3GPP TSG-RAN WG3 #112-e R3-212713

Online, 17 – 28 May, 2021

Agenda Item: 23.2.3

Source: Huawei (moderator)

Title: Summary of Offline Discussion on Application Protocol for Enhanced eNB Architecture Evolution

Document for: Approval

# Introduction

**CB: # 50\_eNBarchEvo\_AP**

**- (E///)**

**For secs. 1-7, add the new eNB logical entities names to each occurrence of the gNB-CU-CP and gNB-CU-UP**

**For secs. 8-9, add a note establishing the equivalence between all the CP logical entities and between all the UP logical entities**

**Reuse the existing UE AP IDs for the new logical entities**

**- (HW)**

**Capture the new logical entities to each occurrence of gNB-CU-CP and gNB-CU-UP for ng-eNB-CU and eNB CP-UP separation in secs. 1-7.**

**all existing E1AP procedures could be also applied to both eNB and ng-eNB CP/UP separation, except IAB UP TNL Address Update.**

**add notes in secs. 8-9 clarifying that each occurrence of gNB-CU-CP/gNB-CU-UP pair could also be applied to CP/UP separation for LTE eNB and NG-RAN eNB deployment scenario**

**ECGI should be introduced for eNB/ ng-eNB-CU CP-UP separation.**

**reuse existing IEs with necessary updates to support ng-eNB/eNB CP/UP separation, e.g. to Uupdate the semantics description and values (if needed) of the related IEs and values, to support the eNB CP-UP separation, , including:**

**- PDCP related parameters: DRB ID, PDCP SN UL Size, PDCP SN DL Size, RLC mode, ROHC Parameters, max CID, ROHC Profiles, T-Reordering Timer, Discard Timer, UL Data Split Threshold, PDCP SN Size, EHC Parameters (EHC-CID-Length, drb-ContinueEHC-DL, drb-ContinueEHC-UL), PDCP Re-establishment, PDCP Data Recovery, Out Of Order Delivery, PDCP Status Report Indication**

**- Security related parameters: Security Algorithm and User Plane Security Keys - DRB ID, PDCP SN UL Size, PDCP SN DL Size, RLC mode, ROHC Parameters, max CID, ROHC Profiles, T-Reordering Timer, Discard Timer, UL Data Split Threshold, PDCP SN Size, EHC-CID-Length, drb-ContinueEHC-DL, drb-ContinueEHC-UL, should refer to TS 36.331;**

**- Chair: merge/revise as agreeable 2198, 2528**

(HW - moderator)

Summary of offline disc

# For the Chairman’s Notes

Propose the following:

Propose to capture the following:

**Agreement text…**

**Agreement text…**

# Discussion

## Section 1 to Section 7

According to [1] and [3], there seems to be consensus to add the new eNB logical entities to each occurrence of the gNB-CU-CP and gNB-CU-UP from section 1 to section 7.

It is therefore proposed to agree the following:

* add the new eNB logical entities to each occurrence of the gNB-CU-CP and gNB-CU-UP from section 1 to section 7

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| --- | --- |
| Company | Comment |
| Huawei | Agree. |
| Nokia | Agree |
| Samsung | Agree |
| Deutsche Telekom | Agree. Note: Consideration of outcome of CB #48 with respect to conclusion of eNB\* vs. eNB-CP required. |
| Ericsson | Agree |
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## UE AP IDs and E1 AP procedures

Here we have proposal in [1] that:

* Reuse the existing UE AP IDs for the new logical entities.

Then in [3], it was proposed that:

* RAN3 to discuss and agree that all the existing E1 AP procedures could be also applied to both eNB and ng-eNB CP/UP separation, except for the IAB UP TNL Address Update procedure.

Here the discussion is mainly about whether to agree to reuse the existing UE AP IDs and E1 AP procedures? Is there any other procedures that is not applicable besides IAB UP TNL Address Update procedure?

