3GPP TSG-RAN WG2 #116-e R2-211xxxx

Electronic meeting, 1st November – 12th November 2021

Agenda Item: 6.1.4.1.1

Source: Ericsson

Title: Summary of [AT116-e][009][NR16] Connection Control II

Document for: Discussion, Decision

# 1 Introduction

This document is to handle the following email discussion:

* [AT116-e][009][NR16] Connection Control II (Ericsson)

Scope: Determine agreeable parts in a first phase, for agreeable parts agree on CRs. Treat [R2-2109340](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_116-e\Docs\R2-2109340.zip), [R2-2109887](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_116-e\Docs\R2-2109887.zip), [R2-2109888](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_116-e\Docs\R2-2109888.zip), [R2-2110682](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_116-e\Docs\R2-2110682.zip), [R2-2110683](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_116-e\Docs\R2-2110683.zip), [R2-2110684](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_116-e\Docs\R2-2110684.zip), [R2-2111036](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_116-e\Docs\R2-2111036.zip), [R2-2110945](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_116-e\Docs\R2-2110945.zip), [R2-2110012](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_116-e\Docs\R2-2110012.zip), [R2-2110756](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_116-e\Docs\R2-2110756.zip),

Intended outcome: Report, Agreed CRs if applicable

Deadline: Schedule 1

Regarding the deadlines, I would like to set the following 2 deadlines:

1) First deadline on **Thursday Nov 4 1200 UTC** to settle scope what is agreeable.

2) Second deadline on **Thursday Nov 11 1200 UTC** to agree the CRs (where applicable) and final check.

# 2 Contact information

|  |  |
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# 3 Discussion

## 3.2 Inter-MN RRC resume without SN change

The following documents have been submitted regarding the LS received in R2-2109340 on the support of the inter-MN RRC resume without the SN change:

[R2-2109340](http://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_116-e/Docs/R2-2109340.zip) LS on inter-MN RRC resume without SN change (R3-214360; contact: Qualcomm) RAN3 LS in Rel-17 LTE\_NR\_DC\_enh2-Core To:RAN2

Moved from 8.2.1

[R2-2109887](http://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_116-e/Docs/R2-2109887.zip) Discussion on inter-MN RRC resume without SN change ZTE Corporation, Sanechips discussion Rel-16 LTE\_NR\_DC\_CA\_enh-Core

[R2-2109888](http://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_116-e/Docs/R2-2109888.zip) Reply LS on inter-MN RRC resume without SN change ZTE Corporation, Sanechips LS out Rel-16 LTE\_NR\_DC\_CA\_enh-Core To:RAN3

[R2-2110682](http://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_116-e/Docs/R2-2110682.zip) Support of inter-MN RRC resume without SN change Ericsson discussion Rel-16 TEI16, LTE\_NR\_DC\_enh2-Core

[R2-2110683](http://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_116-e/Docs/R2-2110683.zip) [Draft] Reply LS on inter-MN RRC resume without SN change Ericsson LS out Rel-16 TEI16, LTE\_NR\_DC\_enh2-Core To:RAN3

[R2-2110684](http://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_116-e/Docs/R2-2110684.zip) Clarification on restore MCG and SCG in case of RRC resume Ericsson CR Rel-16 37.340 16.7.0 0289 - F TEI16, LTE\_NR\_DC\_CA\_enh-Core

[R2-2111036](http://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_116-e/Docs/R2-2111036.zip) Discussion on LS on Inter-MN RRC resume without SN change vivo discussion Rel-16 TEI16

[R2-2110945](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_116-e\Docs\R2-2110945.zip) Inter-MN RRC resume without SN change - RAN2 aspects Qualcomm Incorporated, Nokia, Nokia Shanghai Bell discussion Rel-17

Moved from 8.2.1

[R2-2110012](http://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_116-e/Docs/R2-2110012.zip) Reply LS on Inter-MN RRC resume without SN change Qualcomm Incorporated LS out Rel-17 To:RAN3

Moved from 8.2.1

Based on the submitted contributions, there are basically two questions that RAN2 needs to answer to RAN3. The first one is whether current RRC signalling support the inter-MN RRC resume without SN change from a RAN2 perspective, and the second one is whether to have the support of this in Rel-16 or in Rel-17.

