by sending the SCG FAILURE INFORMATION REPORT message to the en-gNB. Upon receiving the message, the en-gNB shall assume that a PSCell change failure event was detected.

The SCG FAILURE INFORMATION REPORT message may include:

- the *SN Mobility Information* IE, if the *SN Mobility Information* IE was sent for the PSCell change procedure from the en-gNB;

- the *Source PSCell* *CGI* IE, if the *Source PSCell* *CGI* IE was sent for the PSCell change procedure from the en-gNB.

If the SCG FAILURE INFORMATION REPORT message includes the *Source PSCell* *CGI* IE, the en-gNB shall, if supported, store the information.

If the SCG FAILURE INFORMATION REPORT message includes the *Failed PSCell* *CGI* IE, the en-gNB shall, if supported, store the information and act as specified in TS 36.300 [15].

If received, the en-gNB uses the above information for SCG failure reason detection and optimisation.

8.3.x.3 Unsuccessful Operation

Not applicable.

8.3.x.4 Abnormal Conditions

Void.

8.7.y SCG Failure Transfer

8.7.y.1 General

The purpose of the SCG Failure Transfer procedure is to indicate to the MeNB that the root cause of the SCG failure may have occurred in the other nodes.

The procedure uses UE-associated signalling.

8.7.y.2 Successful Operation

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**Figure 8.7.y.2-1: SCG Failure Information Transfer, successful operation**

en-gNB initiates the procedure by sending the SCG FAILURE TRANSFER message to MeNB.

If received, MeNB uses the information according to TS 36.300 [15].

8.3.18.3 Unsuccessful Operation

Not applicable.

8.3.18.4 Abnormal Conditions

Void.

<<<<<<<<<<<<<<<<<<<< Next Change >>>>>>>>>>>>>>>>>>>>

9.1.4.x SCG FAILURE INFORMATION REPORT

This message is sent by the MeNB to the en-gNB to report a PSCell change failure event.

Direction: MeNB → the en-gNB.

| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** | **Criticality** | **Assigned Criticality** |
| --- | --- | --- | --- | --- | --- | --- |
| Message Type | M |  | 9.2.13 |  | YES | ignore |
| MeNB UE XnAP ID | M |  | eNB UE X2AP ID  9.2.24 | Allocated at the MeNB. | YES | ignore |
| SgNB UE X2AP ID | M |  | en-gNB UE X2AP ID  9.2.100 | Allocated at the en-gNB. | YES | ignore |
| Source PSCell CGI | O |  | NR CGI  9.2.111 | NR CGI of source PSCell for PSCell change procedure | YES | ignore |
| Failed PSCell CGI | O |  | NR CGI  9.2.111 | NR CGI of PSCell where SCG failure occurs for PSCell change procedure | YES | ignore |
| SCG Failure Report Container | M |  | OCTET STRING | Contains the *SCGFailureInformationNR* message as defined in TS 36.331 [9] | YES | ignore |
| SN Mobility Information | O |  | BIT STRING (SIZE (32)) | Information related to the PSCell change. It’s provided by en-gNB in order to enable later analysis of the conditions that led to wrong PSCell change. | YES | ignore |
| Time SCG Failure | O |  | INTEGER (0..1023) |  | YES | ignore |

9.1.4.y SCG FAILURE TRANSFER

This message is sent by the en-gNB to the MeNB to indicate that the root cause of the SCG failure may have occurred in the other nodes.

Direction: en-gNB → MeNB.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** | **Criticality** | **Assigned Criticality** |
| Message Type | M |  | 9.2.13 |  | YES | ignore |
| MeNB UE XnAP ID | M |  | en-gNB UE X2AP ID  9.2.100 | Allocated at the MeNB. | YES | ignore |
| SgNB UE X2AP ID | M |  | en-gNB UE X2AP ID  9.2.100 | Allocated at the en-gNB. | YES | ignore |

<<<<<<<<<<<<<<<<<<<< End of Change >>>>>>>>>>>>>>>>>>>>