3GPP TSG-RAN WG3 Meeting #127 R3-250140

Athens, Greece, 17-21 Feb 2025

Agenda Item: 11.2

Source: ZTE Corporation, Qualcomm, China Unicom

Title: [TP to BLCR 38.423] Support of AI/ML assisted Network Slicing

Document for: Text Proposal

# 1 Introduction

This TP to 38.423 follows discussions about AI/ML network slicing to reflect the agreements:

**Introduce Slice Measurement Initiation Result IE to indicate the predicted radio resource status per slice or predicted slice available capacity cannot be initiated.**

**UE performance per S-NSSAI defined in SA5 can be referred in RAN3 which can be used as the feedback.**

# 2 Text Proposal

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

#### 9.1.3.27 DATA COLLECTION RESPONSE

This message is sent by NG-RAN node2 to NG-RAN node1 to indicate that the requested information, for all or part of the measurement objects included in the reporting, is successfully initiated.

Direction: NG-RAN node2 → NG-RAN node1.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| Message Type | M |  | 9.2.3.1 |  | YES | reject |
| NG-RAN node1 Measurement ID | M |  | INTEGER (1..4095,...) | Allocated by NG-RAN node1 | YES | reject |
| NG-RAN node2 Measurement ID | M |  | INTEGER (1..4095,...) | Allocated by NG-RAN node2 | YES | reject |
| **Node Measurement Initiation Result List** |  | *0..1* |  | List of measurement objects that failed to be initiated in the node. | YES | reject |
| **>Node Measurement Initiation Result Item** |  | *1 .. <maxFailedMeasPerNode>* |  |  | – |  |
| >>Node Measurement Failed Report Characteristics | M |  | BITSTRING  (SIZE(32)) | Each position in the bitmap indicates measurement objects that failed to be initiated in the NG-RAN node2.  First Bit = Energy Cost, Second Bit = Average UE Throughput DL,  Third Bit = Average UE Throughput UL,  Fourth Bit = Average Packet Delay,  Fifth Bit = Average Packet Loss DL,  Sixth Bit = Measured UE Trajectory.  Other bits are ignored by the NG-RAN node1. | – |  |
| >>Cause | M |  | 9.2.3.2 | Failure cause for measurement objects for which the measurement cannot be initiated. | – |  |
| **Cell Measurement Initiation Result List** |  | *0..1* |  | List of measurement objects that failed to be initiated per cell. | YES | reject |
| **>Cell Measurement Initiation Result Item** |  | *1 .. <maxnoofCellsinNG-RANnode>* |  |  | – |  |
| >>Cell ID | M |  | Global NG-RAN Cell Identity  9.2.2.27 | Indicates an NR Cell Identity. | – |  |
| **>>Cell Measurement Failure Cause List** |  | *0..1* |  | Indicates that NG-RAN node2 could not initiate the measurement for at least one of the requested measurement objects in the cell. | – |  |
| **>>>Cell Measurement Failure Cause Item** |  | *1 .. <maxFailedCellMeasObjects>* |  |  | – |  |
| >>>>Cell Measurement Failed Report Characteristics | M |  | BITSTRING  (SIZE(32)) | Each position in the bitmap indicates measurement objects that failed to be initiated in the NG-RAN node2.  First Bit = Predicted Radio Resource Status,  Second Bit = Predicted Number of Active UEs,  Third Bit = Predicted RRC Connections.  Other bits are ignored by the NG-RAN node1. | – |  |
| >>>>Cause | M |  | 9.2.3.2 | Failure cause for measurement objects for which the measurement cannot be initiated. | – |  |
| >> **Slice Measurement Initiation Result List** | O |  | 9.2.3.x2 | List of measurement objects that failed to be initiated per slice. |  |  |
| Criticality Diagnostics | O |  | 9.2.3.3 |  | YES | ignore |

| Range bound | Explanation |
| --- | --- |
| maxnoofCellsinNG-RANnode | Maximum no. cells that can be served by a NG-RAN node. Value is 16384. |
| maxFailedCellMeasObjects | Maximum number of measurement objects that can fail per cell. Value is 124. |
| maxFailedMeasPerNode | Maximum number of measurement objects that can fail per node. Value is 124. |

#### 9.1.3.28 DATA COLLECTION FAILURE

This message is sent by the NG-RAN node2 to NG-RAN node1 to indicate that for all of the requested objects the reporting cannot be initiated.

Direction: NG-RAN node2 → NG-RAN node1.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| Message Type | M |  | 9.2.3.1 |  | YES | reject |
| NG-RAN node1 Measurement ID | M |  | INTEGER (1..4095,...) | Allocated by NG-RAN node1 | YES | reject |
| NG-RAN node2 Measurement ID | M |  | INTEGER (1..4095,...) | Allocated by NG-RAN node2 | YES | reject |
| Cause | M |  | 9.2.3.2 |  | YES | ignore |
| Criticality Diagnostics | O |  | 9.2.3.3 |  | YES | ignore |

#### 9.1.3.29 DATA COLLECTION UPDATE

This message is sent by NG-RAN node2 to NG-RAN node1 to report the requested information.

