**3GPP TSG-RAN** **WG2 Meeting #118-e R2-200xxxx**

**Electronic, 9 – 20 May 2022**

**Agenda Item: 6.21.2**

**Source: Huawei, HiSilicon**

**Title: Summary of [AT118-e][082][TEI17] RRC Segmentation capability for UE capability report**

**Document for: Discussion and decision**

# Introduction

This document summarizes the following offline discussion for TEI17 UE capability reporting.

* [AT118-e][082][TEI17] RRC Segmentation capability for UE capability report (Huawei)

 Scope: allow time and discussion to check. Collect comments on the CR solution(s)

 Intended outcome: Report

 Deadline: CB W2 Friday (CRs by post meeting disc)

# Contact from companies

|  |  |
| --- | --- |
| Company | Email |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

# Discussion

## Background

The below document was discussed online and only one company raised concern.

**RACS segmentation capability ind**

[R2-2205519](file:///C%3A%5CUsers%5Cmtk65284%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2_RL2%5CTSGR2_118-e%5CDocs%5CR2-2205519.zip) Indication of RRC Segmentation capability for UE capability report Huawei, HiSilicon, Apple, BT, CATT, CMCC, China Unicom, Ericsson, LG Electronics, Nokia, Nokia Shanghai Bell, NTT DOCOMO INC., Qualcomm Incorporated, Vodafone, ZTE Corporation, Sanechips discussion Rel-17 TEI17

R2-2206349 Indication of RRC Segmentation capability for UE capability report Huawei, HiSilicon, BT, CATT, CMCC, China Unicom, Ericsson, LG Electronics, Nokia, Nokia Shanghai Bell, NTT DOCOMO INC., Qualcomm Incorporated, Vodafone, ZTE Corporation, Sanechips discussion Rel-17 TEI17

DISCUSSION

* Intel think this should additionally be in the UE capability, to support inter-node messages.
* Apple think this is only needed at registration time, can always get UE capabilities and UE can respond back, so this is not needed. Apple has concerns on security. Apple think inter-node message is an issue.
* Huawei think that this is just one bit, and the full cap container is fully protected. Think we have already agreed to not forward early capabilities are not forwarded to core network. Agree that this should also be a normal UE capability.
* Apple think the network can try in any case. Huawei think that by understanding this earlier there can be a onestep UE cap inquiry. Apple think that the network can send two filters and the UE would use the one that can be supported.
* QC understand similar to Huawei. Don’t understand Apple reasoning.
* Chair: there is support for P1, only Apple is objecting. Can allow some time to check, will CB.

## Discussion

In case not yet all the companies read the paper, it is kindly remind that in R2-2206349 observation 2 and proposal 1 have explained the reason why this indication is useful. Here is a short summary of the paper:

In current spec the RRC segmentation function for UE capability report is enabled by the network blindly by including “*rrc-SegAllowed*” in the UE capability enquiry message without knowing whether the UE supports RRC segmentation or not. If this “*rrc-SegAllowed*” is received, The UE will perform segmentation only in case the UE supports RRC segmentation and the encoded UE capability message is larger than the maximum supported size of a PDCP SDU.

However, the network doesn't know whether the UE supports RRC segmentation or not before capability enquiry and thus it would be difficult for the network to decide whether to use multiple UE capability enquiry procedures for different RATs to avoid potential size problem. This can be avoided for segmentation capable UE if the support of RRC segmentation can be known by the network before capability enquiry procedure.

This cannot be done by UE capability reporting as usually the network doesn’t have the UE capability before capability enquiry except capability re-enquiry due to filter mismatch. Therefore, include this capability in msg5（RRC setup complete）is a more beneficial way to solve this issue.

**Proposal 1: include the indication of supporting UL RRC segmentation in RRC setup complete message for NR and LTE.**

**Q1: Do companies agree Proposal 1?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Comments** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**If proposal 1 is agreeable, the subsequent discussion is how to support it in case of handover.**

Generally it is also beneficial for the target RAN node to be aware about whether the UE supports segmentation: if the RAN node wants to re-enquire the capability, the filtering can be set appropriately after knowing whether UE supports it. In the original paper, it is proposed to include it in the AS-Context. During the online discussion, there were also comments raised on whether in the UE capability container needs to include this indication. This may be useful that once the capability is stored in the CN, the RAN node can retrieve this information from the CN.

**Proposal 2a: whether the UE supports UL segmentation is also indicated in AS-Context.**

**Proposal 2b: whether the UE supports UL segmentation is also indicated in UE capability container.**

**Q2: If companies agree P1, do companies have preference of 2a or 2b?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Comments** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**About Early implementation**

If the above proposals are agreeable, the release to support this can be discussed. RACS are introduced in Rel-16 and proponents see benefits to introduce since Rel-16, however from some previous offline discussion there were also concerns raised that this might be too late for Rel-16. Therefore to change Rel-17 with early implementation from Rel-16 could be a compromised way forward. The options can be summarized as below.

Option 1: only change Rel-17

Option 2: change Rel-17 with early implementation to Rel-16

Option 3: change both Rel-16 and Rel-17

**Q3: please companies provide your preferred option.**

|  |  |  |
| --- | --- | --- |
| **Company** | **Preferred option** | **Comments** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**Q4: please companies provide comments on CR details. [To be discussed once Q1-Q3 are concluded]**

|  |  |
| --- | --- |
| **Company** | **Comments** |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

# Conclusion