**3GPP TSG-RAN WG2 Meeting #113 electronic Draft R2-2101963**

**Elbonia, January 25th – Feb 5th, 2021**

**Agenda item:** 6.7.2

**Source:** Intel Corporation

**Title:** Summary of discussion [210][MOB] CHO/CPC corrections (Intel)

**Document for:**  Discussion and decision

# Introduction

This is the summary of below offline discussion:

* [AT113-e][210][MOB] CHO/CPC corrections (Intel)

Scope:

* + - Discuss which CHO/CPC corrections (for LTE and NR) marked for this discussion are seen agreeable
    - Some (or even all) CRs may be merged together if seen needed

Intended outcome:

* + - Discussion summary in R2-2101963 (by email rapporteur).
    - Agreeable CRs (if any)

Deadline for providing comments, for rapporteur inputs, conclusions and CR finalization:

* + - Initial deadline (for companies' feedback): 1st week Thu, UTC 0900
    - Initial deadline (for rapporteur's summary in R2-2101963): 1st week Fri, UTC 09:00
    - Deadline for CR finalization: 2nd week Thu, UTC 1000

To make it easier to find the correct contact delegate in each company for potential follow-up questions, the rapporteur encourages the delegates who provide input to provide their contact information in this table:

|  |  |
| --- | --- |
| Company | Delegate contact |
| COMPANY\_NAME | NAME ([email@address.com](mailto:email@address.com)) |
| Intel | Yi.guo@intel.com |
| Google | frankwu@google.com |
| Samsung | June Hwang (june77.hwang@samsung.com) |
| ZTE | zhang.mengjie@zte.com.cn |
| Nokia | jedrzej.stanczak@nokia.com |
| Ericsson | cecilia.eklof@ericsson.com |
| Futurewei | [Jialinzou88@yahoo.com](mailto:Jialinzou88@yahoo.com) |
| Huawei | jun.chen@huawei.com |
| Lenovo | Wulh5@lenovo.com |
| OPPO | lihaitao@oppo.com |
| Sharp | ningjuan.chang@cn.sharp-world.com |
| MediaTek | li-chuan.tseng@mediatek.com |
| LGE | hassium.kim@lge.com |
| ITRI | NellenHuang@itri.org.tw |

As indicated by chairman, following CRs are handled in this offline discussion:

Web Conf 1st week or By Email [210] (1)

Including discussion on UE compliance check failure for CHO command (postponed in RAN2#112e, see R2-2009998)

[R2-2101265](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_113-e/Docs/R2-2101265.zip) Inability to comply with conditional reconfiguration Ericsson CR Rel-16 38.331 16.3.1 2392 - F NR\_Mob\_enh-Core

Web Conf 1st week or By Email [210] (1)

Discussion on whether CHO is supported for eLTE.

[R2-2101263](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_113-e/Docs/R2-2101263.zip) Conditional handover for LTE-5GC Ericsson discussion NR\_Mob\_enh-Core

Web Conf 1st week or By Email [210] (3)

Discussion on repetition of UE information transmission in NR/LTE CHO (postponed in RAN2#112e, see R2-2010253, R2-2010251, R2-2010254, R2-2010252)

[R2-2100680](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_113-e/Docs/R2-2100680.zip) UE information transmission in NR CHO case SHARP Corporation, Ericsson discussion NR\_Mob\_enh-Core R2-2010253

[R2-2100681](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_113-e/Docs/R2-2100681.zip) UE information transmission in LTE CHO case SHARP Corporation, Ericsson discussion Rel-16 NR\_Mob\_enh-Core R2-2010251

[R2-2100526](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_113-e/Docs/R2-2100526.zip) Transmitting SL UE Information after CHO Nokia, Nokia Shanghai Bell CR Rel-16 38.331 16.3.1 2331 - F NR\_Mob\_enh-Core

By Email [210] (6)

[R2-2100585](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_113-e\R2-2100585.zip) Clarification regarding CHO following IRAT HO failure Samsung Telecommunications CR Rel-16 38.331 16.3.1 2339 - F NR\_Mob\_enh-Core

[R2-2101264](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_113-e\R2-2101264.zip) Missing release of VarConditionalReconfiguration Ericsson CR Rel-16 36.331 16.3.0 4571 - F NR\_Mob\_enh-Core

[R2-2101266](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_113-e\R2-2101266.zip) Addition of conditional reconfiguration in measurement configuration description Ericsson CR Rel-16 38.331 16.3.1 2393 - F NR\_Mob\_enh-Core

[R2-2101362](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_113-e\R2-2101362.zip) Correction on NR Mobility Enhancement Apple CR Rel-16 38.331 16.3.1 2406 - F NR\_Mob\_enh-Core

[R2-2101363](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_113-e\R2-2101363.zip) Correction on LTE Mobility Enhancement Apple CR Rel-16 36.331 16.3.0 4573 - F NR\_Mob\_enh-Core

[R2-2101691](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_113-e\R2-2101691.zip) Discussion on some issues for CHO and CPC Huawei, HiSilicon, China Telecom discussion Rel-16 NR\_Mob\_enh-Core, LTE\_feMob-Core

# Discussion

Web Conf 1st week or By Email [210] (1)

Including discussion on UE compliance check failure for CHO command (postponed in RAN2#112e, see R2-2009998)

[R2-2101265](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_113-e/Docs/R2-2101265.zip) Inability to comply with conditional reconfiguration Ericsson CR Rel-16 38.331 16.3.1 2392 - F NR\_Mob\_enh-Core

**Reason of change:**

The UE will use the RRC configuration received before reception of CHO/CPC configuration When compliance check fails for CPC/CHO configuration. However, the UE may only do compliance checking upon CPC/CHO execution. There may be several RRC configuration messages received during the period.

