3GPP TSG-RAN WG3 Meeting #127bis R3-252365

**Wuhan, China, 7-11 April 2025**

Agenda Item: 21.3

Source: Huawei, Nokia, Nokia Shanghai Bell, CMCC, CATT, Ofinno

Title: (TP to BL CR for TS 38.473) Support of PDU set based QoS handling enhancement

Document for: Approval

# 1. Introduction

This contribution provides TP for F1AP to reflect the change for supporting of PDU set based QoS handling enhancement as listed in the updated WID in RP-250107 [1]. The corresponding objective is copied below

|  |
| --- |
| - Support of PDU set based QoS handling enhancement [RAN3]:  - Support of DL PDU Set marking without PDU Set QoS  - Support of Alternative PDU Set QoS, which may contain UL and/or DL PDU Set QoS Parameters (i.e. UL PSDB, DL PSDB, UL PSER and/or DL PSER).  …… |

The TP includes following changes:

* Extend the codepoint of Notification Cause to support indicating the direction of not fulfilled QoS;
* Add PSDB, PSER for UL and DL in Alternative QoS parameters.

# Annex: TP for TS 38.473 on Alternative PDU Set QoS

*CHANGES START*

#### 9.2.2.13 NOTIFY

This message is sent by the gNB-DU to notify the gNB-CU that the QoS for already established DRBs associated with notification control is not fulfilled any longer or it is fulfilled again.

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 | ignore |
| gNB-CU UE F1AP ID | M |  | 9.3.1.4 |  | YES | reject |
| gNB-DU UE F1AP ID | M |  | 9.3.1.5 |  | YES | reject |
| **DRB Notify List** |  | *1* |  |  | YES | reject |
| **>DRB Notify Item IEs** |  | *<1 .. maxnoofDRBs>* |  |  | EACH | reject |
| >>DRB ID | M |  | 9.3.1.8 |  | - |  |
| >>Notification Cause | M |  | ENUMERATED(Fulfilled, Not-Fulfilled, ..., not fulfilled DL, not fulfilled UL) |  | - |  |
| >>Current QoS Parameters Set Index | O |  | Alternative QoS Parameters set Notify Index  9.3.1.124 | Index to the currently fulfilled alternative QoS parameters set. Value 0 indicates that NG-RAN cannot even fulfil the lowest alternative parameter set. | YES | ignore |
| >>TSC Traffic Characteristics Feedback | O |  | 9.3.1.302 |  | YES | ignore |

*NEXT CHANGE*

#### 9.3.1.125 Alternative QoS Parameters Set List

This IE contains alternative sets of QoS parameters which the gNB can indicate to be fulfilled when notification control is enabled and it cannot fulfil the requested list of QoS parameters.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| **Alternative QoS Parameters Set Item** |  | *1..<maxnoofQoSparaSets>* |  |  | - |  |
| >Alternative QoS Parameters Set Index | M |  | 9.3.1.123 |  | - |  |
| >Guaranteed Flow Bit Rate Downlink | O |  | Bit Rate  9.3.1.22 |  | - |  |
| >Guaranteed Flow Bit Rate Uplink | O |  | Bit Rate  9.3.1.22 |  | - |  |
| >Packet Delay Budget | O |  | 9.3.1.51 |  | - |  |
| >Packet Error Rate | O |  | 9.3.1.52 |  | - |  |
| >Maximum Data Burst Volume | O |  | 9.3.1.54 | Maximum Data Burst Volume is specified in TS 23.501 [21].  This IE is included if the *Delay Critical* IE is set to “delay critical” and is ignored otherwise. | YES | ignore |
| >PDU Set Delay Budget Downlink | O |  | Extended Packet Delay Budget 9.3.1.145 |  | - |  |
| >PDU Set Delay Budget Uplink | O |  | Extended Packet Delay Budget 9.3.1.145 |  | - |  |
| >PDU Set Error Rate Downlink | O |  | Packet Error Rate 9.3.1.52 |  | - |  |
| >PDU Set Error Rate Uplink | O |  | Packet Error Rate 9.3.1.52 |  | - |  |

*NEXT CHANGE*

### 9.4.5 Information Element Definitions

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-- Information Element Definitions