**Question 1**: Do company agree that current RRC signalling can already support the use case of inter-MN RRC resume without SN change?

|  |  |  |
| --- | --- | --- |
| Company | Agree (y/n) | Comments |
| Samsung | Yes with comments | Our understanding is that there is no restriction not to support it from a RAN2 perspective for now. On the other hand, we wonder whether the concerned use case is practically valid or not i.e. early measurement can not be received by the target MN before target MN makes the decision i.e. only blind decision can be allowed unlike inter-MN mobility without SN change. |
| Nokia | Yes | As proponent we think this should be clarified based on [R2-2110945](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_116-e\Docs\R2-2110945.zip). |
| Huawei, HiSilicon | Yes | Based on contributions from companies, the common understanding is that there are no new RAN2 impacts in supporting inter-MN RRC resume without SN change. |
| ZTE | Yes | We agree this scenario is supported in RRC signalling. RRC resume can be triggered in a different Pcell, and when network sends SCG configuration in RRCResume message, the SCG configuration can be either old SCG or a new SCG. |
| Ericsson | Yes but | Even if RAN2 signaling support this scenario, the RAN3 signalling is missing and thus we can say that the inter-MN RRC resume within SN change is currently not supported by 3GPP. This should be clear, unless RAN3 decides to support this scenario already from Rel-16. |
| Qualcomm | Yes | The required RAN2 signalling (including RRC signalling) to support the feature is already available – specifically, the SCG restore mechanism in RRC resume. So, there are no new RAN2 impacts in supporting the feature. |
| MediaTek | Yes (from Rel-16) |  |
| Lenovo | Yes | The current specification does not forbid it. |
| CATT | Yes | From RAN2 perspective,the current RRC specification can support the use case i.e. inter-MN RRC resume without SN change, there are no new RAN2 impacts need to be introduced. |
| OPPO | Yes | This case is supported by current RAN2 signalling. |
| NEC | Yes, but.. | We are not sure what the inter-MN RRC resume without SN change really mean? At inter-MN RRC resume, the target MN can receive the information on stored SCG configuraiton but the target MN does not add/configure the SCG yet with the SN at resuming.  From RAN2 point of view, what current spec support is to retrieve the SCG at inter-MN RRC resume and the same SN/SCG can be retrieved by the target MN „blindly“. |
| Intel | Yes, but | While we agree RAN2 specifications allow it. But we also question the usecase and whether this is a realistic scenario. |
| vivo | Yes | As discussed in our contribution |
| Sequans | Yes |  |
| LGE | Yes | The scenario isn’t restricted and the network can support inter-MN RRC resume w/o SN change. It may be helpful to reduce configuration time when there is no need to SN configuration update. |

**Question 2**: If the support of inter-MN RRC resume without SN change is to be introduced by RAN3, RAN2 would like to suggest to have this additional use case in Rel-16 or Rel-17?

|  |  |  |
| --- | --- | --- |
| Company | Rel16/Rel-17 | Comments |
| Samsung | Rel-17 | There seems no RAN2 specification impact except minor clarification i.e. R2-2110684. On the other hand, we think it is anyway optimization so it makes more sence to introduce Xn message enhancement in R17 so we slightly prefer to have this use case in R17. But we are OK to have it in R16 without any Xn message enhancement. |
| Nokia | Rel-16 | We prefer to have this from Rel-16 |
| Huawei, HiSilicon | Left to RAN3 discussion | Firstly, we think RAN3 LS is to ask whether RAN2 has supported the functionality (related to Q1), and our answer is Yes.  Secondly, the only work is in RAN3, so it can be left to RAN3 discussion, i.e. whether they want to introduce necessary signalling parts in Rel-16 or Rel-17. |
| ZTE | Rel-17 | We don’t think the enhancement discussed in RAN3 is essential for Rel-16 because:   1. As we mentioned in R2-2109887, due to lack of measurement results before RRCResume, target MN can only add SN blindly (e.g. when the coverage of stored PSCell is overlapped with target Pcell), so In real deployment, inter-MN RRC resume without SN addition is a rare case. 2. From the perspective of target MN, it can trigger SN addition and send stored SCG context to SN for delta configuration, although from SN perspective, it may be regarded as “inter-MN RRC resume with SN change“, but it works without any problem.   We think RAN3 is trying to figure out the urgency of this scenario, so we(RAN2) should provide clear guidance to them. And we think it is sufficient to consider the enhancements in Rel-17. |
| Ericsson | Rel-17 | Given that Rel-16 is fronzen for quite some time and that there is no real urgency to support this scenario, we prefer to introduce it from Rel-17. |
| Qualcomm | Rel-16 | We prefer to have this feature in Rel-16 since the required RAN2 signaling to support it is available in Rel-16. It enables the UE to enjoy the benefits of keeping SCG in resume early, as Intra-MN resume and Inter-MN resume are transparent to the UE.  However, as there are network (RAN3) impacts that are being worked out, we would be fine with supporting this feature in Rel-17 also. Regarding the use case, we do not think it is a rare case in real deployments, e.g., it is possible that though serving MN has changed, the SN may continue to be able to serve the UE since SN coverage is different and may even be larger than the MN, e.g., in the NE-DC case. We support such mobility scenarios, e.g., Inter-MN HO without SN change, and this is a similar scenario. |
| MediaTek | Left to RAN3 discussion | Since the additional work is mainly in RAN3, it is more reasonable to let RAN3 make the decision. |
| Lenovo | Left to RAN3 | RAN3 just asked if the current specification can support or not. |
| CATT | Left to RAN3 discussion | Considering the required RAN2 signaling is available in Rel-16, no more RAN2 impacts need to be introduced, the enhancements are mainly in the RAN3 interface aspects, therefore, it is up to RAN3 which release verson (i.e. Rel-16 or Rel-17) to support the use case. |
| OPPO | Left to RAN3 |  |
| NEC | Rel-17 | It is not correction but addition of new use case. |
| Intel | Rel-17 | This is a new scenario and from overall system point of view, we prefer to consider for Rel-17. As it has no RAN2 impact, we think this decision can also be left to RAN3. |
| vivo | Left to RAN3 decision |  |
| Sequans | Rel-17 | It does not look essential for Rel-16 |
| LGE | Rel-17 | Since this is not correction but optimization for additonal use case, we think it is appropriate to go for Rel-17. |

