3GPP TSG-RAN3 Meeting #108-e R3-204185

E-meeting, 01 - 11 June 2020

**Title:** (TP for LTE\_feMob BL CR for TS 36.423): CHO Modification

**Source:** Huawei

**Agenda item:** 15.3.1.3

**Document for:** Other

# 1. Introduction

This document contains the TP to reflect the outcome of CB# 38.

# ANNEX - TP for LTE\_feMob BL CR for TS 36.423

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| **Start of change** |

### 9.2.6 Cause

The purpose of the cause information element is to indicate the reason for a particular event for the whole protocol.

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| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE Type and Reference | Semantics Description |
| CHOICE Cause Group | M |  |  |  |
| *>Radio Network Layer* |  |  |  |  |
| >>Radio Network Layer Cause | M |  | ENUMERATED  (Handover Desirable for Radio Reasons,  Time Critical Handover,  Resource Optimisation Handover,  Reduce Load in Serving Cell,  Partial Handover,  Unknown New eNB UE X2AP ID, Unknown Old eNB UE X2AP ID, Unknown Pair of UE X2AP ID,  HO Target not Allowed,  TX2RELOCoverall Expiry,  TRELOCprep Expiry,  Cell not Available,  No Radio Resources Available in Target Cell,  Invalid MME Group ID,  Unknown MME Code, Encryption And/Or Integrity Protection Algorithms Not Supported, ReportCharacteristicsEmpty, NoReportPeriodicity, ExistingMeasurementID, Unknown eNB Measurement ID, Measurement Temporarily not Available,  Unspecified,...,Load Balancing, Handover Optimisation, Value out of allowed range, Multiple E-RAB ID instances, Switch Off Ongoing, Not supported QCI value, Measurement not supported for the object,TDCoverall Expiry, TDCprep Expiry,  Action Desirable for Radio Reasons,  Reduce Load,  Resource Optimisation,  Time Critical action,  Target not Allowed,  No Radio Resources Available,  Invalid QoS combination, Encryption Algorithms Not Supported, Procedure cancelled, RRM purpose,  Improve user bit rate,  User Inactivity,  Radio Connection With UE Lost, Failure in the Radio Interface Procedure,  Bearer Option not Supported, MCG Mobility, SCG Mobility, Count reaches max value,  Unknown Old en-gNB UE X2AP ID, PDCP Overload, , CHO-CPC resources to be changed) |  |
| *>Transport Layer* |  |  |  |  |
| >>Transport Layer Cause | M |  | ENUMERATED (Transport Resource Unavailable,  Unspecified,...) |  |
| *>Protocol* |  |  |  |  |
| >>Protocol Cause | M |  | ENUMERATED (Transfer Syntax Error,Abstract Syntax Error (Reject),Abstract Syntax Error (Ignore and Notify),Message not Compatible with Receiver State,Semantic Error,Unspecified,Abstract Syntax Error (Falsely Constructed Message),...) |  |
| *>Misc* |  |  |  |  |
| >>Miscellaneous Cause | M |  | ENUMERATED (Control Processing Overload, Hardware Failure,O&M Intervention,Not enough User Plane Processing Resources,Unspecified,...) |  |

The meaning of the different cause values is described in the following table. In general, "not supported" cause values indicate that the concerned capability is missing. On the other hand, "not available" cause values indicate that the concerned capability is present, but insufficient resources were available to perform the requested action.