Direction: NG-RAN node2 → NG-RAN node1.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| Message Type | M |  | 9.2.3.1 |  | YES | ignore |
| NG-RAN node1 Measurement ID | M |  | INTEGER (1..4095,...) | Allocated by NG-RAN node1 | YES | reject |
| NG-RAN node2 Measurement ID | M |  | INTEGER (1..4095,...) | Allocated by NG-RAN node2 | YES | reject |
| **Cell Measurement Result for Data Collection List** |  | *0..1* |  |  | YES | ignore |
| **>Cell Info Result for Data Collection Item** |  | *1 .. < maxnoofCellsinNG-RANnode >* |  |  | – |  |
| >>Cell ID | M |  | Global NG-RAN Cell Identity  9.2.2.27 | Indicates an NR Cell Identity. | – |  |
| >>Predicted Radio Resource Status | O |  | Radio Resource Status  9.2.2.50 | The IE only includes the *SSB Area Radio Resource Status List* IE, excluding the *DL scheduling PDCCH CCE usage* IE and *UL scheduling PDCCH CCE usage* IE, and optionally includes the *Slice Radio Resource Status List* IE. | – |  |
| >>Predicted Number of Active UEs | O |  | Number of Active UEs  9.2.2.62 |  | – |  |
| >>Predicted RRC Connections | O |  | RRC Connections  9.2.2.56 |  | – |  |
| >>Predicted Slice Available Capacity | O |  | 9.2.2.55 |  | – |  |
| **UE Associated Info Result List** |  | *0..1* |  |  | YES | ignore |
| **>UE Associated Info Result Item** |  | *1 .. < maxnoofUEReports >* |  |  | – |  |
| >>UE Assistant Identifier | M |  | NG-RAN node UE XnAP ID  9.2.3.16 | NG-RAN node UE XnAP ID allocated by NG-RAN node1. | – |  |
| >>UE Performance | O |  | 9.2.3.179 |  | – |  |
| >>Measured UE Trajectory | O |  | 9.2.3.182 | It contains information about cells that a UE has connected to. | – |  |
| >>Slice UE performance | O |  | 9.2.3.x2 |  | – |  |
| **Node Associated Info Result** |  | *0..1* |  |  | YES | ignore |
| >Energy Cost | O |  | INTEGER (0..10000,…) | The node level measured Energy Consumption index.  Value 0 indicates the minimum measured Energy Consumption and 10000 indicates the maximum measured Energy Consumption. | - | - |

| Range bound | Explanation |
| --- | --- |
| maxnoofCellsinNG-RANnode | Maximum no. cells that can be served by a NG-RAN node. Value is 16384. |
| maxnoofUEReports | Maximum no. UE s for which information can be reported by a NG-RAN node. Value is 16. |

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

#### 9.2.3.x1 Slice Measurement Initiation Result List

This IE indicates the list of measurement objects that failed to be initiated per slice.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| --- | --- | --- | --- | --- |
| **Slice Measurement Initiation Result** |  | *1..<* *maxnoofBPLMNs >* |  |  |
| >PLMN Identity | M |  | 9.2.2.4 | Broadcast PLMN |
| **>S-NSSAI Measurement Initiation Result List** |  | *1* |  |  |
| **>> S-NSSAI Measurement Initiation Result Item** |  | *1 .. < maxnoofSliceItems>* |  |  |
| >>>S-NSSAI | M |  | 9.2.3.21 |  |
| **>>> S-NSSAI Measurement Failure Cause List** |  | *0..1* |  | Indicates that NG-RAN node2 could not initiate the measurement for at least one of the requested measurement objects in the slice. |
| **>>>> S-NSSAI Measurement Failure Cause Item** |  | *1 .. <maxFailedSliceMeasObjects>* |  |  |
| >>>>S-NSSAI Measurement Failed Report Characteristics | M |  | BITSTRING  (SIZE(32)) | Each position in the bitmap indicates measurement objects that failed to be initiated in the NG-RAN node2.  First Bit = Predicted Radio Resource Status,  Second Bit = Predicted Slice Available Capacity  Other bits are ignored by the NG-RAN node1. |
| >>>>Cause | M |  | 9.2.3.2 | Failure cause for measurement objects for which the measurement cannot be initiated. |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofSliceItems | Maximum no. of signalled slice support items. Value is 1024. |
| maxnoofBPLMNs | Maximum no. of PLMN Ids.broadcast in a cell. Value is 12. |
| maxFailedSliceMeasObjects | Maximum number of measurement objects that can fail per slice. Value is 124. |

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

#### 9.2.3.x2 Slice UE performance

This IE indicates the UE performance per slice.

| IE/Group Name | Presence | Range | IE Type and Reference | Semantics Description |
| --- | --- | --- | --- | --- |
| **Slice UE performance List** |  | *0..1* |  |  |
| **> Slice UE performance Item** |  | *1..< maxnoofBPLMNs >* |  |  |
| >PLMN Identity | M |  | 9.2.2.4 |  |
| **>S-NSSAI UE performance List** |  | *1* |  |  |
| **>>S-NSSAI UE performance Item** |  | *1..<maxnoofSliceItems>* |  |  |
| >>>S-NSSAI | M |  | 9.2.3.21 |  |
| >>>Average UE Throughput DL | O |  | Bit Rate  9.2.3.4 |  |
| >>>Average UE Throughput UL | O |  | Bit Rate  9.2.3.4 |  |
| >>>Average Packet Delay | O |  | 9.2.3.187 |  |
| >>>Average Packet Loss DL | O |  | Packet Loss Rate  9.2.3.11 |  |

|  |  |
| --- | --- |
| Range bound | Explanation |
| maxnoofBPLMNs | Maximum no. of broadcast PLMNs by a cell. Value is 12. |
| maxnoofSliceItems | Maximum no. of signalled slice support items. Value is 1024. |

<<<<<<<<<<<<<<<<<<<< End of Changes >>>>>>>>>>>>>>>>>>>>