3GPP TSG-RAN WG2 Meeting #113 Electronic R2-210xxxx

Elbonia, 25 January – 05 February 2021

**Agenda item: 6.1.2**

**Source: Nokia**

**Title: Summary of [AT113-e][113][RACS] Corrections (Nokia)**

**WID/SID: RACS-RAN-Core (Rel-16)**

**Document for: Discussion and Decision**

# 1 Introduction

This document is the report of the following email discussion:

**[AT113-e][113][RACS] Corrections (Nokia)**

Scope: Discuss a revision of CRs in [R2-2101029](file:///C:\Data\3GPP\Extracts\R2-2101029%20TS%2036.300%20Clarification%20on%20manufacturer%20based%20UE%20capability%20ID.docx), [R2-2101030](file:///C:\Data\3GPP\Extracts\R2-2101030%20TS%2038.300%20Clarification%20on%20manufacturer%20based%20UE%20capability%20ID.docx) and [R2-2101031](file:///C:\Data\3GPP\Extracts\R2-2101031%20CR%20TS%2038.331%20Clarification%20on%20manufacturer%20based%20UE%20capability%20ID.docx)

Intended outcome: rapporteur's summary in R2-2102032 and corresponding CRs (if agreeable)

Deadline (for companies' feedback): Tuesday 2021-02-02 17:00 UTC

Deadline (for summary and CRs): Tuesday 2021-02-02 23:00 UTC

CRs (if any) listed as "can be agreed as is" in R2-2102032 and not challenged until Wednesday 2021-02-03 11:00 UTC will be declared as agreed by the session chair. For the other ones, the discussion will continue online.

Status: Ongoing

# 2 **Discussion**

**Topic 1: Manufacturer based UE capability ID**

[R2-2101030](file:///C:\Data\3GPP\Extracts\R2-2101030%20TS%2038.300%20Clarification%20on%20manufacturer%20based%20UE%20capability%20ID.docx) Clarification on manufacturer based UE capability ID Nokia, Nokia Shanghai Bell CR Rel-16 38.300 16.4.0 0336 - F RACS-RAN-Core

[R2-2101031](file:///C:\Data\3GPP\Extracts\R2-2101031%20CR%20TS%2038.331%20Clarification%20on%20manufacturer%20based%20UE%20capability%20ID.docx) Clarification on manufacturer based UE capability ID Nokia, Nokia Shanghai Bell CR Rel-16 38.331 16.3.1 2380 - F RACS-RAN-Core

**Question 1**: How do companies understand the term “pre-provisioned” capability in the context of the Manufacturer assigned ID discussed in the Stage 2 CRs for TS 38.300 and TS 36.300? Also do the companies see the need for any clarification.

