3GPP TSG-RAN WG3 Meeting #129-bis R3-257248

**Prague, Czech Republic, 13 – 17 October 2025**

Agenda Item: 9.2.2

Source: ZTE Corporation (moderator)

Title: Summary of Offline Discussion for CB: # 7\_R19AIMLRAN

Document for: Discussion

# 1 Introduction

**CB: # 7\_R19AIMLRAN**

**- XnAP misc corrections: check 6828; merge agreeable corrections (if any) from 6866, 6986, 7078**

**- F1AP misc corrections: check 6829; merge agreeable corrections (if any) from 6926, 6930, 6987, 7097**

**- E1AP misc corrections: check 6867, merge agreeable corrections (if any) from 7078**

**- F1-U check 6840 if time allows**

**- How to handle error cases, e.g., by abnormal conditions?**

(ZTE - moderator)

Summary of offline disc [R3-25xxxx](file:///D%3A%5C3GPP%5CTSGR3_129-bis%5CInbox%5CDrafts%5CRAN3_Templates%5CInbox%5CR3-25xxxx.zip)

# 2 For the Chair Notes

Agree XnAP CR: R3-257243 was revision of R3-256828

Agree F1AP CR: R3-257244 was revision of R3-256829

Agree E1AP CR: R3-257245 was revision of R3-256867

Agree new XnAP CR: R3-257246 Correction to XnAP for Slice UE performance metrics

Agree new E1AP CR: R3-257247 Correction to E1AP for UE performance metrics

Agree the following corrections for XnAP:

* Update the semantic description of *UE Performance Collection Configuraiton* IE, with addition of “at successful SN addition”.
* Clarify the procedural text to ensure consistency between the mandatory Global NG-RAN Cell Identity IE and the optional SSB information when describing the CCO operation.
* Update the procedural text of the “cancel” operation so that it explicitly references TS 38.300
* Modify the terminating condition for data collection to only include NR-DC case to “NG-RAN node2, configured as the SN node for the UE, is released.”
* Modify the cell ID in the *Furture Converage Modification Item* IE to *NR CGI* IE, with ASN.1 change.

Agree the following corrections for F1AP:

* For the *Performance Delay Monitoring* IE in the *DRB to Be Setup List* IE in the UE CONTEXT MODIFICATION REQUEST message, add the semantic description “Only the “UL and DL” codepoint value is used for this IE.”
* For the Performance Delay Monitoring IE in the *DRB to Be Modified List* IE in the UE CONTEXT MODIFICATION REQUEST message, removing the existing sematic description “Only the “stop” codepoint value is used for this IE.”
* Clarify the procedural text to ensure consistency between the mandatory Global NG-RAN Cell Identity IE and the optional SSB information when describing the CCO operation.
* The procedural text for the “cancel” operation should consistently refer to TS 38.401.
* Update the name of Performance Delay Monitoring to UE Performance Delay Monitoring, and hence aligns it to the terminology used in NR user plane protocol
* Corrected the dimensioning of the Future Coverage Modification List IE from 512 to 16384.

Agree the following corrections for E1AP:

* Change the Assigned Criticality of the gNB-CU-UP Measurement ID IE in DATA COLLECTION RESPONSE/ FAILURE/ UPDATE from “ignore” to “reject” in tabular.
* Change “to start information reporting and stop information reporting” to“to start information reporting or to stop information reporting”
* Change “accepted by the gNB-CU-CP” to “accepted by the gNB-CU-UP”.
* Modify the termination codition in E1AP data collection to “all the established bearers are suspended or released.”
* Add *UE Performance Collection Configuration* IE in the DATA COLLECTION REQUEST message.
* Modify the procedural text: “If any of the requested information reporting cannot be initiated, gNB-CU-UP shall send the DATA COLLECTION FAILURE message with an appropriate cause value.”