|  |  |
| --- | --- |
| Radio Network Layer cause | Meaning |
| Cell not Available | The concerned cell is not available. |
| Handover Desirable for Radio Reasons | The reason for requesting handover is radio related. |
| Handover Target not Allowed | Handover to the indicated target cell is not allowed for the UE in question |
| Invalid MME Group ID | The target eNB doesn’t belong to the same pool area of the source eNB i.e. S1 handovers should be attempted instead. |
| No Radio Resources Available in Target Cell | The target cell doesn’t have sufficient radio resources available. |
| Partial Handover | Provides a reason for the handover cancellation. The target eNB did not admit all E-RABs included in the HANDOVER REQUEST and the source eNB estimated service continuity for the UE would be better by not proceeding with handover towards this particular target eNB. |
| Reduce Load in Serving Cell | Load in serving cell needs to be reduced. When applied to handover preparation, it indicates the handover is triggered due to load balancing. |
| Resource Optimisation Handover | The reason for requesting handover is to improve the load distribution with the neighbour cells. |
| Time Critical Handover | Handover is requested for time critical reason i.e. this cause value is reserved to represent all critical cases where the connection is likely to be dropped if handover is not performed. |
| TX2RELOCoverall Expiry | The reason for the action is expiry of timer TX2RELOCoverall. |
| TRELOCprep Expiry | Handover Preparation procedure is cancelled when timer TRELOCprep expires. |
| Unknown MME Code | The target eNB belongs to the same pool area of the source eNB and recognizes the MME Group ID. However, the MME Code is unknown to the target eNB. |
| Unknown New eNB UE X2AP ID | The action failed because the New eNB UE X2AP ID or the MeNB UE X2AP ID is unknown. |
| Unknown Old eNB UE X2AP ID | The action failed because the Old eNB UE X2AP ID or the SeNB UE X2AP ID is unknown. |
| Unknown Pair of UE X2AP ID | The action failed because the pair of UE X2 AP IDs is unknown. |
| Encryption And/Or Integrity Protection Algorithms Not Supported | The target eNB is unable to support any of the encryption and/or integrity protection algorithms supported by the UE, or the en-gNB is unable to support any of the NR encryption and/or integrity protection algorithms supported by the UE for EN-DC operation. |
| ReportCharacteristicsEmpty | The action failed because there is no characteristic reported. |
| NoReportPeriodicity | The action failed because the periodicity is not defined. |
| ExistingMeasurementID | The action failed because measurement-ID is already used. |
| Unknown eNB Measurement ID | The action failed because some eNB Measurement-ID is unknown. |
| Measurement Temporarily not Available | The eNB can temporarily not provide the requested measurement object. |
| Load Balancing | The reason for mobility settings change is load balancing. |
| Handover Optimisation | The reason for mobility settings change is handover optimisation. |
| Value out of allowed range | The action failed because the proposed Handover Trigger parameter change in the eNB2 Proposed Mobility Parameters IE is too low or too high. |
| Multiple E-RAB ID Instances | The action failed because multiple instances of the same E-RAB had been provided to the eNB. |
| Switch Off Ongoing | The reason for the action is an ongoing switch off i.e. the concerned cell will be switched off after offloading and not be available. It aides the receiving eNB in taking subsequent actions, e.g. selecting the target cell for subsequent handovers. |
| Not supported QCI value | The action failed because the requested QCI is not supported. |
| Unspecified | Sent when none of the above cause values applies but still the cause is Radio Network Layer related. |
| Measurement not Supported For The Object | At least one of the concerned cell(s) does not support the requested measurement. |
| TDCoverall Expiry | The reason for the action is expiry of timer TDCoverall. |
| TDCprep Expiry | The reason for the action is expiry of timer TDCprep. |
| Action Desirable for Radio Reasons | The reason for requesting the action is radio related. In the current version of this specification applicable for Dual Connectivity and EN-DC only. |
| Reduce Load | Load in the cell(group) served by the requesting node needs to be reduced. In the current version of this specification applicable for Dual Connectivity and EN-DC only. |
| Resource Optimisation | The reason for requesting this action is to improve the load distribution with the neighbour cells. In the current version of this specification applicable for Dual Connectivity and EN-DC only. |
| Time Critical action | The action is requested for time critical reason i.e. this cause value is reserved to represent all critical cases where radio resources are likely to be dropped if the requested action is not performed. In the current version of this specification applicable for Dual Connectivity and EN-DC only. |
| Target not Allowed | Requested action towards the indicated target cell is not allowed for the UE in question.  In the current version of this specification applicable for Dual Connectivity and EN-DC only. |
| No Radio Resources Available | The cell(s) in the requested node don’t have sufficient radio resources available.  In the current version of this specification applicable for Dual Connectivity and EN-DC only. |
| Invalid QoS combination | The action was failed because of invalid QoS combination.  In the current version of this specification applicable for Dual Connectivity and EN-DC only. |
| Encryption Algorithms Not Supported | The requested eNB is unable to support any of the encryption algorithms supported by the UE. In the current version of this specification applicable for Dual Connectivity and EN-DC only. |
| Procedure cancelled | The sending node cancelled the procedure due to other urgent actions to be performed.  In the current version of this specification applicable for Dual Connectivity and EN-DC only. |
| RRM purpose | The procedure is initiated due to node internal RRM purposes.  In the current version of this specification applicable for Dual Connectivity and EN-DC only. |
| Improve User Bit Rate | The reason for requesting this action is to improve the user bit rate.  In the current version of this specification applicable for Dual Connectivity and EN-DC only. |
| User Inactivity | The action is requested due to user inactivity on all E-RABs, e.g., S1 is requested to be released in order to optimise the radio resources; or SeNB/en-gNB didn’t see activity on the DRB recently.  In the current version of this specification applicable for Dual Connectivity and EN-DC only. |
| Radio Connection With UE Lost | The action is requested due to losing the radio connection to the UE.  In the current version of this specification applicable for Dual Connectivity and EN-DC only. |
| Failure in the Radio Interface Procedure | Radio interface procedure has failed.  In the current version of this specification applicable for Dual Connectivity and EN-DC only. |
| Bearer Option not Supported | The requested bearer option is not supported by the sending node.  In the current version of this specification applicable for Dual Connectivity and EN-DC only. |
| MCG Mobility | The procedure is initiated due to mobility related at MCG radio resource. |
| SCG Mobility | The procedure is initiated due to mobility related at SCG radio resource. |
| Count reaches max value | Indicates the PDCP COUNT for UL or DL reached the max value and the bearer may be released. |
| Unknown Old en-gNB UE X2AP ID | The action failed because the Old en-gNB UE X2AP ID or the SeNB UE X2AP ID is unknown. |
| PDCP Overload | The procedure is initiated due to PDCP resource limitation. |
| CHO-CPC resources to be changed | The prepared resources for CHO or CPC for a UE are to be changed. |

