**3GPP TSG-RAN WG3 Meeting #109-e *R3-205717***

**17- 28 Aug 2020**

**Online**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.473** | **CR** | **0396** | **rev** | **-** | **Current version:** | **16.2.0** |  |
|  | | | | | | | | |
| *For* ***[HE](http://www.3gpp.org/3G_Specs/CRs.htm" \l "_blank)******[LP](http://www.3gpp.org/3G_Specs/CRs.htm" \l "_blank)*** *on using this form: comprehensive instructions can be found at  <http://www.3gpp.org/Change-Requests>.* | | | | | | | | |
|  | | | | | | | | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network | **X** | Core Network |  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | CR for TS38.473 on Unsuccessful Operation and Abnormal Conditions of MLB | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | ZTE | | | | | | | | | |
| ***Source to TSG:*** | R3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | TEI16 | | | | |  | ***Date:*** | | | 2020-08-26 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-16 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) Rel-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | For the procedure of Resource Status Reporting Initiation over F1, the description of Unsuccessful Operation is not completed and the description of Abnormal Conditions is still void. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Complete the description of Unsuccessful Operation and Abnormal Conditions.  Add the corresponding ASN.1.  Impact Analysis:  Impact assessment towards the previous version of the specification (same release):  This CR has no impact with the previous version of the specification for implementations following the statement introduced by this CR. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | The function of Resource Status Reporting Initiation can not work properly. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 8.2.10.3; 8.2.10.4; 9.2.1.22; 9.3.1.2; 9.3.4; 9.3.5 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | |  | | |
| ***affected:*** | |  | **X** | Test specifications | | | |  | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | |  | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

<<<<<<<<<<<<<<<<<<<< Start of the first Change >>>>>>>>>>>>>>>>>>>>

#### 8.2.10.3 Unsuccessful Operation



Figure 8.2.10.3-1: Resource Status Reporting Initiation, unsuccessful operation

If any of the requested measurements cannot be initiated, gNB-DU shall send the RESOURCE STATUS FAILURE message. The *Cause* IE shall be set to an appropriate value e.g. "Measurement Temporarily not Available" or "Measurement not Supported For The Object" for each requested measurement object. The gNB-DU may use the *Complete Failure Cause Information* IE to enhance the failure cause information per measurement in the RESOURCE STATUS FAILURE message.

#### 8.2.10.4 Abnormal Conditions

If the initiating gNB-CU does not receive either RESOURCE STATUS RESPONSE message or RESOURCE STATUS FAILURE message, the gNB-CU may reinitiate the Resource Status Reporting Initiation procedure towards the same gNB-DU, provided that the content of the new RESOURCE STATUS REQUEST message is identical to the content of the previously unacknowledged RESOURCE STATUS REQUEST message.

If the *Report Characteristics* IE bitmap is set to "0" (all bits are set to "0") in the RESOURCE STATUS REQUEST message then gNB-DU shall initiate a RESOURCE STATUS FAILURE message, the cause shall be set to appropriate value e.g. "ReportCharacteristicsEmpty".

If the *Reporting Periodicity* IE value is not specified when at least one of the bits of the *Report Characteristics* IE, for which semantics is specified, is set to 1 then gNB-DU shall initiate a RESOURCE STATUS FAILURE message, the cause shall be set to appropriate value e.g. "NoReportPeriodicity".

If the gNB-DU received a RESOURCE STATUS REQUEST message which includes the *Registration Request* IE set to "start" and the *gNB-CU Measurement ID* IE corresponding to an existing on-going load measurement reporting, then gNB-DU shall initiate a RESOURCE STATUS FAILURE message, the cause shall be set to appropriate value e.g. "ExistingMeasurementID".

If the *Registration Request* IE is set to "stop", "partial stop" or "add" and the RESOURCE STATUS REQUEST message does not contain *gNB-DU Measurement ID* IE, gNB-DU shall consider the procedure as failed and respond with the RESOURCE STATUS FAILURE message, the cause shall be set to appropriate value e.g. "Unknown gNB-DU Measurement ID".