# 3 Discussion (optional)

## 3.1 XnAP Corrections

1. Update the semantic description of UE Performance Collection Configuration IE. //Agree

#### 9.2.3.186 UE Performance Collection Configuration

This IE indicates the configuration for UE performance measurement collection.

| IE/Group Name | Presence | Range | IE Type and Reference | Semantics Description |
| --- | --- | --- | --- | --- |
| Collection Time Duration for UE Performance | M |  | INTEGER(1..5000, ...) | Time duration starting at successful handover or at successful SN addition within which the UE performance measurements are collected.Unit: millisecond |

2. Clarify the procedural text to ensure consistency between the mandatory Global NG-RAN Cell Identity IE and the optional Future SSB Coverage Modification List IE when describing the “cancel” operation. //Agree

3. Update the procedural text of the “cancel” operation so that it explicitly references TS 38.300. //Agree

If the *Predicted Coverage Modification Cause* IE set to "cancel" is contained in the NG-RAN NODE CONFIGURATION UPDATE message, the NG-RAN node2 shall, if supported, consider it as a notification of cancellation of the future coverage modifications associated to the cell(s) and optionally beam(s) listed in the *Future Coverage Modification List* IE, as described in TS 38.300 [9].

1. Modification the terminating condition for data collection to only include NR-DC case.

If the *Registration Request for Data Collection* IE is set to "start" in the DATA COLLECTION REQUEST message and one or more of the UE performance metrics are requested, the *UE Performance Collection Configuration* IE shall be included.The NG-RAN node2 shall take the *UE Performance Collection Configuration* IE into account for the configuration of UE performance collection and reporting. NG-RAN node2 shall terminate the collection when at least one of the following conditions is fulfilled:

- the time since UE was successfully handed over to NG-RAN node2 is equal to the value of the *Collection Time Duration for UE Performance* IE;

- the time since SN addition successfully completed is equal to the value of the *Collection Time Duration for UE Performance* IE;

- UE moves to RRC\_INACTIVE or RRC\_IDLE state;

- UE is handed over to another cell;

- **Option 1:** NG-RAN node2, configured as the SN for the UE, is released.

- **Option 2:** the NG-RAN node2 is released as SN for the UE.

Agree : Option 1

1. Modify the cell ID in the furture Converage Modification Item IE to NR CGI IE, with ASN.1 change. //Agree
2. the sematics descriptions of the *Future Cell Coverage State* IE and the *Future SSB Coverage State* IE clarify that they will be ignored by the neighbor NG-RAN node after they are received within the cancellation notification of neighbor future coverage modifications provided by the sending NG-RAN node.

9.1.3.4 NG-RAN NODE CONFIGURATION UPDATE

This message is sent by a NG-RAN node to a neighbouring NG-RAN node to transfer updated information for an Xn-C interface instance.

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

| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** | **Criticality** | **Assigned Criticality** |
| --- | --- | --- | --- | --- | --- | --- |
| Message Type | M |  | 9.2.3.1 |  | YES | reject |
| *\*\*\* skip unmodified parts \*\*\** |
| **Future Coverage Modification List** |  | *0..1* |  | List of cells whose coverage will be modified. | YES | ignore |
| **>Future Coverage Modification Item** |  | *1..<maxnoofCellsinNG-RAN node>* |  |  | – |  |
| >>NR CGI | M |  | 9.2.2.7 | Identifier of the NR cell whose coverage will be modified. | – |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| >>Future Cell Coverage State | M |  | INTEGER (0..63, ...) | Value ‘0’ indicates that the cell will be inactive. Other values indicate that the cell will be active and also indicates the future coverage configuration of the concerned cell. The IE is ignored if the Predicted Coverage Modification Cause is set to “cancel” | – |  |

