**3GPP TSG-RAN** **WG2 Meeting #111-e R2-200xxxx**

**Electronic, 17th – 28th August 2020**

**Agenda Item: 6.12**

**Source: Huawei, HiSilicon**

**Title: Summary of offline 103 - RACS corrections**

**Document for: Discussion and decision**

# Introduction

This document summarizes the following offline discussion for RACS.

* [AT111][103][RACS] Corrections (Huawei)

Scope: Discuss the CRs in [R2-2008104](file:///C:\Data\3GPP\RAN2\Docs\R2-2008104.zip), [R2-2007806](file:///C:\Data\3GPP\RAN2\Docs\R2-2007806.zip) and [R2-2007807](file:///C:\Data\3GPP\RAN2\Docs\R2-2007807.zip)

Initial intended outcome: summary of the offline discussion with e.g.:

* + - List of CRs that can be agreed as is
    - List of CRs that can be agreed with some changes (with an indication of the needed changes)
    - List of CRs that require online discussion
    - List of CRs that should not be pursued

Initial deadline (for companies' feedback): Wednesday 2020-08-19 07:00 UTC

Initial deadline (for rapporteur's summary in R2-2008183): Wednesday 2020-08-19 09:00 UTC

CRs listed as "can be agreed as is" in R2-2008183 and not challenged until Wednesday 2020-08-19 13:00 UTC will be declared as agreed by the session chair. For the other ones, the discussion will continue online.

# Discussion

## UE Capability presence upon SN addition and SN change (R2-2008104)

This CR [1] proposes to clarify that the UE Capability Information is optional present if UE Radio Capability ID IE is included in the signalling for SN Addition.

At RAN3#107 e-meeting, it is agreed that the UE Radio Capability ID IE is allowed to be transferred from the MN to SN during the SN addition procedure, if RACS feature is supported. In the condition if the UE Radio Capability ID is transferred by the MN to the SN, via SgNB ADDITION REQUEST or S-NODE ADDITION REQUEST message, there would be no need to transfer the UE capability information. However, in the inter-node message i.e. *CG-ConfigInfo*, the UE capabilities are mandatory present upon SN addition. In order to avoid the unnecessary transmission of the UE capabilities, the UE capability information shall be changed to optional present upon SN addition is the UE Radio Capability ID IE is transferred.

NOTE 3: The following table indicates per MN RAT whether RAT capabilities are included or not in *ue-CapabilityInfo*.

|  |  |  |  |
| --- | --- | --- | --- |
| **MN RAT** | **NR capabilities** | **E-UTRA capabilities** | **MR-DC capabilities** |
| E-UTRA (in case of EN-DC) | May be included if the UE Radio Capability ID as specified in 23.502 [43] is used. Included otherwise. | Not included | May be included if the UE Radio Capability ID as specified in 23.502 [43] is used. Included otherwise. |
| NR (in case of NE-DC) | Not included | May be included if the UE Radio Capability ID as specified in 23.502 [43] is used. Included otherwise. | May be included if the UE Radio Capability ID as specified in 23.502 [43] is used. Included otherwise. |
| NR (in case of NR-DC) | May be included if the UE Radio Capability ID as specified in 23.502 [43] is used. Included otherwise. | Not included | Not included |

**Q1. Do companies agree the intention and proposed changes of this CR?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Agree / Disagree** | **Comments** |
| Huawei, HiSilicon | Agree (proponent) |  |
| Lenovo |  | Just for curiosity: why did RAN3 agree on EN-DC only and not on NGEN-DC as well? Is there no use-case for NGEN-DC? |
| Nokia | Agree but need some revision | We have difficulty in understanding this in relation to the cover page “May be included if the UE Radio Capability ID as specified in 23.502 [43] is used. Included otherwise”  So, maybe means included or not included? |
| Qualcomm Incorporated (Masato) |  | Agree to the comments above. |
| CATT | Agree | Perhaps we can add a “not” after “May be”.  “May be not included if the UE Radio Capability ID as specified in 23.502 [43] is used. Included otherwise.” |
| ZTE(Yuan) | Agree but need revision | 1. Based on the existing presence condition for ue-CapabilityInfo, this field is mandatory present upon SN addition and SN change. In our understanding, this field can be optional if UE capability ID is used. Thus, the presence condition should also be updated. 2. About the proposed change in R2-2008104, there is ongoing discussion in offline 007 to update this table and we can align with their conclusion on how to capture different MR-DC structures in the first row (e.g. we may need to add another row to indicate the target RAT). Agree with the changes in the second, third and forth row. |
| Samsung | Agree | We understand intention is to do same as for HO preparation i.e. if ID is included, it is still optional to also include explicit capabilities |

**Summary**: Majority companies agree the intention of this CR, but some revisions are needed based on companies’ comments:

1. Rapporteur views on comments from Lenovo: after check TS 37.340, it describes “In EN-DC and MR-DC with 5GC, the MN may provide the UE radio capability ID to the SN”, thus NGEN-DC should also be included.
2. Rapporteur views on comments from Nokia, Qualcomm, CATT: if the UE Radio Capability ID is used, the MN may include or not include the capabilities, technically, the MN does not need to include capabilities. CATT’s suggestion looks good.
3. Rapporteur views on comments from ZTE: for the first comment, although the field is mandatory, the container can be empty, so if UE Radio Capability ID is used, an empty list can be used. Thus no critical issue exists if description for presence condition is not changed. For the second comment, thanks for spotting this, I agree the change should be aligned.