**Rapporteur summary:** Based on the inputs received in the first two question, is quite clear that current RAN2 signalling may already support the inter-MN RRC resume without SN change without any further specification impact. This is regardless on whether the intension was to support this use case when the MCG/SCG restore feature was standardized during Rel-16.

Further, on whether to have this change in Rel-16 or Rel-17, there is quite good support to indicate to RAN3 to have this new use case in Rel-17 while an equal number of companies prefer to leave the decision directly to RAN3. In order to accommodate both camps, rapporteur suggests to indicate the RAN2 preference in the Reply LS, but at the same time also make it clear that the ultimate decision is up to RAN3.

According to this, the rapporteur would like to suggest the following proposals:

1. RAN2 to reply to RAN3 that current RAN2 signalling can already support the use case of inter-MN RRC resume without SN change and no additional impact on RAN2 is foreseen.
2. RAN2 to reply to RAN3 that the RAN2 preference is to introduce this new use case in Rel-17 but that the final decision is up to RAN3.

Finally, a company submitted a CR in order to clarify that even if the SCG/MCG restore feature has been introduced already in Rel-16, the use case of inter-MN RRC resume is not supported (meaning that the restore of the SCG/MCG is done only in case the UE resumes in the same MN).

[R2-2110684](http://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_116-e/Docs/R2-2110684.zip) Clarification on restore MCG and SCG in case of RRC resume Ericsson CR Rel-16 37.340 16.7.0 0289 - F TEI16, LTE\_NR\_DC\_CA\_enh-Core

**Question 3**: Do companies agree with the changes proposed in [R2-2110684](http://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_116-e/Docs/R2-2110684.zip)?

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| --- | --- | --- |
| Company | Agree (y/n) | Comments |
| Samsung | See comments | It depends on the outcome of Q1 i.e. whether to confirm the support of inter-MN RRC resume without SN change in Rel-16. If agreed not to be supported, we are OK with the CR. |
| Huawei, HiSilicon | No | As pointed out by [R2-2110945](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_116-e\Docs\R2-2110945.zip), from the UE point of view, Inter-MN or Intra-MN RRC resume is transparent to the UE, so that the Rel-16 SCG restore also applies to the Inter-MN RRC resume case.  In the CR cover page, one reason for change is as below:  *However, this feature can only be used in case the UE resume in the same MN whereas if the UE resumes to a new MN the stored MCG and SCG configuration needs to be released and cannot be restore.*  We do not think the above text is correct as the current RAN2 specifications have not defined such UE behaviours.  In general, we do not think the CR is needed. |
| ZTE | No | Similar view as HW, UE does not need to care whether MN or SN is changed, the UE just applies the configuration when received from network.  From network perspective, during RRC Resume procedure, target MN can obtain the source MCG and SCG context based on legacy context retrieve procedure, so the network(target MN) is able to resume MCG and SCG during RRCResume procedure. Just as we mentioned, network needs to trigger it blindly. But the spec should not prevent network from doing it. |
| Ericsson | Yes with comment | If RAN3 decides to introduce the scenario of inter-MN RRC resume without SN change in Rel-17, a clarification is needed since there is no current support on RAN3 for it.  Also, it is true that the network can keep the SN blindly but does it really work for inter-vendor deployment? Our understanding is that this may create IODT issues. |
| Qualcomm | No | As pointed out by Huawei, UE does not know/cannot differentiate whether it is an Intra-MN resume or Inter-MN resume procedure. |
| MediaTek | No strong view | This depends on whether inter-MN RRC resume without SN change is supported in Rel-16. |
| CATT | See comment | As mentioned above, it depends on whether inter-MN RRC resume without SN change is supported in Rel-16 or R17. Furthermore how to configure the SCG is up to NW, so it seems no need to introdcue too much restrictions. |
| OPPO | No | Share the same view with HW. |
| NEC |  | agree with Samsung. |
| Intel | No, but can be up to RAN3 | It depends on whether RAN3 supports this scenario or not. |
| vivo | No | Agree with Intel |
| LGE | Yes but | The answer should be conditional on the result of Q1/Q2 |