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| Answers to Question 1 | | |
| Company | Yes/No | Comments (e.g. changes required to be acceptable, why the CR is or is not needed) |
| Nokia | Yes | [Proponent] It would be good to get common understanding of the system level behavior if the network is required to fetch the capabilities associated with the manufacturer assigned ID from the UE via. RRC or is this “pre-provisioned” i.e. already stored in the network.  Depending on the outcome of the understanding, we can think if a CR is required or not. No strong views on that but this is a potential IODT issue. |
| Vodafone |  | If the UE has provided a Manufacturer provided UE Capability ID, then - if they are not already cached in that RAN node - the RAN should fetch the capabilities from the Core Network.  However, if the RAN requests the UE capabilities from the UE, then the UE should supply them.  Clarifying TS 36.300 and 38.300 is OK. |
| Qualcomm Incorporated |  | No strong view on the need of stage-2 CRs. Given Vodafone’s explanation though, we need to modify the proposed change so that it does not give the impression that Uu UE capability transfer is never used when Manufacturer provided UE Capability ID is in use. |
| Ericsson | Yes  (I guess the question is if we agree with the interpretation of pre-provisioned as described in the CRs) | In case the manufacturer-assigned ID is used the corresponding UE capabilities are pre-provisioned in the CN (in the UCMF) and hence the RAN do not need to retrieve the UE capabilities from the UE over the air-interface. As Vodafone pointed out though, there is nothing that prevents the RAN from retrieving the UE capabilities from the UE if it wants to. |
| Huawei, HiSilicon |  | Agree that the “pre-provisioned” capability is capability in the CN (i.e. UCMF), If the manufacturer-assigned ID is provided, the RAN should fetch the corresponding capabilities from the CN. If fetch the capabilities successfully, RAN does not need to request capabilities from the UE. No strong view on the CRs. |
| MediaTek | See comment | We don’t quite see that these CRs solve a real problem. As Vodafone describe above, if the RAN node requests the UE capabilities, the UE will respond with them—thus it is not exactly true that having a pre-provisioned set of capabilities excludes the use of the RRC capability transfer. It seems natural that a RAN node implementation would fetch the capabilities from the core network, but it doesn’t seem that anything goes wrong if it instead fetches them from the UE. So we don’t see a strong motivation to capture this restriction in the spec.  If we do capture something, the ME box on the coversheet should not be ticked, and we should be clear that this is purely guidance for the network (i.e. it does not obviate the requirement on the UE to respond to a UECapabilityEnquiry if one is sent). |
| Intel | Yes, with comments | While we support this clarification in stage 2 in principle, the comments raised by others are valid and updating to provide more details on the interaction between the capabilities retrieval from the UE and manufacturer ID would be useful.  Also agree with MediaTek, there should be no UE impact from this CR. |
| CATT | See comment | Agree with MediaTek. UECapabilityEnquiry message is triggered by network, UE shall send its UE capabilities to gNB when it received UECapabilityEnquiry message. Whether the UE capabilities acquired from RRC message corresponding to manufacturer-assigned ID is up to UCMF implementation. |
| Samsung |  | We are not sure if there is need to clarify anything. We assume that if capability is pre-provisioned there is no need for network to retrieve. However, it should be clear from stage 3 that UE responds when receiving enquiry |
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**Summary 1**: There is consensus on the understanding that “pre-provisioning” implies UE capability is already stored in the CN (i.e. UCMF) and for this case no retrieval with UE Capability Enquiry is necessary. However, this does not preclude the RAN from fetching the UE capabilities from the UE if it wants to (e.g. retrieval failure while fetching from CN). One company is not sure of the need to clarify something, 9 other companies would be okay for clarifying the interaction between the capabilities retrieval from the UE and manufacturer ID. As this CR should not affect UE behavior the ME tick-box must be unchecked. Rapporteur suggests the following wording for the CR.

**Proposal 1**: The manufacturer-assigned ID(s) corresponds to a pre-provisioned set of capabilities stored in the UCMF which can be retrieved directly by the RAN from the core network.

**Topic 2: UE Capability ID in MR-DC**

[R2-2101031](file:///C:\Data\3GPP\Extracts\R2-2101031%20CR%20TS%2038.331%20Clarification%20on%20manufacturer%20based%20UE%20capability%20ID.docx) Clarification on UE capability ID in MR-DC scenarios Nokia, Nokia Shanghai Bell CR Rel-16 38.331 16.3.1 2380 - F RACS-RAN-Core

The UE Capability ID may be exchanged from MN to SN allowing a reduction in X2/Xn message size. However, the UE Capability ID may point to a UE Radio Access Capability that contains information on multiple RATs. Some of the additional information may not be interpreted by the SN. Additionally, for NR-DC, the additional capablities are irrelevant and if included should not cause any additional confusion.

For MR-DC scenarios apart from NR-DC, it may be misunderstood that the SN is allowed additional freedom due to the UE Capability ID to interpret MN capabilities which might break a Rel-15 principle. For NR-DC, the additional capablities are irrelevant and if included should not cause any additional confusion.

**Question 2**: Do companies agree that the SN is not required to receive the MN part of the UE’s standalone capability container as part of the UE Capability ID as discussed in [R2-2101031](file:///C:\Data\3GPP\Extracts\R2-2101031%20CR%20TS%2038.331%20Clarification%20on%20manufacturer%20based%20UE%20capability%20ID.docx)?

