94e-33-UserPlane-Integrity - Version 0.0.4
RAN

3GPP TSG RAN#94e RP-21xxxx

e-Meeting, Dec 6th – 17th, 2021

Agenda item: 9.1.3

Source: 3GPP TSG RAN3 Chair (ZTE)

Title: Email Summary on User Plane Integrity Protection support for EPC connected Architectures

Document for: Discussion and Decision

1 Initial Round

The following proposals were noted in RP-212588 in RAN#93e:

P1: Approve the following scenarios/scopes for this new WI with limited work in R17:

a. Support and use of UPIP for the EPC connected architectures only when NR PDCP is supported, i.e., only for LTE UEs supporting EN-DC and/or NR UEs which also support LTE.

b. Exclude NB IoT cases.

Since there is no consensus on eMTC case, it is out the scope of this WI, which means no discussion/effort on eMTC in this R17 WI

While other cases can be further investigated in R18.

P2: If proposal1 can not be agreed, then send LS to SA/SA3 for further clarification and postphone it to R18 (considering the timeline of R17 is quite limited) is another option on the table.

In this document, we continue the discussion on User Plane Integrity Protection support for EPC connected architectures, using the following contributions as a starting point:

RP-213332 Motivation for New WID on User Plane Integrity Protection support for EPC connected architectures

RP-213328 New WID on User Plane Integrity Protection support for EPC connected architectures

In addition, there is an LS in RP-213476 (cc RAN) with the information as below:

SA3 has decided to use LTE algorithms for integrity protection of the user plane. However, SA3 did not decide

on using either LTE or NR algorithm code points for signalling to the UE which integrity algorithm to use. SA3 does not see any security issue with choosing either of the alternatives. This is because the algorithms are identical and can be mapped to each other. Therefore, SA3 kindly requests the RAN groups to take the final decision in this matter and inform SA3.

The motivation and standard impact on RAN should be clear based on the previous email discussion, this proposed R17 WID attempts to find a compromise by adding the UPIP option only for EN-DC capable devices. Furthermore, no changes to TS 36.306 are believed to be needed in order to support EN-DC devices. The objectives proposed in RP-213328 are listed as below:

The set of objectives includes:

- **Specify RAN basic functions for optional support and use of UPIP (at the full data rate supported by the UE) for the EPC connected architectures using NR PDCP (RAN2, RAN3)**

For this release, it is intended that this feature only applies to EN-DC capable devices.

Note: For security related reasons, the UE's support/non-support for EPS-UPIP is not sent in the UE Radio Access Capabilities, and instead, it is sent from the UE to the MME in NAS messages and then sent by the MME to the RAN in S1-AP signalling.

EN-DC capable devices need to support NR-PDCP, and the support of EN-DC is signalled to the eNB within existing R15 UE Radio Access Capabilities. Hence no changes to TS 36.306 are anticipated to be needed.

Feedback Form 1: Q1) Do you agree this R17 WID proposed in RP-213328? If no, please elaborate the reason in detail.

1 – VODAFONE Group Plc Vodafone (proponent): Yes.
2 – Ericsson LM Yes
3 – ZTE Corporation For the scope of WID, we'd like to exclude NB-IoT and eMTC as discussed in previous email discussion. However, we are not sure if the common understanding from companies is that these two are excluded according to the current WID or not. Currently it is mentioned that the feature is tied to ENDC capability. However, we wonder if ENDC capable devices may also support eMTC (and/or NB-IoT). If this is the case, then what is the intended behaviour on the UE side. Should the UE then be required to support also UPIP in this case? Further if NR-PDCP is used (e.g. for eMTC), then is the expectation then that UPIP may be configured for such eMTC radio bearers? For NB-IoT, perhaps the situation is simpler because NR-PDCP is not used. So, we think NB-IoT is excluded by design from the WID. Is this the correct understanding?

Then, the revised WID in RP-213328 only focuses on EN-DC capable devices and then supports NR-PDCP in the eNB. In addition, as shown in the LS RP-213476 from SA3, the detailed procedure and impacts on S1/X2/RRC have been defined. Furthermore, the impact to TS38.463 is not expected, according to the agreements in "the Enhanced eNB Architecture Evolution WI", it should be TS37.4XX.

In addition, we are also fine to discuss it in R18 as a new WI (taking the limited time window in R17 into account). Alternatively, if the consensus is to complete this in R17, we are open to also consider TEI17 assuming the specification of this will anyway has to be finished within the next plenary cycle in this case.

4 – Intel Technology India Pvt Ltd

Yes.

5 – Samsung Electronics Co.

Yes.

6 – vivo Mobile Communication Co.

We support it and think that RAN3 should be primary group for this WI.

7 – QUALCOMM JAPAN LLC.

The proposal is acceptable to us with the following conditions.

- RAN confirms that the new feature is fully optional also from RAN perspective. No attempt is made to make the feature conditionally mandatory.
- RAN3 and RAN2 leadership will make sure this new item will not jeopardize the completion of other ongoing release-17 items.

8 – Huawei Technologies France

The proposal is reasonable, and we think this work should be supported in RAN in Rel-17 to align the work in SA/CT. Thus, we support this proposal.

About the situation from last RAN plenary regarding moving to Rel-18, we thik it will create a huge delay on this security thread.

9 – CATT

Yes

10 – Guangdong OPPO Mobile Telecom.

we can support this new WID. By assuming EN-DC capable UE, it seems the main spec impact is over S1 interface instead of Uu. maybe RAN3 should be the leading group.

11 – Apple Computer Trading Co. Ltd

Yes.