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| Company | Comment |
| Huawei | Agree to reuse the existing UE AP IDs and E1 AP procedures. IAB UP TNL Address Update procedure is an exception. |
| Nokia | Agree on reuse of E1 procedures.  However, new identifiers are needed for E1 interface usage with eNB legacy nodes (eNB-CP, eNB-UP) |
| Samsung | Agree on reusing the existing UE AP IDs and E1 AP procedures. |
| Deutsche Telekom | Agree to reuse E1 procedures. |
| Ericsson | E1 procedures can be reused. UE AP ID issue is treated in CB#48 |
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## Section 8 and Section 9

In these two sections, there are many occurrences of gNB-CU-CP and gNB-CU-UP that make it very difficult to add the new logical entities or corresponding IE names to each occurrence. It also seems there is a common understanding from both set of papers that notes could be added to clarify the equivalence between all the CP logical entities and between all the UP logical entities. So this discussion is about whether we can agree on the following:

* Agree to add notes in sections 8 and 9 to clarify that each occurrence of gNB-CU-CP/gNB-CU-UP pair could also be applied to CP/UP separation for LTE eNB and NG-RAN eNB deployment scenario.

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| Company | Comment |
| Huawei | We can agree on the above proposal. |
| Nokia | Agree |
| Samsung | Agree on just adding notes for clarifications. |
| Deutsche Telekom | Agree |
| Ericsson | Agree |
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## Introduce ECGI for eNB/ng-eNB-CU CP-UP separation

As mentioned in [3], since the ECGI has different format than the NR CGI, the NR CGI could not be used for the eNB/ ng-eNB-CU CP-UP separation, and the ECGI should be introduced.

Here the target is to discuss whether to agree that ECGI should be introduced for eNB/ ng-eNB-CU CP-UP separation.

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| Company | Comment |
| Huawei | ECGI should be introduced. The ECGI has different format than the NR CGI. For example, the cell identity has 28 bits for ECGI while 36 bits for NR CGI. |
| Nokia | ECGI should be introduced. |
| Samsung | Agree on introducing the ECGI |
| Deutsche Telekom | Same view as companies before. |
| Ericsson | CU-UP has no cell knowledge. Scenario leading to NR-CGI introduction in E1 Setup should be discussed first |

## Updates on related parameters to support the eNB CP-UP separation

This discussion tries to collect comments about the following [3]:

‘RAN3 to discuss and agree a suitable way to reuse existing IEs with necessary updates to support ng-eNB/eNB CP/UP separation, e.g. to update the semantics description and values (if needed) of the related IEs and values, including:

* PDCP related parameters: - DRB ID, PDCP SN UL Size, PDCP SN DL Size, RLC mode, ROHC Parameters, max CID, ROHC Profiles, T-Reordering Timer, Discard Timer, UL Data Split Threshold, PDCP SN Size, EHC Parameters (EHC-CID-Length, drb-ContinueEHC-DL, drb-ContinueEHC-UL), PDCP Re-establishment, PDCP Data Recovery, Out Of Order Delivery, PDCP Status Report Indication
* Security related parameters: Security Algorithm and User Plane Security Keys’

|  |  |
| --- | --- |
| Company | Comment |
| Huawei | We should reuse existing IEs with necessary updates to support ng-eNB/eNB CP/UP separation. The above mentioned parameters should be updated accordingly. |
| Nokia | Proposal is agreeable |
| Samsung | Agree on updating the semantics description. |
| Deutsche Telekom | Agree with proposal |
| Ericsson | Agree for the above-mentioned parameters. Further work needed for the other parameters |

# Conclusion, Recommendations [if needed]

If needed

# References

1. R3-212195, E1 changes needed for eNB CP-UP separation (Ericsson)
2. R3-212198, E1 changes needed for eNB CP-UP separation- CR (Ericsson)
3. R3-212527, Further discussion on stage 3 details (Huawei)
4. R3-212528, CR to 38.463 on the support of CP-UP separation for eNB and ng-eNB (Huawei)