The network has no idea whether the UE will use RRC configuration received before CHO/CPC configuration or the RRC configuration received before the last RRC configuration since the network does not know which RRC configuration has problem.

**NR: 38.331**

3> if the *RRCReconfiguration* message was received as part of *ConditionalReconfiguration*:

4> continue using the configuration used prior to the attempt to apply the message;

3> else:

4> continue using the configuration used prior to the reception of *RRCReconfiguration* message;

**[Rapp comments]** The intention is ok. Assume it is also applied for LTE.

Rapporteur understands the UE will use reconfigurationFailure as reestablishmentCause for this case, that’s the reason the network cannot distinguish which RRC configuration has problem.

ReestablishmentCause ::= ENUMERATED {reconfigurationFailure, handoverFailure, otherFailure, spare1}

**Question 1a: Do companies agree the changes proposed in R2-2101265 (NR)? And if any additional correction is needed for the CRs?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Remark** |
| Google | Yes |  |
| Samsung | Not sure | We assume intention is only to clarify behaviour of UE doing delayed compliance check. I.e. we assume that if UE performs immediate compliance check, UE will perform RRE in case of compliance error regardless in which part of the message it is.  (We at least see no need to change UE behaviour for latter case/ to introduce partial success/ failure. (if desired, network can use separate messages for regular and condRRCReconfig)  (Typical example is that regular configuration includes changes to measurements for conditional reconfiguration) |
| ZTE | Yes, but | We think the same changes should also be applied for (NG)EN-DC case (highlighted by yellow as below).  The UE shall:  1> if the UE is in (NG)EN-DC:  2> if the UE is unable to comply with (part of) the configuration included in the *RRCReconfiguration* message received over SRB3;  3> continue using the configuration used prior to the reception of *RRCReconfiguration* message;  3> if MCG transmission is not suspended:  4> initiate the SCG failure information procedure as specified in subclause 5.7.3 to report SCG reconfiguration error, upon which the connection reconfiguration procedure ends;  3> else:  4> initiate the connection re-establishment procedure as specified in TS 36.331 [10], clause 5.3.7, upon which the connection reconfiguration procedure ends;  2> else, if the UE is unable to comply with (part of) the configuration included in the *RRCReconfiguration* message received over SRB1;  3> continue using the configuration used prior to the reception of *RRCReconfiguration* message;  3> initiate the connection re-establishment procedure as specified in TS 36.331 [10], clause 5.3.7, upon which the connection reconfiguration procedure ends. |
| Nokia | Yes | The changes could be correct, although they cover a sort of a corner case, where the UE is configured with CHO and then still from the source it receives subsequent reconfigurations, before CHO is triggered. In such case indeed the fallback should be to the last configuration kept in the source and not the one used before receiving the CHO configurations. |
| Futurewei | Yes | The proposed change makes sense. |
| Huawei, HiSilicon | Yes |  |
| Lenovo | Yes with comments | We agree with the intention. ‘continue using the configuration used prior to the attempt to apply the message’ should be only applied to the case that the UE performs compliance check at the Cho execution. If the UE performs compliance check upon the reception of CHO command, the UE does not attempt to apply the message. |
| OPPO |  | Since the timing for CHO compliance check is up to UE implementation. We prefer to have a NOTE related to late compliance check. |
| Sharp | Yes | We also share Lenovo’s concern. |
| MediaTek | Yes | This is for the case when UE performs compliance check before CHO execution, which could be a more reasonable UE behaviour because it avoids RRC re-establishment due to failure to comply with a CHO configuration that UE eventually never uses, although we agreed that it is up to UE implementation when to perform compliance check for CHO. We are also fine to have a NOTE instead of procedural text if companies think there’s any confusion. |
| LG |  | We understand the intention and tend to agree that the UE needs to continue using the configuration used prior to the attempt to apply the conditional reconfiguration.  However, the change of procedure text seems to force the UE to check compliance always later than the time at the reception of the conditional reconfiguration. Since it is up to UE implementation when to perform the compliance check of the conditional reconfiguration, the change of procedure text may cause another ambiguity to understand compliance check.  Thus, the change would be better to be placed as a NOTE for the case that the UE performs the compliance check when the execution of the conditional mobility. |
| ITRI |  | The change is correct in case the compliance checking is performed upon CPC/CHO execution. However, we have the same concerns as Lenovo. If the compliance checking is performed upon reception of CPC/CHO configuration, no attempt is made to apply the message and we have no “configuration used prior to the attempt to apply the message”. |
| Apple | Yes, but | We agree with the intention. But for the change, we think following change may be better.  3> if the *RRCReconfiguration* message was received as part of *ConditionalReconfiguration*:  4> continue using the configuration used prior to execute the CHO; |

**Summary:14 companies provided inputs**

10 companies say “yes” to the changes.

But 4 companies commented that current change implies that the UE shall always do late compliance checking since if the compliance checking is performed upon reception of CPC/CHO configuration, no attempt is made to apply the message and then “configuration used prior to the attempt to apply the message” will not be performed.