12 – BT plc Yes, we agree with the R17 WID proposal.
13 – TELECOM ITALIA S.p.A. Yes
14 – Deutsche Telekom AG Yes
15 – Ericsson LM Regarding ZTE's comments about EN-DC capable UEs also supporting eMTC: if the UE supports EN-DC it supports the required functionality and should be ***allowed*** to support UP IP. We agree with Qualcomm that UPIP is ***optional***. Therefore we think the proposed WID is fine as it is.
16 – Nokia Corporation We are fine with the limited scope as RAN2 impact should be mainly in the UE capabilities (but this needs discussion in RAN2). One question to the proponent: Would RAN2 have to handle this already in January meeting, or only in February meeting? We would prefer to do this only in February to avoid impacting NR Rel-17 completion (as that is the main reason for January RAN2 AH).
17 – MediaTek Inc. We prefer work in Rel-18 however we can live with the proposal in Rel-17 provided a) It remains fully **optional** to EN-DC capable UEs b) It does not challenge Rel-17 completion in RAN2 and RAN3

1.1 Moderator's summary

According to the inputs in the intial round, it is agreeable to approve this new R17 WI with the following conditions:

1) This feature is fully **optional** to EN-DC capable UEs

2) It does not challenge Rel-17 completion in RAN2 and RAN3

Considering that it already states as below in the objectives in RP-213328:

Specify RAN basic functions for **optional support** and use of UPIP (at the full data rate supported by the UE) for the EPC connected architectures using NR PDCP (RAN2, RAN3)

Condition 1) has already been adopted.

Then for condition 2), taking the fact that the standard impact on RAN2 and RAN3 is limited and this new item shall not jeopardize the completion of other ongoing release-17 items:

For RAN3, it will be treated in the basket item with 0.5TU (shared with other late R17 items) per e-meeting in Q1'22.

For RAN2, it will be treated in February meeting, pls the proponent check with RAN2 Chair on the TU allocation during the intermediate round email discussion.

Please the proponent provide the draft final WID in the draft box as below for further checking:

Directory Listing /ftp/tsg_ran/TSG_RAN/TSGR_94e/Inbox/Drafts/[94e-33-UserPlane-Integrity]/Intermediate round (3gpp.org)

2 Intermediate Round

Proposal1) This small R17 WID can be approved with the following conditions:

1) This feature is fully optional to EN-DC capable UEs

2) It does not challenge Rel-17 completion in RAN2 and RAN3

For RAN3, it will be treated in the basket item with 0.5TU (shared with other late R17 items) per e-meeting in Q1'22.

For RAN2, it will be treated in February meeting, pls the proponent check with RAN2 Chair on the TU allocation during the intermediate round email discussion.

Feedback Form 2: Q2: Do you agree P1?

1 – VODAFONE Group Plc

Moderator: thank you. As proponent, yes, this is acceptable.

The cleaned up WID is at https://www.3gpp.org/ftp/tsg_ran/TSG_RAN/TSGR_94e/Inbox/Drafts/%5B94e-33-UserPlane-Integrity%5D/Intermediate%20round/RP-21%20xxxx%20rev%203328%20rev%202297_EPC%20UPIP%

The changes to RP-213328 are to add 2 more supporting companies, and, to removed the "to be decided" on the rapporteur.

With regard to the ZTE comment about 38.463 being incorrect, I checked the RAN 3 #113 August Chair's notes for agenda item 23 on Enhanced eNB Architecture evolution. The notes include agreement on R3-214358 as the text changes to TS 38.463 for that feature. Hence I do think that this is the correct TS to identify - although, having now scanned the TP, it could well be that no changes are needed to it.

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Next, I will email the RAN 2 chair about the TU allocation.

2 – ZTE Corporation

RAN3 Chair: When the new spec on TS37.46X is created, the impact TS needs to be updated.

3 – Huawei Technologies France

we agree with moderator's proposal, as to the TU, it is up to chair's final decision.

4 – TELECOM ITALIA S.p.A. ok
5 – VODAFONE Group Plc Thanks to the moderator I now understand that Rel 16 TS 38.463 (E1 interface between CU-CP and CU-UP for NG-RAN) is being replaced by a 37 series specification in Rel 17 that covers this interface for both E-UTRAN and NG-RAN. Hence (as ZTE suggested) I've updated that in a rev 1 of the WID. Rev 1 also has another 2 supporting companies. Rev 1 is at https://www.3gpp.org/ftp/tsg_ran/TSG_RAN/TSGR_94e/Inbox/Drafts/%5B94e-33-UserPlane-Integrity%5D/Intermedia 21%20xxxx%20rev%203328%20rev%202297_EPC%20UPIP%20WID_v01.doc
6 – BT plc Yes, we agree with proposal 1.
7 – Telia Company AB We agree with proposal 1 and rev1.
8 – VODAFONE Group Plc Just aligned the WID title with the previously updated document title in rev 2: https://www.3gpp.org/ftp/tsg_ran/TSG_RAN/TSGR_94e/Inbox/Drafts/%5B94e-33-UserPlane-Integrity%5D/Intermedia 21%20xxxx%20rev%203328%20rev%202297_EPC%20UPIP%20WID_v02.doc
9 – Ericsson LM Yes, P1 and rev2

Feedback Form 3: Q3: Any further comments/editorial updates on the draft final WID uploaded in the draft box?

3 Conclusion

This small R17 WID is approved with the following conditions:

1) This feature is fully optional to EN-DC capable UEs

2) It does not challenge Rel-17 completion in RAN2 and RAN3

For RAN3, it will be treated in the basket item with 0.5TU (shared with other late R17 items) per e-meeting in Q1'22.

For RAN2, it will be treated in February meeting with 0.5TU as the "reserve" TUs.

The final WID for approval is in RP-213669.