If the *Registration Request* IE is set to "partial stop" and the *Cell To Report* IE contains cells that have not been initiated for the reporting before, gNB-DU shall consider the procedure as failed and respond with the RESOURCE STATUS FAILURE message, the cause shall be set to appropriate value e.g. "Cell not Available". If the *Registration Request* IE is set to "add" and the *Cell To Report* IE contains cells that have been initiated for the reporting before, gNB-DU shall consider the procedure as failed and respond with the RESOURCE STATUS FAILURE message, the cause shall be set to appropriate value e.g. "Cell not Available".

<<<<<<<<<<<<<<<<<<<< End of the first Change >>>>>>>>>>>>>>>>>>>>

<<<<<<<<<<<<<<<<<<<< Start of the Second Change >>>>>>>>>>>>>>>>>>>>

#### 9.2.1.22 RESOURCE STATUS FAILURE

This message is sent by gNB-DU to gNB-CU to indicate that for any of the requested measurement objects the measurement cannot be initiated.

Direction: gNB-DU → gNB-CU.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| Message Type | M |  | 9.3.1.1 |  | YES | reject |
| Transaction ID | M |  | 9.3.1.23 |  | YES | reject |
| gNB-CU Measurement ID | M |  | INTEGER (1..4095,...) | Allocated by gNB-CU | YES | reject |
| gNB-DU Measurement ID | M |  | INTEGER (1..4095,...) | Allocated by gNB-DU | YES | ignore |
| Cause | M |  | 9.3.1.2 | Ignored by the receiver when the Complete Failure Cause Information IE is included | YES | ignore |
| Criticality Diagnostics | O |  | 9.3.1.3 |  | YES | ignore |
| **Complete Failure Cause Information** |  | *0..1* |  | Complete list of failure causes for all requested cells | YES | ignore |
| >**Complete Failure Cause Information Item** |  | *1 .. <maxCellingNBDU>* |  |  | EACH | ignore |
| >>Cell ID | M |  | NR CGI  9.3.1.12 |  | – |  |
| >>**Measurement Failure Cause List** |  | *1* |  |  | – |  |
| >>>**Measurement Failure Cause Item** |  | *1 .. <maxnoofFailedMeasObjects>* |  |  | EACH | ignore |
| >>>>Measurement Failed Report Characteristics | M |  | BITSTRING  (SIZE(32)) | Each position in the bitmap indicates measurement object the gNB-DU is requested to report.  First Bit = PRB Periodic,  Second Bit = TNL Capacity Ind Periodic,  Third Bit =  Composite Available Capacity Periodic, Fourth Bit = HW LoadInd Periodic, Fifth Bit = Number of Active UEs  Other bits shall be ignored by the gNB-DU. | – |  |
| >>>>Cause | M |  | 9.3.1.2 | Failure cause for measurements that cannot be initiated | – |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxCellingNBDU | Maximum no. cells that can be served by a gNB-DU. Value is 512. |
| maxnoofFailedMeasObjects | Max number of measurement objects that can fail per measurement. Value is 32. |