3 companies commented a NOTE should be sufficient to address this late compliance check case;

1(ZTE) company pointed, the issue also exists for NG-EN-DC case;

Rapporteur agree comments from companies that current changes will cause problem for early compliance check, and would suggest:

**Proposal 1a: The updated R2-2101265 is agreed with following changes:**

**1 address the concern from companies as:**

3> if the *RRCReconfiguration* message was received as part of *ConditionalReconfiguration* and if the compliance checking is performed upon conditional reconfiguration execution:

4> continue using the configuration used prior to the attempt to apply the message;

3> else:

4> continue using the configuration used prior to the reception of *RRCReconfiguration* message;

**2 address NG-EN-DC case;**

**Question 1b: Do companies agree the changes proposed in R2-2101265 (NR) is also applied for LTE?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Remark** |
| Google | Yes |  |
| Samsung | No | Some clarification seems required, see previous |
| ZTE | Yes |  |
| Nokia | Yes | Should be aligned. |
| Ericsson | No | In LTE the UE is required to do compliance check upon reception of the message, so we don’t think this change is needed for LTE. |
| Futurewei | No | Agreed with Ericsson.  In fact, it is cleaner if NR also takes the same approach as LTE for compliance check. The issue in NR is introduced by UE implementation option allowing compliance check conducted at CHO/CPC execution… Compliance check at reception of the RRC Reconfiguration message would also prevent the failure at the execution which waste the time, efforts and resources. |
| Huawei, HiSilicon | Yes |  |
| OPPO | No | See our above comments. |
| Sharp | Yes |  |
| MediaTek | No | Agree with Ericsson. |
| LG | No | See above our comment |
| ITRI | No | Agree with Ericsson. |

**Summary:13 companies provided inputs**

Ericsson pointed out that in LTE the UE is required to do compliance check upon reception of the message and therefore the change is not needed. .

Therefore Rapporteur would suggest:

**Proposal 1b: The issue raised in R2-2101265 is not applied for LTE;**

Web Conf 1st week or By Email [210] (1)

Discussion on whether CHO is supported for eLTE.

[R2-2101263](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_113-e/Docs/R2-2101263.zip) Conditional handover for LTE-5GC Ericsson discussion NR\_Mob\_enh-Core

**Identified changes:**

[Observation 1 In order to support CHO with LTE/5GC, the data forwarding for conditional handover, if UE is connected to 5GC, needs to refer to the NG-RAN procedure in 38.300.](#_Toc61536379)

[Observation 2 In order to support CHO with LTE/5GC, the entities in VarConditionalReconfiguration needs to be released when UE is released to RRC\_INACTIVE.](#_Toc61536380)

Proposals:

[Proposal 1 CHO+CPC for LTE/5GC is to be supported by the specifications. RAN2 is asked to agree the draft CRs provided in 5.1.](#_Toc61536383)

[Proposal 2 If Proposal 1 cannot be agreed, RAN2 is asked to agree the draft CRs in 5.2 to specify that neither CHO nr CPC for LTE/5GC is not supported.](#_Toc61536384)

**[Rapp comments]** RAN2 have agreed not support CHO/eLTE + DAPS. Ericsson will provide CRs in this email discussion for review. So here just reserved for Ericsson in case it is needed.

**Question 2: Do companies agree the changes proposed in 5.2 of R2-2101263 on TS36.300 and TS37.340? And if any additional correction is needed for the CRs?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No**  **(, e.g. yes for TS36.300, no for TS37.340)** | **Remark** |
| Google | Yes |  |
| Samsung | Not sure | We would like to understand whether any changes are required to stage 3 specifications |
| ZTE | Yes for TS 36.300, maybe no for TS 37.340 | It’s fine to not support CHO for LTE-5GC. But regarding CPC for LTE-5GC, we see no additional impact on the current spec to support it since only intra-SN CPC is supported in Rel-16 (no data forwarding related handling is required). However, if we do not support it, some clarification is needed in TS 37.340 as proposed. And we found that the following agreement in RAN2#107 meeting has supported CPC in any architecture option with NR PSCell.  1: Support conditional NR PSCell addition/change and reusing the conditional HO solution being developed. Supported for any architecture option with NR PSCell.  So perhaps we should not preclude CPC for NGEN-DC case. |
| Nokia |  | Handled during online, right? |
| Futurewei | Yes | Following the resolution from the online meeting. |
| Huawei, HiSilicon | Yes for TS 36.300 | For CPC for LTE-5GC, basically we share simialr views as ZTE. If we agree to not support CPC for LTE-5GC, NGEN-DC case may be impossible for CPC but it is not aligned with the RAN2 agreement “Supported for any architecture option with NR PSCell.”. |
| Lenovo | Yes | Explicit description can make it clear. |
| OPPO | Yes |  |
| Sharp | Yes |  |
| MediaTek | Yes for TS 36.300 | We also have concerns about the CPC case, as ZTE and Huawei commented. |
| LG | Yes | This issue was already handled by the online session. |
| ITRI | Yes |  |
| Apple | Yes |  |

**Summary:14 companies provided inputs**

CHO in eLTE (36.300 CR): 12

CPC in eLTE (37.340 CR):8

The issue on whether CHO/CPC should be supported under eLTE has been discussed and agreed

* CHO/CPC in LTE/5GC is not support in Rel-16.
* Adopt TP for non-support of LTE/5GC from in [R2-2101978](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_113-e\R2-2101978.zip) (36.300) and [R2-2101979](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_113-e\R2-2101979.zip) (37.340). This can be handled in discussion [210]

We should avoid the discussion on whether CHO/CPC can be supported or not. And therefore Rapporteur would suggest:

**Proposal 2: The CRs in R2-2101978 and R2-2101979 are agreed;**

Web Conf 1st week or By Email [210] (3)

Discussion on repetition of UE information transmission in NR/LTE CHO (postponed in RAN2#112e, see R2-2010253, R2-2010251, R2-2010254, R2-2010252)

[R2-2100680](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_113-e/Docs/R2-2100680.zip) UE information transmission in NR CHO case SHARP Corporation, Ericsson discussion NR\_Mob\_enh-Core R2-2010253

[R2-2100681](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_113-e/Docs/R2-2100681.zip) UE information transmission in LTE CHO case SHARP Corporation, Ericsson discussion Rel-16 NR\_Mob\_enh-Core R2-2010251