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

F1AP-IEs {

itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)

ngran-access (22) modules (3) f1ap (3) version1 (1) f1ap-IEs (2) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS

id-gNB-CUSystemInformation,

id-HandoverPreparationInformation,

id-TAISliceSupportList,

***---------------- unchanged part skipped ---------------------***

id-LocalOrigin,

id-SRSPosPeriodicConfigHyperSFNIndex,

id-PduSetDelayBudgetDownlink,

id-PduSetDelayBudgetUplink,

id-PduSetErrorRateDownlink,

id-PduSetErrorRateUplink,

maxNRARFCN,

maxnoofErrors,

maxnoofBPLMNs,

-- A

***---------------- unchanged part skipped ---------------------***

AlternativeQoSParaSetList ::= SEQUENCE (SIZE(1..maxnoofQoSParaSets)) OF AlternativeQoSParaSetItem

AlternativeQoSParaSetItem ::= SEQUENCE {

alternativeQoSParaSetIndex QoSParaSetIndex,

guaranteedFlowBitRateDL BitRate OPTIONAL,

guaranteedFlowBitRateUL BitRate OPTIONAL,

packetDelayBudget PacketDelayBudget OPTIONAL,

packetErrorRate PacketErrorRate OPTIONAL,

iE-Extensions ProtocolExtensionContainer { {AlternativeQoSParaSetItem-ExtIEs} } OPTIONAL,

...

}

AlternativeQoSParaSetItem-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {

{ ID id-MaxDataBurstVolume CRITICALITY ignore EXTENSION MaxDataBurstVolume PRESENCE optional }|

{ ID id-PduSetDelayBudgetDownlink CRITICALITY ignore EXTENSION ExtendedPacketDelayBudget PRESENCE optional }|

{ ID id-PduSetDelayBudgetUplink CRITICALITY ignore EXTENSION ExtendedPacketDelayBudget PRESENCE optional }|

{ ID id-PduSetErrorRateDownlink CRITICALITY ignore EXTENSION PacketErrorRate PRESENCE optional }|

{ ID id-PduSetErrorRateUplink CRITICALITY ignore EXTENSION PacketErrorRate PRESENCE optional },

...

}

***---------------- unchanged part skipped ---------------------***

-- N

***---------------- unchanged part skipped ---------------------***

NonUPTrafficType ::= ENUMERATED {ue-associated, non-ue-associated, non-f1, bap-control-pdu,...}

NoofDownlinkSymbols ::= INTEGER (0..14)

NoofUplinkSymbols ::= INTEGER (0..14)

Notification-Cause ::= ENUMERATED {fulfilled, not-fulfilled, ..., not-fulfilled-dl, not-fulfilled-ul}

NotificationControl ::= ENUMERATED {active, not-active, ...}

NotificationInformation ::= SEQUENCE {

message-Identifier MessageIdentifier,

serialNumber SerialNumber,

iE-Extensions ProtocolExtensionContainer { { NotificationInformationExtIEs} } OPTIONAL,

...

}

NotificationInformationExtIEs F1AP-PROTOCOL-EXTENSION ::= {

...

}

*NEXT CHANGE*

### 9.4.7 Constant Definitions

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

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-- Constant definitions

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***---------------- unchanged part skipped ---------------------***

-- IEs

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

***---------------- unchanged part skipped ---------------------***

id-MeasBasedOnAggregatedResources ProtocolIE-ID ::= 847

id-SIB23-message ProtocolIE-ID ::= 848

id-BarringExemptionforEmerCallInfo ProtocolIE-ID ::= 849

id-SIB17bis-message ProtocolIE-ID ::= 850

id-ReportingIntervalIMs ProtocolIE-ID ::= 851

id-Transmission-Bandwidth-asymmetric ProtocolIE-ID ::= 852

id-TagIDPointer ProtocolIE-ID ::= 853

id-LocalOrigin ProtocolIE-ID ::= 854

id-LTMResetInformation ProtocolIE-ID ::= 855

id-SRSPosPeriodicConfigHyperSFNIndex ProtocolIE-ID ::= 856

id-PreconfiguredSRSInformation ProtocolIE-ID ::= 857

id-PduSetDelayBudgetDownlink ProtocolIE-ID ::= a1

id-PduSetDelayBudgetUplink ProtocolIE-ID ::= a2

id-PduSetErrorRateDownlink ProtocolIE-ID ::= a3

id-PduSetErrorRateUplink ProtocolIE-ID ::= a4

END

-- ASN1STOP

*CHANGES END*