<<<<<<<<<<<<<<<<<<<< End of the Second Change >>>>>>>>>>>>>>>>>>>>

<<<<<<<<<<<<<<<<<<<< Start of the Third Change >>>>>>>>>>>>>>>>>>>>

#### 9.3.1.2 Cause

The purpose of the *Cause* IE is to indicate the reason for a particular event for the F1AP protocol.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **IE/Group Name** | **Presence** | **Range** | **IE Type and Reference** | **Semantics Description** |
| CHOICE *Cause Group* | M |  |  |  |
| >*Radio Network Layer* |  |  |  |  |
| >>Radio Network Layer Cause | M |  | ENUMERATED (Unspecified, RL failure-RLC, Unknown or already allocated gNB-CU UE F1AP ID,  Unknown or already allocated gNB-DU UE F1AP ID,  Unknown or inconsistent pair of UE F1AP ID,  Interaction with other procedure,  Not supported QCI Value,  Action Desirable for Radio Reasons,  No Radio Resources Available,  Procedure cancelled, Normal Release, ..., Cell not available, RL failure-others, UE rejection, Resources not available for the slice(s), AMF initiated abnormal release, Release due to Pre-Emption, PLMN not served by the gNB-CU, Multiple DRB ID Instances, Unknown DRB ID, Multiple BH RLC CH ID Instances, Unknown BU RLC CH ID, CHO-CPC resources to be changed, NPN not supported, NPN access denied,  ReportCharacteristicsEmpty, NoReportPeriodicity, ExistingMeasurementID, Unknown gNB-DU Measurement ID, Measurement Temporarily not Available, Measurement not Supported For The Object) |  |
| *>Transport Layer* |  |  |  |  |
| >>Transport Layer Cause | M |  | ENUMERATED (Unspecified, Transport Resource Unavailable, ... , Unknown TNL address for IAB, Unknown UP TNL information for IAB) |  |
| *>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,  Abstract Syntax Error (Falsely Constructed Message), Unspecified, ...) |  |
| *>Misc* |  |  |  |  |
| >>Miscellaneous Cause | M |  | ENUMERATED (Control Processing Overload, Not enough User Plane Processing Resources, Hardware Failure, O&M Intervention, Unspecified, ...) |  |

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

|  |  |
| --- | --- |
| Radio Network Layer cause | Meaning |
| Unspecified | Sent for radio network layer cause when none of the specified cause values applies. |
| RL Failure-RLC | The action is due to an RL failure caused by exceeding the maximum number of ARQ retransmissions. |
| Unknown or already allocated gNB-CU UE F1AP ID | The action failed because the gNB-CU UE F1AP ID is either unknown, or (for a first message received at the gNB-CU) is known and already allocated to an existing context. |
| Unknown or already allocated gNB-DU UE F1AP ID | The action failed because the gNB-DU UE F1AP ID is either unknown, or (for a first message received at the gNB-DU) is known and already allocated to an existing context. |
| Unknown or inconsistent pair of UE F1AP ID | The action failed because both UE F1AP IDs are unknown, or are known but do not define a single UE context. |
| Interaction with other procedure | The action is due to an ongoing interaction with another procedure. |
| Not supported QCI Value | The action failed because the requested QCI is not supported. |
| Action Desirable for Radio Reasons | The reason for requesting the action is radio related. |
| No Radio Resources Available | The cell(s) in the requested node don’t have sufficient radio resources available. |
| Procedure cancelled | The sending node cancelled the procedure due to other urgent actions to be performed. |
| Normal Release | The action is due to a normal release of the UE (e.g. because of mobility) and does not indicate an error. |
| Cell Not Available | The action failed due to no cell available in the requested node. |
| RL Failure-others | The action is due to an RL failure caused by other radio link failures than exceeding the maximum number of ARQ retransmissions. |
| UE rejection | The action is due to gNB-CU’s rejection of a UE access request. |
| Resources not available for the slice(s) | The requested resources are not available for the slice(s). |
| AMF initiated abnormal release | The release is triggered by an error in the AMF or in the NAS layer. |
| Release due to Pre-Emption | Release is initiated due to pre-emption. |
| PLMN not served by the gNB-CU | The PLMN indicated by the UE is not served by the gNB-CU. |
| Multiple DRB ID Instances | The action failed because multiple instances of the same DRB had been provided. |
| Unknown DRB ID | The action failed because the DRB ID is unknow. |
| Multiple BH RLC CH ID Instances | The action failed because multiple instances of the same BH RLC CH ID had been provided. This cause value is only applicable to IAB. |
| Unknown BH RLC CH ID | The action failed because the BH RLC CH ID is unknown. This cause value is only applicable to IAB. |
| CHO-CPC resources to be changed | The gNB-DU requires gNB-CU to replace, i.e. overwrite the configuration of indicated candidate target cell. |
| NPN not supported | The action fails because the indicated SNPN is not supported in the node. |
| NPN access denied | The action is due to rejection of a UE access request for NPN. |
| 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 gNB-DU Measurement ID | The action failed because some gNB-DU Measurement-ID is unknown. |
| Measurement Temporarily not Available | The gNB-DU can temporarily not provide the requested measurement object. |
| Measurement not Supported For The Object | At least one of the concerned cell(s) does not support the requested measurement. |