[R2-2100526](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_113-e/Docs/R2-2100526.zip) Transmitting SL UE Information after CHO Nokia, Nokia Shanghai Bell CR Rel-16 38.331 16.3.1 2331 - F NR\_Mob\_enh-Core

**Information: There are similar contributions in 6.1.1**

R2-2100101 Co-configuration of V2X and other features OPPO discussion Rel-16 NR\_Mob\_enh-Core, 5G\_V2X\_NRSL-Core, LTE\_NR\_DC\_CA\_enh-Core

R2-2100102 CR on co-configuration of NR-V2X and other features OPPO CR Rel-16 38.331 16.3.1 2301 - F NR\_Mob\_enh-Core, 5G\_V2X\_NRSL-Core, LTE\_NR\_DC\_CA\_enh-Core

R2-2100103 CR on Co-configuration of NR-V2X and MR-DC OPPO CR Rel-16 37.340 16.4.0 0245 - F 5G\_V2X\_NRSL-Core

R2-2100104 CR on co-configuration of CHO and UAI and SUI report OPPO CR Rel-16 36.331 16.3.0 4544 - F 5G\_V2X\_NRSL-Core, NR\_Mob\_enh-Core

R2-2101169 Retransmission of UE information after CHO Google Inc. CR Rel-16 36.331 16.3.0 4569 - F MBMS\_LTE\_SC-Core, SPIA\_IDC\_LTE-Core, LTE\_feMob-Core, 5G\_V2X\_NRSL-Core, LTE\_eDDA-Core

R2-2101182 Retransmission of UE information after CHO Google Inc. CR Rel-16 38.331 16.3.1 2389 - F NR\_Mob\_enh-Core, 5G\_V2X\_NRSL-Core, NR\_UE\_pow\_sav-Core

**Reason of change:**

Observation 1: the UE will initiate transmission of a SidelinkUEInformation message at the end of the handover procedure, if it has transmitted a SidelinkUEInformation message within 1 second before reception of the handover command.

Observation 2: the UE will initiate transmission of a UEAssistanceInformation message at the end of the handover procedure, if it has transmitted a UEAssistanceInformation message within 1 second before successful completion of RA.

Observation 3: in CHO case, the target cell may not get the latest SidelinkUEInformation message that has been transmitted before the CHO execution and after reception of the CHO command.

Observation 4: in CHO case, the target cell may not get the latest UEAssistanceInformation message that has been transmitted within 1 second before reception of CHO command or after reception of the CHO command but before the CHO execution.

**Changes in NR [R2-2100680]:**

2> if the UE initiated transmission of a *UEAssistanceInformation* message for the corresponding cell group during the last 1 second, and the UE is still configured to provide the concerned UE assistance information for the corresponding cell group; or

2> if the *RRCReconfiguration* is applied due to a conditional reconfiguration execution and if the UE transmitted a *UEAssistanceInformation* message for the corresponding cell group during 1 second before reception of the conditional reconfiguration configuration or later:

3> initiate transmission of a *UEAssistanceInformation* message for the corresponding cell group in accordance with clause 5.7.4.3 to provide the concerned UE assistance information;

2> if *SIB12* is provided by the target PCell; and the UE initiated transmission of a *SidelinkUEInformationNR* message indicating a change of NR sidelink communication related parameters relevant in target PCell (i.e. change of *sl-RxInterestedFreqList* or *sl-TxResourceReqList*) during the last 1 second preceding reception of the *RRCReconfiguration* message including *reconfigurationWithSync* in *spCellConfig* of an MCG; or

2> if the *RRCReconfiguration* is applied due to a conditional reconfiguration execution for the PCell and if the UE transmitted a *SidelinkUEInformationNR* message since the conditional reconfiguration configuration was received:

3> initiate transmission of the *SidelinkUEInformationNR* message in accordance with 5.8.3.3;

**Changes in LTE[R2-2100681]:**

**Similar changes.**

**[Rapp comments]** Seems correct. The changes in R2-2100526 have been covered by R2-2100680.

**Question 3a: Do companies agree the changes proposed in R2-2100680 (NR)? And if any additional correction is needed for the CRs?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Remark** |
| Google |  | The same discussion is also occurring in Summary of [AT113-e][015].  We should discuss this in one place and have a single solution for all UE information messages. |
| Samsung | Yes |  |
| ZTE |  | Agree with the intention. And we also preferred to have a single solution for all UE information messages, e.g during the last 1 second preceding the conditional reconfiguration execution. |
| LG | Yes | We want to have a single solution for this |

**Question 3b: Do companies agree the changes proposed in R2-2100681 (LTE)? And if any additional correction is needed for the CRs?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Remark** |
| Google |  | The same discussion is also occurring in Summary of [AT113-e][015].  We should discuss this in one place and have a single solution for all UE information messages. |
| Samsung | Yes |  |
| ZTE |  | The same comment as above. |
| LG | Yes | We want to have a single solution for this |

By Email [210] (6)

[R2-2100585](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_113-e\R2-2100585.zip) Clarification regarding CHO following IRAT HO failure Samsung Telecommunications CR Rel-16 38.331 16.3.1 2339 - F NR\_Mob\_enh-Core

**Summary of change:**

**NR:**

5.4.3.4 Successful completion of the mobility from NR

Upon successfully completing the handover, at the source side the UE shall:

1> reset MAC;

1> stop all timers that are running except T400;

1> release *ran-NotificationAreaInfo*, if stored;

1> release the AS security context including the KRRCenc key, the KRRCint key, the KUPint key and the KUPenc key, if stored;

1> release all radio resources, including release of the RLC entity and the MAC configuration;

1> release the associated PDCP entity and SDAP entity for all established RBs;

NOTE : PDCP and SDAP configured by the source RAT prior to the handover that are reconfigured and re-used by target RAT when delta signalling (i.e., during inter-RAT intra-system handover when *fullConfig* is not present) is used, are not released as part of this procedure.