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| Answers to Question 2 | | |
| Company | Yes/No | Comments (e.g. changes required to be acceptable, why the CR is or is not needed) |
| Nokia | Yes | [Proponent] The intention of the proposal is to ensure that we do not allow some additional interpretation that by passing the UE Capability ID to the SN which contains the MN part of the UE’s capabilities that the SN can use them.  As Intel mentioned during the discussion we are fully open on the aspect on how we clarify this, no strong opinion on the chosen wording but we would like to have a common understanding as this is a potential IODT issue. |
| Vodafone |  | Each UE Capability ID has to map to the same UE capabilities across the whole PLMN.  The SN may act as a MN for other UEs.  Hence the SN shall NOT discard the multi-RAT information related to the UE Capability ID, but should cache it for use by other UEs.  Whether or not a SN is allowed to use information on the UE’s capabilities for other RATs ought to already be clearly documented in RAN specs -> what do they say?  The existing text in 38.331 is misleading about RACS – but the CR in 1031 does not seem to clarify things. |
| Qualcomm Incorporated |  | We agree with the expected behaviour outlined in the CR.  The proposed change is confusing because it was applied to the table describing inclusion of RAT containers in *ue-CapabilityInfo*, but not about how the UE capabilities indicated by UE Capability ID is treated in the receiving node.  All in all we think the behaviour of the receiving node can be left to implementation. |
| Ericsson |  | Agree with Qualcomm, this can be left to the implementation. We do not think this breaks the Rel-15 principle since the SN is not required to parse the UE capabilities concerned for the MN in that case, it may simply receive those also within the UE capabilities, but nothing mandates the SN to look into those capabilities. If this needs to be clarified it should perhaps rather be done in the X2-AP/Xn2-AP specs. |
| Huawei, HiSilicon |  | We think SN is not required to comprehend the MN part of the UE’s standalone capability container as part of the UE Capability ID, if such capability is received, the SN can ignore irrelevant part and we agree it can be left to the implementation. |
| Intel |  | We do not see a need to specify that the receiving node shall ignore capabilities that is not relevant for it as that is the normal behaviour. It should be clear to any implementation from existing specification that the UE capabilities associated with the capability ID could contain other capabilities not relevant for it.  If it is decided to have this clarification, the text needs to be updated.  “If the UE Radio Capability ID as specified in 23.502 [43] includes this capability then it shall be ignored.” The “it” that is referred to in this sentence is confusing – it seem to be imply that the UE Radio Capability ID is ignored. Suggest to rephrase to clarify the that UE capability itself is ignored. |
| CATT |  | We share most companies’ view that whether SN needs to comprehend MN related UE capabilities can be left to implementation. |
| Samsung |  | As expressed by others, we think SN is merely not required to comprehend. I.e. there is however no real need to forbid comprehension by SN and thus no need for any clarification either. |
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**Summary 2**: General consensus is that Rel-15 principle is maintained that the SN is not required to comprehend the MN part of the UE capability received as part of the UE capability ID. It should be clear to any implementation from existing specification that the UE capabilities associated with the capability ID could contain other capabilities not relevant for it and if received can be ignored.

**Proposal 2**: Note Summary 2 in chair notes and CR in [R2-2101031](file:///C:\Data\3GPP\Extracts\R2-2101031%20CR%20TS%2038.331%20Clarification%20on%20manufacturer%20based%20UE%20capability%20ID.docx) is not pursued.

# 4 Conclusion

Thanks to all the companies for participating in this discussion. The following is the summary of the discussion with proposals.

**Topic 1: Manufacturer based UE capability ID**

**Summary 1**: There is consensus on the understanding that “pre-provisioning” implies UE capability is already stored in the CN (i.e. UCMF) and for this case no retrieval with UE Capability Enquiry is necessary. However, this does not preclude the RAN from fetching the UE capabilities from the UE if it wants to (e.g. retrieval failure while fetching from CN). One company is not sure of the need to clarify something, 9 other companies would be okay for clarifying the interaction between the capabilities retrieval from the UE and manufacturer ID. As this CR should not affect UE behavior the ME tick-box must be unchecked.

Rapporteur suggests the following wording for the CR.

**Proposal 1**: Suggested wording for the CR “The manufacturer-assigned ID(s) corresponds to a pre-provisioned set of capabilities stored in the UCMF which can be retrieved directly by the RAN from the core network.”

**Topic 2: UE Capability ID in MR-DC**

**Summary 2**: General consensus is that Rel-15 principle is maintained that the SN is not required to comprehend the MN part of the UE capability received as part of the UE capability ID. It should be clear to any implementation from existing specification that the UE capabilities associated with the capability ID could contain other capabilities not relevant for it and if received can be ignored.

**Proposal 2**: Note Summary 2 in chair notes and CR in [R2-2101031](file:///C:\Data\3GPP\Extracts\R2-2101031%20CR%20TS%2038.331%20Clarification%20on%20manufacturer%20based%20UE%20capability%20ID.docx) is not pursued.

# Annex A – Contact Points

Respondents to the email discussion are kindly asked to fill in the following table.

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| --- | --- | --- |
| Company | Name | Email Address |
| Nokia | Amaanat | amaanat.ali@nokia.com |
| Ericsson | Oscar Ohlsson | oscar.ohlsson@ericsson.com |
| Huawei, HiSilicon | Yiru Kuang | kuangyiru@huawei.com |
| Samsung | Himke van der Velde | himke.vandervelde@samsung.com |
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