<<<<<<<<<<<<<<<<<<<< End of the Third Change >>>>>>>>>>>>>>>>>>>>

<<<<<<<<<<<<<<<<<<<< Start of the Fourth Change >>>>>>>>>>>>>>>>>>>>

### 9.4.4 PDU Definitions

<Unchanged Parts Skipped>

FROM F1AP-Containers

id-Candidate-SpCell-Item,

id-Candidate-SpCell-List,

id-Cause,

id-Cancel-all-Warning-Messages-Indicator,

id-Cells-Failed-to-be-Activated-List,

id-Cells-Failed-to-be-Activated-List-Item,

id-Cells-Status-Item,

id-Cells-Status-List,

id-Cells-to-be-Activated-List,

id-Cells-to-be-Activated-List-Item,

id-Cells-to-be-Deactivated-List,

id-Cells-to-be-Deactivated-List-Item,

id-ConfirmedUEID,

id-CriticalityDiagnostics,

id-C-RNTI,

id-CUtoDURRCInformation,

id-DRB-Activity-Item,

id-DRB-Activity-List,

id-DRBs-FailedToBeModified-Item,

id-DRBs-FailedToBeModified-List,

id-DRBs-FailedToBeSetup-Item,

id-DRBs-FailedToBeSetup-List,

id-DRBs-FailedToBeSetupMod-Item,

id-DRBs-FailedToBeSetupMod-List,

id-DRBs-ModifiedConf-Item,

id-DRBs-ModifiedConf-List,

id-DRBs-Modified-Item,

id-DRBs-Modified-List,

id-DRB-Notify-Item,

id-DRB-Notify-List,

id-DRBs-Required-ToBeModified-Item,

id-DRBs-Required-ToBeModified-List,

id-DRBs-Required-ToBeReleased-Item,

id-DRBs-Required-ToBeReleased-List,

id-DRBs-Setup-Item,

id-DRBs-Setup-List,

id-DRBs-SetupMod-Item,

id-DRBs-SetupMod-List,

id-DRBs-ToBeModified-Item,

id-DRBs-ToBeModified-List,

id-DRBs-ToBeReleased-Item,

id-DRBs-ToBeReleased-List,

id-DRBs-ToBeSetup-Item,

id-DRBs-ToBeSetup-List,

id-DRBs-ToBeSetupMod-Item,

id-DRBs-ToBeSetupMod-List,

id-DRXCycle,

id-DUtoCURRCInformation,

id-ExecuteDuplication,

id-FullConfiguration,

id-gNB-CU-UE-F1AP-ID,

id-gNB-DU-UE-F1AP-ID,

id-gNB-DU-ID,

id-GNB-DU-Served-Cells-Item,

id-gNB-DU-Served-Cells-List,

id-gNB-CU-Name,

id-gNB-DU-Name,

id-InactivityMonitoringRequest,

id-InactivityMonitoringResponse,

id-new-gNB-CU-UE-F1AP-ID,

id-new-gNB-DU-UE-F1AP-ID,

id-oldgNB-DU-UE-F1AP-ID,

id-PLMNAssistanceInfoForNetShar,

id-Potential-SpCell-Item,

id-Potential-SpCell-List,

id-RAT-FrequencyPriorityInformation,

id-RedirectedRRCmessage,

id-ResetType,

id-ResourceCoordinationTransferContainer,

id-RRCContainer,

id-RRCContainer-RRCSetupComplete,

id-RRCReconfigurationCompleteIndicator,

id-SCell-FailedtoSetup-List,

id-SCell-FailedtoSetup-Item,

id-SCell-FailedtoSetupMod-List,

id-SCell-FailedtoSetupMod-Item,

id-SCell-ToBeRemoved-Item,

id-SCell-ToBeRemoved-List,

id-SCell-ToBeSetup-Item,

id-SCell-ToBeSetup-List,

id-SCell-ToBeSetupMod-Item,

id-SCell-ToBeSetupMod-List,

id-SelectedPLMNID,

id-Served-Cells-To-Add-Item,

id-Served-Cells-To-Add-List,

id-Served-Cells-To-Delete-Item,