1> remove all the entries within *VarConditionalReconfig*, if any;

**[Rapp comments]** Tend to agree this part is missing for NR. Same changes should be applied for LTE.

**Question 4a: Do companies agree the changes proposed in R2-2100585 (NR)? And if any additional correction is needed for the CRs?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Remark** |
| Google | Yes |  |
| Samsung | Yes |  |
| ZTE | No | It has been discussed in R2-2010719 at last meeting. And companies agreed that the UE releases RRC configurations in case of a successful inter-RAT handover, which has be covered by the following sentence. Thus no additional explicit release is required.  1> release all radio resources, including release of the RLC entity and the MAC configuration; |
| Nokia | No | It should be clarified what is exactly the scenario where this may happen? UE performs inter-RAT HO from NR, the HO fails, during the reestablishment the UE may try to recovery via CHO? How come the UE would have CHO configs during IRAT HO from NR? |
| Ericsson | Yes | We had a CR R2-2009996 with the same change in the last meeting, it was not agreed, but as Samsung shows here this is one example where things can get wrong. We think this should be agreed. |
| Futurewei | No | The assumed scenario is not clear. |
| Huawei, HiSilicon | Yes |  |
| Lenovo | Yes |  |
| OPPO | Yes |  |
| Sharp | Yes |  |
| MediaTek | Yes with comments | We agree that the assumed case rarely happens: If UE does have some NR neighbor cells configured for CHO, it is unlikely to be commanded to perform IRAT HO to LTE. But network is not prohibited from doing this, so for procedural correctness, we can have the proposed change. |
| LG | No | Agree with ZTE, may not need to have the same discussion. |
| ITRI | No | We have the same views as ZTE and LG. |
| Apple | Yes |  |

**Summary:15 companies provided inputs**

9 companies support the change. However as pointed by companies that the issue has been discussed in R2-2010719 at last meeting. And companies agreed that the UE releases RRC configurations in case of a successful inter-RAT handover, which has be covered by the following sentence. Thus no additional explicit release is required.

1> release all radio resources, including release of the RLC entity and the MAC configuration;

* 1a: Do not capture the release of VarConditionalReconfig for inter-RAT handover case, and therefore [R2-2009996](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_112-e\R2-2009996.zip) is not pursued;

Considering this has been discussed in last meeting, and RAN2 already had agreements on this, therefore Rapporteur would suggest:

**Proposal 3: The CR on the release of VarConditionalReconfig for inter-RAT handover case in R2-2100585 is not pursued for both NR and LTE;**

**Question 4b: Do companies agree the changes proposed in R2-2100585 (NR) is also applied for LTE?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Remark** |
| Google | Yes |  |
| Samsung | Yes | We are happy to prepare the corresponding CR |
| ZTE | No | The same comment as above. |
| Nokia | No | Clarifications on the aforementioned aspects should be brought first. |
| Ericsson | Yes | We have a CR for LTE R2-2009997 to the last meeting where this case was included. |
| Futurewei | No | The same comment as above. |
| Huawei, HiSilicon | Yes |  |
| Lenovo | Yes |  |
| OPPO | Yes |  |
| Sharp | Yes |  |
| MediaTek | Yes |  |
| LG | No |  |
| ITRI | No |  |
| Apple | Yes |  |

**Summary:15 companies provided inputs**

Considering this has been discussed in last meeting, and RAN2 already had agreements on this, therefore Rapporteur would suggest not consider this for LTE.

[R2-2101264](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_113-e\R2-2101264.zip) Missing release of VarConditionalReconfiguration Ericsson CR Rel-16 36.331 16.3.0 4571 - F NR\_Mob\_enh-Core

[R2-2101363](file:///C:\\Users\\terhentt\\Documents\\Tdocs\\RAN2\\RAN2_113-e\\R2-2101363.zip) Correction on LTE Mobility Enhancement Apple CR Rel-16 36.331 16.3.0 4573 - F NR\_Mob\_enh-Core

**Summary of change:**

The entities in VarConditionalReconfiguration are released as part of the actions when leaving to RRC\_IDLE with suspended configuration in 5.3.12

**LTE (R2-2101264):**

1> if leaving RRC\_CONNECTED was triggered by suspension of the RRC:

2> re-establish RLC entities for all SRBs and DRBs, including RBs configured with NR PDCP;

2> remove all entries within *VarConditionalReconfiguration*, if any;

**LTE (R2-2101363)**

1> if leaving RRC\_CONNECTED was triggered by suspension of the RRC:

2> re-establish RLC entities for all SRBs and DRBs, including RBs configured with NR PDCP;

2> remove all entries within *VarConditionalReconfiguration*, if any;

2> for each *measId*, that is part of the current UE configuration in *VarMeasConfig,* if the associated *reportConfig* has *condReconfigurationTriggerEUTRA* configured:

3> remove the entry with the matching *reportConfigId* from the *reportConfigList* within the *VarMeasConfig*;

3> if the associated *measObjectId* is only associated with *condReconfigurationTriggerEUTRA*:

4> remove the entry with the matching *measObjectId* from the *measObjectList* within the *VarMeasConfig*;

3> remove the entry with the matching *measId* from the *measIdList* within the *VarMeasConfig*;