## 3.2 F1AP Corrections

1. In the tabular, Performance Delay Monitoring IE is listed at the same IE level as DRB information IE. In ASN.1 it is included inside DRB information. Update the tabular to align with the ASN.1. Same issues also exists for ECN Marking or Congestion Information Reporting Request IE, PSI based SDU Discard UL IE and PSI based SDU Discard DL IE.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **DRB to Be Setup List** |  | *0..1* |  |  | YES | reject |
| **>DRB to Be Setup Item IEs** |  | *1 .. <maxnoofDRBs>* |  |  | EACH | reject |
| >>DRB ID | M |  | 9.3.1.8 |  | - |  |
| >>CHOICE *QoS Information* | M |  |  |  | - |  |
| *>>>E-UTRAN QoS* |  |  |  |  |  |  |
| >>>>E-UTRAN QoS | M |  | 9.3.1.19 | Shall be used for EN-DC case to convey E-RAB Level QoS Parameters | - |  |
| *>>>DRB Information* |  |  |  |  |  |  |
| **>>>>DRB Information** |  | *1* |  | Shall be used for NG-RAN cases | YES | ignore |
| >>>>>DRB QoS | M |  | QoS Flow Level QoS Parameters9.3.1.45 |  | - |  |
| >>>>>S-NSSAI | M |  | 9.3.1.38 |  | - |  |
| >>>>>Notification Control | O |  | 9.3.1.56 |  | - |  |
| **>>>>>Flows Mapped to DRB Item** |  | *1 .. <maxnoofQoSFlows>* |  |  | - |  |
| >>>>>>QoS Flow Identifier | M |  | 9.3.1.63 |  | - |  |
| >>>>>>QoS Flow Level QoS Parameters | M |  | 9.3.1.45 |  | - |  |
| >>>>>>QoS Flow Mapping Indication | O |  | 9.3.1.72 |  | YES | ignore |
| >>>>>>TSC Traffic Characteristics | O |  | 9.3.1.141 | Traffic pattern information associated with the QFI. Details in TS 23.501 [21]. | YES | ignore |
| >>>>>ECN Marking or Congestion Information Reporting Request | O |  | 9.3.1.321 |  | YES | ignore |
| >>>>>PSI based SDU Discard UL | O |  | ENUMERATED (start, stop, …) | Indicates whether UL PSI based SDU discard is (re)configured or released for the DRB. The codepoint “start” means that UL PSI based discarding is (re)configured, while the codepoint “stop” means that UL PSI based discarding is released. Up to 8 DRBs can be set as “start”. | YES | ignore |
| >>>>>PSI based SDU Discard DL | O |  | ENUMERATED (configured, not-configured, …) | Indicates whether DL PSI based SDU discard is configured or not for the DRB.  | YES | ignore |
| >>>>>Performance Delay Monitoring  | O |  | 9.3.1.370 | Only the “UL and DL” codepoint value is used for this IE. | YES | ignore |

1. Clarify that gNB-CU shall, if supported, consider that the gNB-DU has cancelled the future coverage modifications indicated for the cells and beams listed in the Future Coverage Modification Notification IE, only if all the instances of the Future Coverage Modification Cause IE are set to “cancel”.
2. Add as abnormal condition the case when some of the instances of the Future Coverage Modification Cause IE are set to “cancel”, while some other instances are set to values different from "cancel".

### 8.2.4 gNB-DU Configuration Update

#### 8.2.4.1 General

The purpose of the gNB-DU Configuration Update procedure is to update application level configuration data needed for the gNB-DU and the gNB-CU to interoperate correctly on the F1 interface. This procedure does not affect existing UE-related contexts, if any. The procedure uses non-UE associated signalling.

NOTE: Update of application level configuration data also applies between the gNB-DU and the gNB-CU in case the DU does not broadcast system information other than for radio frame timing and SFN, as specified in the TS 37.340 [7]. How to use this information when this option is used is not explicitly specified.

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

If the *Future Coverage Modification Notification* IE is contained in the GNB-DU CONFIGURATION UPDATE message, the gNB-CU shall, if supported, take it into account for Coverage and Capacity Optimization.