**Rapporteur summary:** According to the comments received, it looks like that is too premature to discuss this change, given also that RAN3 may decide to introduce the inter-MN RRC resume without SN change already from Rel-16. Therefore, rapporteur proposes to postpone this CR.

1. The CR in R2-2110684 is postponed (wait for final decision from RAN3).

## 3.1 IIOT – Mobility

[R2-2110756](http://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_116-e/Docs/R2-2110756.zip) Correction to need code for drb-ContinueEHC-DL and drb-ContinueEHC-UL MediaTek Inc. CR Rel-16 38.331 16.6.0 2845 - F NR\_IIOT-Core

**Question 1**: Do company agree with the changes proposed in the CR in [R2-2110756](http://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_116-e/Docs/R2-2110756.zip)?

|  |  |  |
| --- | --- | --- |
| Company | Agree (y/n) | Comments |
| Samsung | No strong view | We have some sympathy with this motivation. However, no critical problem would be foreseen in the current specification. |
| Nokia | Neutral | Sounds logical if those fields are really one shot and there is no impact upon absence |
| Huawei, HiSilicon | No | We prefer not change ANSI.1 at this stage, the said issue could be handled by sensible network configuration. |
| ZTE | Neutral | We are fine with the change if there is no NBC concern. |
| Ericsson | Tend to agree | We are not sure if there would be any critical issue even if the UE keeps the configuration. On the other hand, since drb-ContinueROHC-DL/drb-ContinueROHC-UL (from Rel-15) have need code as need N, it is okay to align them. |
| MediaTek | Yes (Proponent) | The *drb-ContinueEHC* indicates whether the UE to continue or reset the EHC upon re-establishment. This is clear a one shot behavior and the original ASN.1 need code is just a mistake.  As this is more like UE behavior, we don’t understand the comment from Huawei that how „sensible network configuration“ could handle this. |
| CATT | Neutral | On one hand it seems logical to align with the same parameters for RoHC, on the other hand, nothing is broken if UE keeps these values beyond the handover completion. |
| OPPO | Neutral |  |
| NEC | No strong view | but we are Ok with this correction. |
| Intel | Agree | Agree these are one-shot and Need N is the correct usage.  While this is a change in ASN.1, there should not be any impact on the implementation as the end result on absence is the same for N and R here – that the field is no longer configured.  Correcting to N now avoid confusion in terms of understanding. |
| vivo | No strong view |  |
| Sequans | Agree | It makes sense to alig with RoHC case and having Need R is confusing. |
| LGE | No strong view but | We wonder if there is no NBC concern. Need N seems correct, but Need R does not seem to make any trouble. |

**Rapporteur summary:** According to the comments received, it seems that the changes in the CR can be agreed, even if there is not a strong opinion on having them. However, the impact analysis of the CR is revised so to highlight that there is not really any NBC issue with the change.

1. The CR in R2-2110756 is revised in R2-2111549 and agreed.

# Conclusion

Based on the discussion in the previous sections we propose the following:

1. RAN2 to reply to RAN3 that current RAN2 signalling can already support the use case of inter-MN RRC resume without SN change and no additional impact on RAN2 is foreseen.
2. RAN2 to reply to RAN3 that the RAN2 preference is to introduce this new use case in Rel-17 but that the final decision is up to RAN3.
3. RAN2 to approve the LS to RAN3 in R2-2111591
4. The CR in R2-2110684 is postponed (wait for final decision from RAN3).
5. The CR in R2-2110756 is revised in R2-2111549 and agreed.