**[Rapp comments]** Looks correct changes for CIOT. R2-2101363 has covered R2-2101264.

**Question 5: Do companies agree the changes proposed in R2-2101363 (LTE)? And if any additional correction is needed for the CRs?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Remark** |
| Google | Yes |  |
| Samsung | Yes |  |
| ZTE | Yes |  |
| Nokia | Yes | The suspension of RRC shall lead to the release of Conditional Reconfigurations. We prefer the changes in 1264. |
| Huawei, HiSilicon | Yes |  |
| Lenovo | Yes | When UE leaves RRC connected upon receiving suspend indication, the CHO configuration should be released. |
| OPPO | Yes |  |
| Sharp | Yes |  |
| MediaTek | Yes |  |
| LG | Yes |  |
| ITRI | Yes |  |
| Apple | Yes |  |

**Summary:13 companies provided inputs**

All companies agree the changes. 1 company commented that 1264 is preferred since the suspension of RRC shall lead to the release of Conditional Reconfigurations. To Rapporteur ‘s understanding, here the UE is to release the variable, and thus conditional Reconfiguration related variables shall also be removed. Rapporteur would suggest:

**Proposal 4: The CR on release of VarConditionalReconfiguration upon leaving to RRC\_IDLE with suspended configuration in R2-2101363 is agreed;**

[R2-2101266](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_113-e\R2-2101266.zip) Addition of conditional reconfiguration in measurement configuration description Ericsson CR Rel-16 38.331 16.3.1 2393 - F NR\_Mob\_enh-Core

**Summary of change:**

In chapter 5.5.2 there is a description of the cases in which the network applies measurement configurations. The measurement configurations are used in conditional reconfigurations, but this case is missing in the description.

**NR:**

In section 5.5.2.1,

-    to ensure that, if conditional reconfiguration is configured, the UE is configured with at least one *measId* associated to a *reportType* set to *condTriggerConfig;*

**[Rapp comments]** Not essential, but ok to have the change. The impact analysis is incorrect, If the network implemented based on the CR, there should not be any problem since the network will configure CHO together with execution condition.

**Question 6a: Do companies agree the changes proposed in R2-2101266 (NR)? And if any additional correction is needed for the CRs?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Remark** |
| Google | Yes | Agree with Rapporteur on the impact analysis. |
| Samsung | No | We think this is not really needed |
| ZTE |  | We want to firstly confirm whether the pre-configured meas ID (used for RRM purpose) can be reused as the execution condition? If yes, then the proposed change seems not needed. |
| Nokia | No | The same information is captured already within the field descriptions for reportConfig (i.e. that condTriggerConfig should be set, etc.), so we find this change a bit artificial and not needed. |
| Futurewei |  | Not essential. Ok to have. |
| Huawei, HiSilicon | No |  |
| Lenovo | No |  |
| OPPO | No |  |
| Sharp |  | Agree with rapporteur that this is not essential, but ok to have it. |
| MediaTek | Yes | We actually think this needed, otherwise we should not have all other “to ensure that” in the same section. |
| LG | No |  |
| ITRI |  | Agree with rapporteur. |
| Apple | Yes |  |

**Summary:14 companies provided inputs**

3 company say “yes”;

4 companies think it is not essential, but ok to have.

7 companies think it is not needed.

Rapporteur would suggest:

**Proposal 5: The CR R2-2101266 is not pursued for both NR and LTE;**

**Question 6b: Do companies agree the changes proposed in R2-2101266 (NR is also applied for LTE?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Remark** |
| Google | Yes |  |
| ZTE |  | The same comment as above. |
| Nokia | No |  |
| Ericsson | Yes |  |
| Huawei, HiSilicon | No |  |
| OPPO | No |  |
| MediaTek | Yes |  |
| LG | No |  |
| Apple | Yes |  |

[R2-2101362](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_113-e\R2-2101362.zip) Correction on NR Mobility Enhancement Apple CR Rel-16 38.331 16.3.1 2406 - F NR\_Mob\_enh-Core

**Summary of change:**

* Change 1 (section 5.3.5.3):

Change the statement for consistency between MCG and SCG

* Change 2 (5.3.5.5.6):

UE should apply the following operation when the rlf-TimersAndConstants is set to release:

3> stop timer T310 for this cell group, if running;

3> stop timer T312 for this cell group, if running;

3> reset the counters N310 and N311.

* Change 3 (5.3.5.13.4):

During the condition evaluation, “Applicable Cells” should be updated to “ Applicable cell”

* Change 4 (6.3.2):

Clarify that t312-r16 in MeasObjectNR shall be configured if at least one associated ReportConfigsNR is configured with useT312= TRUE.

**[Rapp comments]**

* change in 3.2 is not mentioned in the coversheet. Do not see why intra SN is needed for CPC abbreviation.
* Change 1: editorial, to align with CPC description. But nothing broke since current wording is "3> remove all the entries within VarConditionalReconfig, if any;", therefore do not need to mention if CHO was configured;
* Change 2, it is unrelated to mob, and seems a legacy issue?
* Change 3, ok.
* Change 4, intention is correct. But do we really need to specific the condition on what configuration should be configured simultaneously?