id-Served-Cells-To-Delete-List,

id-Served-Cells-To-Modify-Item,

id-Served-Cells-To-Modify-List,

id-ServCellIndex,

id-ServingCellMO,

id-SpCell-ID,

id-SpCellULConfigured,

id-SRBID,

id-SRBs-FailedToBeSetup-Item,

id-SRBs-FailedToBeSetup-List,

id-SRBs-FailedToBeSetupMod-Item,

id-SRBs-FailedToBeSetupMod-List,

id-SRBs-Required-ToBeReleased-Item,

id-SRBs-Required-ToBeReleased-List,

id-SRBs-ToBeReleased-Item,

id-SRBs-ToBeReleased-List,

id-SRBs-ToBeSetup-Item,

id-SRBs-ToBeSetup-List,

id-SRBs-ToBeSetupMod-Item,

id-SRBs-ToBeSetupMod-List,

id-SRBs-Modified-Item,

id-SRBs-Modified-List,

id-SRBs-Setup-Item,

id-SRBs-Setup-List,

id-SRBs-SetupMod-Item,

id-SRBs-SetupMod-List,

id-TimeToWait,

id-TransactionID,

id-TransmissionActionIndicator,

id-UEContextNotRetrievable,

id-UE-associatedLogicalF1-ConnectionItem,

id-UE-associatedLogicalF1-ConnectionListResAck,

id-DUtoCURRCContainer,

id-NRCGI,

id-PagingCell-Item,

id-PagingCell-List,

id-PagingDRX,

id-PagingPriority,

id-SItype-List,

id-UEIdentityIndexValue,

id-GNB-CU-TNL-Association-Setup-List,

id-GNB-CU-TNL-Association-Setup-Item,

id-GNB-CU-TNL-Association-Failed-To-Setup-List,

id-GNB-CU-TNL-Association-Failed-To-Setup-Item,

id-GNB-CU-TNL-Association-To-Add-Item,

id-GNB-CU-TNL-Association-To-Add-List,

id-GNB-CU-TNL-Association-To-Remove-Item,

id-GNB-CU-TNL-Association-To-Remove-List,

id-GNB-CU-TNL-Association-To-Update-Item,

id-GNB-CU-TNL-Association-To-Update-List,

id-MaskedIMEISV,

id-PagingIdentity,

id-Cells-to-be-Barred-List,

id-Cells-to-be-Barred-Item,

id-PWSSystemInformation,

id-RepetitionPeriod,

id-NumberofBroadcastRequest,

id-Cells-To-Be-Broadcast-List,

id-Cells-To-Be-Broadcast-Item,

id-Cells-Broadcast-Completed-List,

id-Cells-Broadcast-Completed-Item,

id-Broadcast-To-Be-Cancelled-List,

id-Broadcast-To-Be-Cancelled-Item,

id-Cells-Broadcast-Cancelled-List,

id-Cells-Broadcast-Cancelled-Item,

id-NR-CGI-List-For-Restart-List,

id-NR-CGI-List-For-Restart-Item,

id-PWS-Failed-NR-CGI-List,

id-PWS-Failed-NR-CGI-Item,

id-EUTRA-NR-CellResourceCoordinationReq-Container,

id-EUTRA-NR-CellResourceCoordinationReqAck-Container,

id-Protected-EUTRA-Resources-List,

id-RequestType,

id-ServingPLMN,

id-DRXConfigurationIndicator,

id-RLCFailureIndication,

id-UplinkTxDirectCurrentListInformation,

id-SULAccessIndication,

id-Protected-EUTRA-Resources-Item,

id-GNB-DUConfigurationQuery,

id-GNB-DU-UE-AMBR-UL,

id-GNB-CU-RRC-Version,

id-GNB-DU-RRC-Version,

id-GNBDUOverloadInformation,

id-NeedforGap,

id-RRCDeliveryStatusRequest,

id-RRCDeliveryStatus,

id-Dedicated-SIDelivery-NeededUE-List,