If the *Future Coverage Modification Notification* IE is contained in the GNB-DU CONFIGURATION UPDATE message and if all the instances of the *Future Coverage Modification Cause* IE are set to “cancel”, the gNB-CU shall, if supported, consider it as a notification that the gNB-DU has cancelled the future coverage modifications indicated for the cells and beams listed in the *Future Coverage Modification Notification* IE.

#### 8.2.4.3 Unsuccessful Operation



Figure 8.2.4.3-1: gNB-DU Configuration Update procedure: Unsuccessful Operation

If the gNB-CU cannot accept the update, it shall respond with a GNB-DU CONFIGURATION UPDATE FAILURE message and appropriate cause value.

If the GNB-DU CONFIGURATION UPDATE FAILURE message includes the *Time To Wait* IE, the gNB-DU shall wait at least for the indicated time before reinitiating the GNB-DU CONFIGURATION UPDATE message towards the same gNB-CU.

#### 8.2.4.4 Abnormal Conditions

If the *Future Coverage Modification Notification* IE is contained in the GNB-DU CONFIGURATION UPDATE message and if some of the instances of the *Future Coverage Modification Cause* IE are set to “cancel”, while some other instances are set to values different from "cancel", the gNB-CU shall ignore the *Future Coverage Modification Notification* IE and fail the gNB-DU Configuration Update procedure.

1. The Performance Delay Monitoring IE in the DRB to Be Setup List IE in the UE CONTEXT MODIFICATION REQUEST message can either take the codepoint UL and DL, or the codepoint Stop. However, using the Stop codepoint for a DRB that is being setup leads to a logical error.
2. The Performance Delay Monitoring IE in the DRB to Be Modified List IE in the UE CONTEXT MODIFICATION REQUEST message can only take the code point Stop. This restriction is seen as unnecessary as there are potential use-cases that are enabled if the gNB-CU-CP is allowed to use the codepoint UL and DL for a DRB that is being modified, e.g., to obtain UE performance measurements before a UE is handed over.

Corrections for bullet 4 and bullet 5:

* For the Performance Delay Monitoring IE in the DRB to Be Setup List IE in the UE CONTEXT MODIFICATION REQUEST message, add the semantic description “Only the “UL and DL” codepoint value is used for this IE.”
* For the Performance Delay Monitoring IE in the DRB to Be Modified List IE in the UE CONTEXT MODIFICATION REQUEST message, removing the existing sematic description “”

//Agree

1. Add the semantic descriptions for Time for Predicted CCO Issue IE, Future Cell Coverage State IE and the Future SSB Coverage State IE, Neighbour Future Cell Coverage State IE and the Neighbour Future SSB Coverage State IE, Time for Neighbour Future Coverage Modification IE that it will be ignored, when the indication is “cancel”.
	* enhances the sematics description of the Time for Predicted CCO Issue IE to clarify that it will be ignored by the gNB-DU if it is included by the gNB-CU when sending the cancellation indication (i.e., when the Predicted CCO Issue IE is set to ‘cancel’);
	* enhances the sematics descriptions of the Future Cell Coverage State IE and the Future SSB Coverage State IE to clarify that they will be ignored by the gNB-CU after they are received within the cancellation notification sent by the gNB-DU;
	* enhances the sematics descriptions of the Neighbour Future Cell Coverage State IE and the Neighbour Future SSB Coverage State IE to clarify that they will be ignored by the gNB-DU after they are received within the cancellation notification of neighbor future coverage modifications sent by the gNB-CU;
	* enhances the sematics description of the Time for Neighbour Future Coverage Modification IE to clarify that it will be ignored by the gNB-DU if it is included by the gNB-CU when sending the Neighbour Future Coverage Modification Notification List IE together with the Predicted CCO Issue IE (included in the Predicted CCO Assistance Information IE) set to “cancel”.
2. The Future Coverage Modification Notification IE contains both mandatory (cell-level) and optional (beam-level) information. However, in the procedure for the “cancel” operation, the handling of these IEs is not consistently described. //Agree
3. The procedural text for the “cancel” operation should consistently refer to TS 38.401. //Agree
4. In the sentence “If the Predicted CCO Assistance Information IE is contained in the GNB-CU CONFIGURATION UPDATE message and the NR CGI IE contained in the Predicted Affected Cells and Beams IE is not served by the gNB-DU, the gNB-DU may use it to adjust the coverage of its cells and/or beam configuration”, the word “Future” for configuration is not mentioned. //Agree
5. Updates the name of Performance Delay Monitoring to UE Performance Delay Monitoring, and hence aligns it to the terminology used in NR user plane protocol. //Agree
6. Corrected the dimensioning of the Future Coverage Modification List IE from 512 to 16384. //Agree