**Question 7: Do companies agree the changes proposed in R2-2101362 (NR)? And if any additional correction is needed for the CRs?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No**  **(, e.g. yes for change 1, no for change 2)** | **Remark** |
| Google |  | 1st change:   * Don’s see a need to add “intra SN”. If the intention is to distinguish Rel-16 CPC and Rel-17 CPC, we can consider the change for Rel-17. * Nothing is broken in the current wording so the change is not needed.   2nd change: it is not related to eMob. This should be discussed in Rel-15 agenda item.  3rd change: OK.  4th change: don’t see a need to have this change. The UE behaviour is clear as excerpted from 38.331 as below. The UE starts T312 if *useT312* is set to true in the *reportConfig* for this event.  3> if *useT312* is set to *true* in *reportConfig* for this event:  4> if T310 for the corresponding SpCell is running; and  4> if T312 is not running for corresponding SpCell:  5> start timer T312 for the corresponding SpCell with the value of T312 configured in the corresponding *measObjectNR*; |
| Samsung | No | We see no real need for any changes (some might be included in minor corrections CR) |
| ZTE | Yes for change 3, no for others | change 1 seems not correct. The UE shall release stored CHO or CPC configurations upon PCell change, not only for CHO case. If we add the condition “and the CHO was configured”, then the procedure text can just cover the PCell change in case CHO is configured, but not for PCell change when CPC is configured. |
| Nokia | No | The section with abbreviations does not serve as a description of implementation scenarios where functionality is supported. Thus, the addition of 'Intra-SN' is quite peculiar.  The field description change for t312 looks OK, but not essential.  Overall – none of these is needed. |
| Ericsson | No | The first changes are not correct. The abbreviation CPC is correct as it is. Regarding “and the CHO was configured” see comment from ZTE.  The second change is not related to MobEnh and should not be treated here.  The third and fourth changes are not needed. |
| Futurewei | No |  |
| Huawei, HiSilicon | No | **1st change:**  Not needed and we share the same view as ZTE.  **2nd change:**  This change is not related to Rel-16 Mobility enhancements, and it is more about timer/counter handling issue. In addition, we do not think the reason for change is clear enough.  **3rd change:**  No strong opinion and it seems an editorial change.  **4th change:**  No strong opinion. |
| OPPO | No | We think no changes are essential. |
| Sharp | No for change 1 and 2. | Change 1is not needed.  Change 2 is not eMob related and can be discussed in other agenda item as suggested by Google.  For change 3 and 4, no strong view, ok but not essential. |
| MediaTek | Yes for 3, no for others | 1st change: not correct  2nd change: not related to MobEnh  3rd change: editorial and correct  4th change: not needed |
| LG | Partially agree (3rd) | For 1st change, not needed for now because this can be considered when implementing R17 CPAC.  For 2nd change, seems not MOB issue.  For 4th change, the current text may be enough to understand |
| ITRI | Yes for 3, no for others | 1st change is not correct. We share the same view as ZTE.  2nd change is not related to mobility.  3rd change is correct.  4th change is not needed. The UE behaviour has been specified clearly. |
| Apple | Yes for all changes | Our intention is to make the spec clear, therefore for the potential agreed part (e.g. proposal3), it’s fine to corrected and merged into other agreed CRs.  For proposal 1, we are fine to make it clear to cover both CHO and CPC case, otherwise, if we donot say anything here, it seems incomplete.  For proposal 2, |

**Summary:14 companies provided inputs**

1 company think change 4 is correct but not essential.

7 companies think change 3 is correct but it is editorial change.

1 company think all changes are needed.

**Proposal 6: The CR R2-2101362is not pursued; The editorial change “During the condition evaluation, “Applicable Cells” is updated to “ Applicable cell”” is agreed and merged in CR in Proposal 7;**

[R2-2101691](file:///C:\\Users\\terhentt\\Documents\\Tdocs\\RAN2\\RAN2_113-e\\R2-2101691.zip) Discussion on some issues for CHO and CPC Huawei, HiSilicon, China Telecom discussion Rel-16 NR\_Mob\_enh-Core, LTE\_feMob-Core

**Summary of change:**

Proposal 1: It is clarified that the UE only performs acquiring SIB1 once for CHO is performed upon the selected suitable cell is a CHO candidate cell during re-establishment, and it can be done either in normal text or by a Note.

Proposal 2: RAN2 should modify the description of conditional reconfiguration modification in TS 38.331:

* Modify the bullet editing error
* Clarify that "the entry" refers to *condExecutionCond* or *condReconfigId*, i.e. change "the entry" in “replace the entry with the value received for this *condReconfigId*" to *condExecutionCond* or *condReconfigId*.

Proposal 3: Clarify that "the entry" in bullet 4, section 5.3.5.9.3 of TS 36.331 refers to *triggerCondition* or *condReconfigurationToApply*.

Proposal 4: RAN2 should clarify that the CPC configuration described in Figure 10.3.2-4 of TS 37.340 is configured in the SN RRC reconfiguration message.

Proposal 5: RAN2 should clarify which conditional reconfiguration operations in section 5.3.5.3 of TS 38.331 that are only applicable to CPC scenarios.

Proposal 6: In NR-DC, use *ULInformationTransferMRDC* instead of *RRCReconfigurationComplete* message to inform the network of CPC execution when no SRB3 is configured and the MN informs the SN, i.e. *ULInformationTransferMRDC* message to MN includes an embedded *RRCReconfigurationComplete* message to the SN.

**[Rapp comments]**

* proposal 1 (issue 1): intention is ok to avoid UE to read SIB twice. But I assume it can be resolved by UE implementation?
* proposal 2 (issue 2):editorial change is ok.
* Proposal 2/3 (issue 2):
* Change entry to IE name, understand the intention, but the change will cause confusion on whether it is variable or not.
* Proposal 4 (issue 3): DO not see the real need for the change on TS37.340;
* Proposal 5 (issue 4): based on precondition "2> if the RRCReconfiguration message was received via E-UTRA RRC message RRCConnectionReconfiguration within MobilityFromNRCommand;", should not it is clear it is for CPC?
* Proposal 6 (issue 5): seems correct.