id-Dedicated-SIDelivery-NeededUE-Item,

id-ResourceCoordinationTransferInformation,

id-Associated-SCell-List,

id-Associated-SCell-Item,

id-IgnoreResourceCoordinationContainer,

id-UAC-Assistance-Info,

id-RANUEID,

id-PagingOrigin,

id-GNB-DU-TNL-Association-To-Remove-Item,

id-GNB-DU-TNL-Association-To-Remove-List,

id-NotificationInformation,

id-TraceActivation,

id-TraceID,

id-Neighbour-Cell-Information-List,

id-Neighbour-Cell-Information-Item,

id-SymbolAllocInSlot,

id-NumDLULSymbols,

id-AdditionalRRMPriorityIndex,

id-DUCURadioInformationType,

id-CUDURadioInformationType,

id-LowerLayerPresenceStatusChange,

id-Transport-Layer-Address-Info,

id-BHChannels-ToBeSetup-List,

id-BHChannels-ToBeSetup-Item,

id-BHChannels-Setup-List,

id-BHChannels-Setup-Item,

id-BHChannels-ToBeModified-Item,

id-BHChannels-ToBeModified-List,

id-BHChannels-ToBeReleased-Item,

id-BHChannels-ToBeReleased-List,

id-BHChannels-ToBeSetupMod-Item,

id-BHChannels-ToBeSetupMod-List,

id-BHChannels-FailedToBeSetup-Item,

id-BHChannels-FailedToBeSetup-List,

id-BHChannels-FailedToBeModified-Item,

id-BHChannels-FailedToBeModified-List,

id-BHChannels-FailedToBeSetupMod-Item,

id-BHChannels-FailedToBeSetupMod-List,

id-BHChannels-Modified-Item,

id-BHChannels-Modified-List,

id-BHChannels-SetupMod-Item,

id-BHChannels-SetupMod-List,

id-BHChannels-Required-ToBeReleased-Item,

id-BHChannels-Required-ToBeReleased-List,

id-BAPAddress,

id-ConfiguredBAPAddress,

id-BH-Routing-Information-Added-List,

id-BH-Routing-Information-Added-List-Item,

id-BH-Routing-Information-Removed-List,

id-BH-Routing-Information-Removed-List-Item,

id-UL-BH-Non-UP-Traffic-Mapping,

id-Child-Nodes-List,

id-Activated-Cells-to-be-Updated-List,

id-IABIPv6RequestType,

id-IAB-TNL-Addresses-To-Remove-List,

id-IAB-TNL-Addresses-To-Remove-Item,

id-IAB-Allocated-TNL-Address-List,

id-IAB-Allocated-TNL-Address-Item,

id-IABv4AddressesRequested,

id-TrafficMappingInformation,

id-UL-UP-TNL-Information-to-Update-List,

id-UL-UP-TNL-Information-to-Update-List-Item,

id-UL-UP-TNL-Address-to-Update-List,

id-UL-UP-TNL-Address-to-Update-List-Item,

id-DL-UP-TNL-Address-to-Update-List,

id-DL-UP-TNL-Address-to-Update-List-Item,

id-NRV2XServicesAuthorized,

id-LTEV2XServicesAuthorized,

id-NRUESidelinkAggregateMaximumBitrate,

id-LTEUESidelinkAggregateMaximumBitrate,

id-PC5LinkAMBR,

id-SLDRBs-FailedToBeModified-Item,

id-SLDRBs-FailedToBeModified-List,

id-SLDRBs-FailedToBeSetup-Item,

id-SLDRBs-FailedToBeSetup-List,

id-SLDRBs-Modified-Item,

id-SLDRBs-Modified-List,

id-SLDRBs-Required-ToBeModified-Item,

id-SLDRBs-Required-ToBeModified-List,