**Proposal 1: R2-2008104 can be agreed with some changes:**

* **The changes for EN-DC in the CR also applies to NGEN-DC**
* **Update the wording to “May not be included if the UE Radio Capability ID as specified in 23.502 [43] is used.”**
* **The changes for the table should be aligned with the conclusion in offline-007**

## UE capability of segmentation for UE capability information (R2-2007806, R2-2007807)

These CRs [2][3] propose to clarify that the UE capability of segmentation for UE capability information is optional feature without UE radio access capability parameters.

At RAN2#109bis e-meeting, the UE capability indication for segmentation was discussed and there was an agreement that UE capability indication was not agreed and not further discussed for this release. Although no signalling is needed for UE capability indication for segmentation, the UE capability of segmentation for UE capability information is optional instead of mandatory. However, it is not clear in current specification.

38.306 CR:

## 5.2 UE receiver features

| Definitions for feature |
| --- |
| SU-MIMO Interference Mitigation advanced receiver  - R-ML (reduced complexity ML) receivers with enhanced inter-stream interference suppression for SU-MIMO transmissions with rank 2 with 2 RX antennas  - R-ML (reduced complexity ML) receivers with enhanced inter-stream interference suppression for SU-MIMO transmissions with rank 2, 3, and 4 with 4 RX antennas  UE supporting the feature is required to meet the Enhanced Receiver Type requirements in TS 38.101-4 [18]. |
| Relaxed measurement  Indicates whether the UE supports relaxed RRM measurements of neighbour cells in RRC\_IDLE/RRC\_INACTIVE as specified in TS 38.304 [21]. |
| Mobility history information storage  It is optional for UE to support the storage of mobility history information and the reporting in *UEInformationResponse* message as specified in TS 38.331 [9]. UE is not required to report this capability. |
| Cross RAT RLF Report  Indicates whether the UE supports delivery of EUTRA RLF report to an NR node upon request from the network. UE is not required to report this capability. |
| Radio Link Failure Report for inter-RAT MRO EUTRA  It is optional for UE to include EUTRA CGI and associated TAC as *failedPCellId* in *RLF-Report* upon request from the network as specified in TS 38.331 [9]. |
| Reconnection Report for inter-RAT MRO EUTRA  It is optional for UE to include *eutra-CellIdentity* in *reconnectionCellIdentity* in the *VarRLF-Report* upon UE has radio link failure or handover failure and successfully re-connected to an E-UTRA cell as specified in TS 38.331 [9]. |
| Segmentation for UE capability information  Indicates whether the UE supports segmentation of *UECapabilityInformation* as specified in TS 38.331 [9]. |

36.306 CR:

### 6.8.x Segmentation for UE capability information

It is optional for UE to support segmentation of *UECapabilityInformation* as specified in TS 38.331 [9].

**Q2. Do companies agree the intention and proposed changes of 38.306 CR and 36.306 CR?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Agree / Disagree** | **Comments** |
| Huawei, HiSilicon | Agree with revision (proponent) | There is an error for 36.306 CR:  It is optional for UE to support segmentation of UECapabilityInformation as specified in TS 36~~8~~.331 [5~~9~~]. |
| Lenovo | Agree on both CRs to be complete | Further minor correction to be made in the 38.306 CR:  Beginning of the sentence should be corrected as shown below.  “It is optional for UE to support segmentation of UECapabilityInformation as specified in TS 38.331 [9].” |
| Nokia | Agree but this needs to be a different section | Okay but this is not a receiver feature as in RAN1 but could be part of another section e.g. L3 feature or something equivalent. |
| Qualcomm Incorporated (Masato) | Agree to the intention | We also do not think it should be categorized into the receiver features. |
| CATT | Agree to the intention | Agree with Nokia and Qualcomm |
| ZTE(Yuan) | Agree with the intention | Agree with Nokia and Qualcomm that it can be captured in another section, e.g. 5.3 RRC connection. |
| Samsung | Agree with the intention | Agree to the comments from Nokia/ Qualcomm |

**Summary**: All companies agree the intention of these CRs, but some revisions are needed based on companies’ comments:

1. Rapporteur views on 38.306 CR: update the wording to align with the description in 36.306 CR, and move this capability to a new clause “5.x Other features” which is aligned with TS 36.306.
2. Rapporteur views on 36.306 CR: correct the reference from “38.331 [9]” to “36.331 [5]”.

**Proposal 2: R2-2007806 can be agreed with some changes:**

* **Update the wording to align with the description in 36.306 CR, the beginning of the sentence is corrected as “It is optional for UE to support…”**
* **Move this capability to a new clause “5.x Other features”**

**Proposal 3: R2-2007807 can be agreed with some changes:**

* **Correct the reference from “38.331 [9]” to “36.331 [5]”**

# Conclusion

**Proposal 1: R2-2008104 can be agreed with some changes:**

* **The changes for EN-DC in the CR also applies to NGEN-DC**
* **Update the wording to “May not be included if the UE Radio Capability ID as specified in 23.502 [43] is used.”**
* **The changes for the table should be aligned with the conclusion in offline-007**

**Proposal 2: R2-2007806 can be agreed with some changes:**

* **Update the wording to align with the description in 36.306 CR, the beginning of the sentence is corrected as “It is optional for UE to support…”**
* **Move this capability to a new clause “5.x Other features”**

**Proposal 3: R2-2007807 can be agreed with some changes:**

* **Correct the reference from “38.331 [9]” to “36.331 [5]”**

# Reference

1. R2-2008104 Correction on the UE Capability presence upon SN addition and SN change, Huawei, HiSilicon, Ericsson
2. R2-2007806 CR on UE capability of segmentation for UE capability information, Huawei, HiSilicon
3. R2-2007807 CR on UE capability of segmentation for UE capability information, Huawei, HiSilicon