## 3.3 E1AP Corrections

1. ~~Change the Assigned Criticality of the gNB-CU-UP Measurement ID IE in DATA COLLECTION RESPONSE/ FAILURE/ UPDATE from “ignore” to “reject” in tabular.~~
2. Change “to start information reporting and stop information reporting” to“to start information reporting or to stop information reporting”
3. Change “accepted by the gNB-CU-CP” to “accepted by the gNB-CU-UP”.
4. all the established bearers are suspended or released.
5. Add *UE Performance Collection Configuration* IE in the DATA COLLECTION REQUEST message.
6. If any of the requested information reporting cannot be initiated, gNB-CU-UP shall send the DATA COLLECTION FAILURE message with an appropriate cause value.

## 3.4 Abnormal Conditions

Discuss the abnormal conditions that may arise when a predicted CCO issue is being cancelled, and determine the following options:

- whether to add abnormal conditions in the procedural text

**Proposal 1-A: When the DU serving the predicted affected cells and beams receives a GNB-CU CONFIGURATION UPDATE message including the *Predicted CCO Assistance Information* IE with the *Predicted CCO issue* IE set to “cancel” but the list of cells and beams is not the same as the list of cells and beams included in the previously received *Predicted CCO Assistance Information* IE, the DU discards the *Predicted CCO Assistance Information* IE, and the cancelling is not executed.**

**Proposal 1-B: When a DU not serving the predicted affected cells and beams receives a GNB-CU CONFIGURATION UPDATE message including the *Predicted CCO Assistance Information* IE and the *Neighbour Future Coverage Modification Notification* IE, where the *Predicted CCO issue* IE is set to “cancel” but the list of cells and beams in the *Predicted Affected Cells and Beams* IE is not the same as the list of cells and beams contained in the *Neighbour Future Coverage Modification Notification* IE, the DU discards both the *Predicted CCO Assistance Information* IE and the *Neighbour Future Coverage Modification Notification* IE, and the cancelling is not executed.**

**Proposal 2-A: When a DU not serving the predicted affected cells and beams receives a GNB-CU CONFIGURATION UPDATE message which includes the *Predicted CCO Assistance Information* IE where the *Predicted CCO issue* IE is set to “cancel”, but the *Neighbour Future Coverage Modification Notification* IE is not present, the DU discards the *Predicted CCO Assistance Information* IE, and the cancelling is not executed.**

**Proposal 2-B: When a DU not serving the cells and beams initially predicted to be affected by the predicted CCO issue receives a GNB-CU CONFIGURATION UPDATE message which includes the *Neighbour Future Coverage Modification Notification* IE and the *Predicted CCO Assistance Information* IE, if the *Predicted CCO issue* IE is present and set to “cancel” but the *Predicted Affected Cells and Beams* IE is not present, the DU discards the *Neighbour Future Coverage Modification Notification* IE and the *Predicted CCO Assistance Information* IE, and the cancelling is not executed.**

- to resolve the proposal 1-B, proposal 2-A, and proposal 2-B, add *Future Coverage Modification Cause* IE to the *Neighbour Future Coverage Modification Notification* IE

- do noting.

# 4 Conclusion