id-SLDRBs-Required-ToBeReleased-Item,

id-SLDRBs-Required-ToBeReleased-List,

id-SLDRBs-Setup-Item,

id-SLDRBs-Setup-List,

id-SLDRBs-ToBeModified-Item,

id-SLDRBs-ToBeModified-List,

id-SLDRBs-ToBeReleased-Item,

id-SLDRBs-ToBeReleased-List,

id-SLDRBs-ToBeSetup-Item,

id-SLDRBs-ToBeSetup-List,

id-SLDRBs-ToBeSetupMod-Item,

id-SLDRBs-ToBeSetupMod-List,

id-SLDRBs-SetupMod-List,

id-SLDRBs-FailedToBeSetupMod-List,

id-SLDRBs-SetupMod-Item,

id-SLDRBs-FailedToBeSetupMod-Item,

id-SLDRBs-ModifiedConf-List,

id-SLDRBs-ModifiedConf-Item,

id-gNBCUMeasurementID,

id-gNBDUMeasurementID,

id-RegistrationRequest,

id-ReportCharacteristics,

id-CellToReportList,

id-CellMeasurementResultList,

id-HardwareLoadIndicator,

id-ReportingPeriodicity,

id-TNLCapacityIndicator,

id-RACHReportInformationList,

id-RLFReportInformationList,

id-ReportingRequestType,

id-TimeReferenceInformation,

id-ConditionalInterDUMobilityInformation,

id-ConditionalIntraDUMobilityInformation,

id-targetCellsToCancel,

id-requestedTargetCellGlobalID,

id-TraceCollectionEntityIPAddress,

id-ManagementBasedMDTPLMNList,

id-PrivacyIndicator,

id-TraceCollectionEntityURI,

id-ServingNID,

id-CompleteFailureCauseInformation-List,

id-CompleteFailureCauseInformation-Item,

maxCellingNBDU,

maxnoofCandidateSpCells,

maxnoofDRBs,

maxnoofErrors,

maxnoofIndividualF1ConnectionsToReset,

maxnoofPotentialSpCells,

maxnoofSCells,

maxnoofSRBs,

maxnoofPagingCells,

maxnoofTNLAssociations,

maxCellineNB,

maxnoofUEIDs,

maxnoofBHRLCChannels,

maxnoofRoutingEntries,

maxnoofChildIABNodes,

maxnoofServedCellsIAB,

maxnoofTLAsIAB,

maxnoofULUPTNLInformationforIAB,

maxnoofUPTNLAddresses,

maxnoofSLDRBs,

maxnoofFailedMeasObjects

<Unchanged Parts Skipped>

-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

--

-- Resource Status Failure

--

-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

ResourceStatusFailure ::= SEQUENCE {

protocolIEs ProtocolIE-Container { { ResourceStatusFailureIEs} },

...

}

ResourceStatusFailureIEs F1AP-PROTOCOL-IES ::= {

{ ID id-TransactionID CRITICALITY reject TYPE TransactionID PRESENCE mandatory }|

{ ID id-gNBCUMeasurementID CRITICALITY reject TYPE GNBCUMeasurementID PRESENCE mandatory }|

{ ID id-gNBDUMeasurementID CRITICALITY ignore TYPE GNBDUMeasurementID PRESENCE mandatory }|

{ ID id-Cause CRITICALITY ignore TYPE Cause PRESENCE mandatory }|

{ ID id-CriticalityDiagnostics CRITICALITY ignore TYPE CriticalityDiagnostics PRESENCE optional },

{ ID id-CompleteFailureCauseInformation-List CRITICALITY ignore TYPE CompleteFailureCauseInformation-List PRESENCE optional},

...