**Question 8: Do companies agree the proposals and corresponding changes in R2-2101691? And if any additional correction is needed for the CRs?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No(, e.g. yes for P1, no for P2.)** | **Remark** |
| Google |  | Proposal 1: This can be left to UE implementation  Proposal 2/3: Agree with the intent.  Proposal 4: OK  Proposal 5: Same view as Rapporteur  Proposal 6: OK |
| Samsung | Partial | We agree with P6. We see no real need for changes regarding the other issues (some might be included in minor corrections CR) |
| ZTE |  | Proposal 1: Not needed. The UE is required to acquire SIB1 only upon successful completion of RA to the target SpCell. So it seems the UE shall not acquire SIB1 twice (In case the first handover fails, the UE does not acquire SIB1 actually).  Proposal 2/3: Agree with the intention. But suggest to change “the entry” to “condExecutionCond within the VarConditionalReconfig” to make it clearer.  Other changes seems fine to us. |
| Nokia |  | P1: Not needed, can be handled by the UE implementation.  P2/3: Seems OK  P4: based on the old version of 37.340. No such text in v16.4.0  P5: Looks OK, although not a necessary change.  P6: OK |
| Ericsson |  | P1: Not needed.  P2/3: We think it is clear enough as it is. It refers to the line above.  P4: Agree with Nokia.  P5: We think it is clear enough already.  P6: We think only the change in 5.7.2a.2 is needed. There is already a CR for the same issue in R2-2101546, which is treated in offline discussion [015]. |
| Futurewei |  | P1: Ok to have a note to clarify.  P2, 3: Ok to have.  P4: Not needed.  P5: Ok to clarify.  P6: Support the change. |
| Huawei, HiSilicon |  | We have some clarifications on the following proposals:  P2/3 (for Issue 2): We are ok with the improved wording from ZTE.  P6: For Ericsson’s comments, we checked R2-2101546 and also the scope of [015], and we have the following comments:   * We understand that [015] should mainly treat cross-feature issues, and P6 is only about CPC feature so that it is better to be handled in this email discussion * In 1546, it says “there is no inter-opreability issue foreseen”, but it also mentions some issues in Consequences if not approved. In comparison, we provided some inter-operability analysis in draft CR for P6 |
| Lenovo |  | Issue 1: not needed. left for UE implementation.  Issue: 2/3/4: no change is needed except for edit error.  Issue5: agree with change. |
| OPPO |  | Proposal 6 is ok. Others are not essential. |
| Sharp |  | P1: not needed.  P2/3: ok with have. And think ZTE’s wording is preferred.  P4: not needed.  P5/6: ok to make it clear. |
| MediaTek | Yes for P2, 3, 5, 6 | P1: Can be UE implementation  P2, 3: Can use ZTE’s text if there’s confusion  P4: not needed  P5, 6: OK to have |
| LG | Partially agree (6th) | For 1st change, it can be resolved by UE implementation  For 2nd and 3rd change, the current text seems clear  For 4th change, seems to be not needed  For 5th change, no strong view |
| ITRI |  | Proposal 1: can be left for UE implementation  Proposal 2/3: agree with the intent. Ok to have  Proposal 4: no corresponding text in 37.340 v16.4.0  Proposal 5: same view as Rapporteur  Proposal 6: agree |
| Apple | Yes for P2/3/4/5/6 | P1: up to UE implementation. |

**Summary:15 companies provided inputs**

P1 (issue 1): all companies agreed it can be left to UE implementation except 1;

P2/3 (issue 2):10 companies agreed the intention, and 1 company suggested to change “the entry” to “condExecutionCond within the VarConditionalReconfig” to make it clearer.

P4 (issue 3), 2 company commented that “based on the old version of 37.340. No such text in v16.4.0”

P5 (issue 4) 7 companies ok to have the change.

P6, 9 companies agreed the change. However 1 companies commented the same issue is discussed under offline discussion 015, and it should be only approved in one place.

Rapporteur would suggest:

**Proposal 7: For R2-2101691, P2, P3 with the additional change, i.e.to change “the entry” to “condExecutionCond within the VarConditionalReconfig”, and P5 are agreed and merged in single NR RRC CR and LTE RRC CR.**

**Proposal 8: For R2-2101691, the changes on P6 is agreed. Coordinate with offline discussion [015] to avoid overlapping. If handled in mobility CR, it can be merged together with changes in Proposal 7. .**

# Summary

**Proposal 1a: The updated R2-2101265 is agreed with following changes:**

**1 address the concern from companies as:**

3> if the *RRCReconfiguration* message was received as part of *ConditionalReconfiguration* and if the compliance checking is performed upon conditional reconfiguration execution:

4> continue using the configuration used prior to the attempt to apply the message;

3> else:

4> continue using the configuration used prior to the reception of *RRCReconfiguration* message;

**2 address NG-EN-DC case;**

**Proposal 1b: The issue raised in R2-2101265 is not applied for LTE;**

**Proposal 2: The CRs in R2-2101978 and R2-2101979 are agreed;**

**Proposal 3: The CR on the release of VarConditionalReconfig for inter-RAT handover case in R2-2100585 is not pursued for both NR and LTE;**

**Proposal 4: The CR on release of VarConditionalReconfiguration upon leaving to RRC\_IDLE with suspended configuration in R2-2101363 is agreed;**

**Proposal 5: The CR R2-2101266 is not pursued for both NR and LTE;**

**Proposal 6: The CR R2-2101362is not pursued; The editorial change “During the condition evaluation, “Applicable Cells” is updated to “ Applicable cell”” is agreed and merged in CR in Proposal 7;**

**Proposal 7: For R2-2101691, P2, P3 with the additional change, i.e.to change “the entry” to “condExecutionCond within the VarConditionalReconfig”, and P5 are agreed and merged in single NR RRC CR and LTE RRC CR.**

**Proposal 8: For R2-2101691, the changes on P6 is agreed. Coordinate with offline discussion [015] to avoid overlapping. If handled in mobility CR, it can be merged together with changes in Proposal 7. .**