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| **Next change** |

CauseRadioNetwork ::= ENUMERATED {

handover-desirable-for-radio-reasons,

time-critical-handover,

resource-optimisation-handover,

reduce-load-in-serving-cell,

partial-handover,

unknown-new-eNB-UE-X2AP-ID,

unknown-old-eNB-UE-X2AP-ID,

unknown-pair-of-UE-X2AP-ID,

ho-target-not-allowed,

tx2relocoverall-expiry,

trelocprep-expiry,

cell-not-available,

no-radio-resources-available-in-target-cell,

invalid-MME-GroupID,

unknown-MME-Code,

encryption-and-or-integrity-protection-algorithms-not-supported,

reportCharacteristicsEmpty,

noReportPeriodicity,

existingMeasurementID,

unknown-eNB-Measurement-ID,

measurement-temporarily-not-available,

unspecified,

...,

load-balancing,

handover-optimisation,

value-out-of-allowed-range,

multiple-E-RAB-ID-instances,

switch-off-ongoing,

not-supported-QCI-value,

measurement-not-supported-for-the-object,

tDCoverall-expiry,

tDCprep-expiry,

action-desirable-for-radio-reasons,

reduce-load,

resource-optimisation,

time-critical-action,

target-not-allowed,

no-radio-resources-available,

invalid-QoS-combination,

encryption-algorithms-not-supported,

procedure-cancelled,

rRM-purpose,

improve-user-bit-rate,

user-inactivity,

radio-connection-with-UE-lost,

failure-in-the-radio-interface-procedure,

bearer-option-not-supported,

mCG-Mobility,

sCG-Mobility,

count-reaches-max-value,

unknown-old-en-gNB-UE-X2AP-ID,

pDCP-Overload,

cho-cpc-resources-tobechanged

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| **End of second change** |