}

CompleteFailureCauseInformation-List ::= SEQUENCE (SIZE (1..maxCellingNBDU)) OF ProtocolIE-Single-Container { {CompleteFailureCauseInformation-ItemIEs} }

CompleteFailureCauseInformation-ItemIEs F1AP-PROTOCOL-IES ::= {

{ ID id-CompleteFailureCauseInformation-Item CRITICALITY ignore TYPE CompleteFailureCauseInformation-Item PRESENCE mandatory}

}

CompleteFailureCauseInformation-Item ::= SEQUENCE {

cell-ID NRCGI,

measurementFailureCause-List MeasurementFailureCause-List,

iE-Extensions ProtocolExtensionContainer { {CompleteFailureCauseInformation-Item-ExtIEs} } OPTIONAL,

...

}

CompleteFailureCauseInformation-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {

...

}

MeasurementFailureCause-List ::= SEQUENCE (SIZE (1..maxnoofFailedMeasObjects)) OF ProtocolIE-Single-Container { {MeasurementFailureCause-ItemIEs} }

MeasurementFailureCause-ItemIEs F1AP-PROTOCOL-IES ::= {

{ ID id-MeasurementFailureCause-Item CRITICALITY ignore TYPE MeasurementFailureCause-Item PRESENCE mandatory}

}

MeasurementFailureCause-Item ::= SEQUENCE {

measurementFailedReportCharacteristics ReportCharacteristics,

cause Cause,

iE-Extensions ProtocolExtensionContainer { {MeasurementFailureCause-Item-ExtIEs} } OPTIONAL,

...

}

MeasurementFailureCause-Item-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {

...

}

<<<<<<<<<<<<<<<<<<<< End of the Fourth Change >>>>>>>>>>>>>>>>>>>>

<<<<<<<<<<<<<<<<<<<< Start of the Fifth Change >>>>>>>>>>>>>>>>>>>>

### 9.3.5 Information Element definitions

<Unchanged Parts Skipped>

-- C

<Unchanged Parts Skipped>

Cause ::= CHOICE {

radioNetwork CauseRadioNetwork,

transport CauseTransport,

protocol CauseProtocol,

misc CauseMisc,

choice-extension ProtocolIE-SingleContainer { { Cause-ExtIEs} }

}

Cause-ExtIEs F1AP-PROTOCOL-IES ::= {

...

}

CauseMisc ::= ENUMERATED {

control-processing-overload,

not-enough-user-plane-processing-resources,

hardware-failure,

om-intervention,

unspecified,

...

}

CauseProtocol ::= ENUMERATED {

transfer-syntax-error,

abstract-syntax-error-reject,

abstract-syntax-error-ignore-and-notify,

message-not-compatible-with-receiver-state,

semantic-error,

abstract-syntax-error-falsely-constructed-message,

unspecified,

...

}

CauseRadioNetwork ::= ENUMERATED {

unspecified,

rl-failure-rlc,

unknown-or-already-allocated-gnb-cu-ue-f1ap-id,

unknown-or-already-allocated-gnb-du-ue-f1ap-id,

unknown-or-inconsistent-pair-of-ue-f1ap-id,

interaction-with-other-procedure,

not-supported-qci-Value,

action-desirable-for-radio-reasons,

no-radio-resources-available,

procedure-cancelled,

normal-release,

...,

cell-not-available,

rl-failure-others,

ue-rejection,

resources-not-available-for-the-slice,

amf-initiated-abnormal-release,

release-due-to-pre-emption,

plmn-not-served-by-the-gNB-CU,

multiple-drb-id-instances,

unknown-drb-id,

multiple-bh-rlc-ch-id-instances,

unknown-bh-rlc-ch-id,

cho-cpc-resources-tobechanged,

nPN-not-supported,

nPN-access-denied,

report-characteristics-empty,

no-report-periodicity,

existing-measurement-ID,

unknown-gNB-DU-measurement-ID,

measurement-temporarily-not-available,

measurement-not-supported-for-the-object}

CauseTransport ::= ENUMERATED {

unspecified,

transport-resource-unavailable,

...,

unknown-TNL-address-for-IAB,

unknown-UP-TNL-information-for-IAB

}

<<<<<<<<<<<<<<<<<<<< End of the Fifth Change >>>>>>>>>>>>>>>>>>>>