**3GPP TSG-** **RAN2 Meeting #123 *R2-2308953***

**Toulouse, France, August 21-25, 2023**

**Agenda item:** 6.2.1

**Title:** [Pre123][401][Relay] Summary of AI 6.2.1 on Rel-17 relay control plane (Huawei)

**Source:** Huawei, HiSilicon

**Document for:** Discussion and decision

1. Introduction

This is to summarize the company contributions in AI 6.2.1.

2. Discussion

## 38.300 CRs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| TDoc number | TDoc title | Source | Change summary | Rapp’s suggestions |
| [R2-2308272](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_123/Docs/R2-2308272.zip) | Corrections to TS38.300 on SL relay (re)selection | ZTE, CAICT, Sanechips | 1. In clause 16.12.4, correct the sentence that remote UE performs Uu radio measurements for relay selection and performs radio measurements at PC5 interface for relay reselection.
2. Add the case “when U2N remote UE detects Uu RLF” as a trigger for relay selection.
 | 38.300 CRFor the first change, the moderator understands the original sentence is to say the remote UE needs to evaluate PC5 RSRP with a relay UE and see if the RSRP is above the PC5 threshold. From this sense, the sentence is correct.For the second change, the moderator observes the stage2 description is not quite exclusive. For instance, the first condition of Uu strength is below a threshold is not specific to idle/inactive thus it should be able to cover the case of relay selection during RRC reestablishment. Based on above considerations, the moderator tends to think the two changes are not needed. |
| [R2-2308553](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_123/Docs/R2-2308553.zip) | Miscellaneous Correction for SL Relays | Ericsson | Section 16.12.6* Added the term “PC5” to reflect both PC5 and Uu measurement configurations.
* Aligning the terminology for the U2N Relay UE chosen during a service continuity procedure.
 | 38.300 CRFor the first change, the moderator understands the original wording means the Uu RRC message for measurement configuration and reporting. Then the proposed change seems to interpret it as measurement on Uu which does not align with the original intention.The second change is kind of editorial. It can make the text more precise, but the original text is not wrong either. So the change seems not critical.Based on above considerations, the moderator tends to think the two changes are not needed. |

To sum up, the changes in the above two stage 2 CRs seems not essential, thus the moderator suggests not to pursue the CRs.

**Proposal 1: The stage 2 CRs in R2-2308272 and R2-2308553 are not essential, thus not pursued.**

## 38.331 CRs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| TDoc number | TDoc title | Source | Change summary | Rapp’s suggestions |
| [R2-2307194](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_123/Docs/R2-2307194.zip) | 38.331\_CR\_Corrections to processing of paging information received via Relay UE | Samsung Electronics Co., Ltd | Updated the text to clarify that UuMessageTransferSidelink message includes only one PagingRecord.Updated the text to clarify that paging cause related processing is applied only for case PagingRecord is received by UE in paging message. | 38.331 CRThe first change is reasonable.The second change seems not needed, because there is no issue with the current description.**Thus the moderator suggests to agree the first change in R2-2307194:****Updated the text to clarify that UuMessageTransferSidelink message includes only one PagingRecord.** |
| [R2-2307239](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_123/Docs/R2-2307239.zip) | Correction of RemoteUEInformationSidelink transmission condition | OPPO | 1. Adding trigger condition “or if the information carried by the *sl-PagingInfo-RemoteUE* has changed since the last transmission of the *RemoteUEInformationSidelink* message”.
 | 38.331 CRThe case that inactive remote UE may receive a new I-RNTI and/or DRX configuration from the same connected relay UE seems to be valid, therefore the proposed change is reasonable.**Thus the moderator suggests to agree the change in R2-2307239:****Adding trigger condition “or if the information carried by the *sl-PagingInfo-RemoteUE* has changed since the last transmission of the *RemoteUEInformationSidelink* message”.** |
| [R2-2307727](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_123/Docs/R2-2307727.zip) | Conditions for RRC connection establishment and resume for NR sidelink discovery | Samsung, Huawei, HiSilicon | Change #1:* In 5.3.3.1a, added the conditions to check SIB12 whether the network supports L2 U2N relay discovery or L3 U2N relay discovery or non-relay discovery.

Change #2:* In 5.3.13.a1, added the conditions to check SIB12 whether the network supports L2 U2N relay discovery or L3 U2N relay discovery or non-relay discovery.
 | 38.331 CRThe two changes are in line with the RAN2 agreement that only when SIB12 indicates discovery is supported the UEs can perform discovery related procedures which should also include RRC establishment/resume triggered by discovery resource request.**Thus the moderator suggests to agree the changes in R2-2307727.**  |
| [R2-2307755](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_123/Docs/R2-2307755.zip) | Correction on NR Sidelink Relay RRC | Philips International B.V. | Correct the “*ue-TimersAndConstantsRemoteUE*” in the specification text to “*sl-TimersAndConstantsRemoteUE*”. | 38.331 CRThe CR is to correct the wrong field name in procedural text.**Thus the moderator suggests to agree the changes in R2-2307755:****Correct the “*ue-TimersAndConstantsRemoteUE*” in the specification text to “*sl-TimersAndConstantsRemoteUE*”.** |
| [R2-2307852](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_123/Docs/R2-2307852.zip) | Corrections on SRAP related configurations for SL relay | Apple | 1. In 5.3.5.5.2, removed the step to apply SL-RLC1 configuration;
2. In 5.3.8.3, restricted SRAP entity release only to remote UE and exclude SL-RLC0/SL-RLC1 for PC5 Relay RLC channel release
3. In 5.3.11, restricted SRAP entity release only to remote UE and exclude SL-RLC0/SL-RLC1 for PC5 Relay RLC channel release
4. In 9.2.5, added “RRCResumeRequest1” and changed “Identity” to “identity”.
 | 38.331 CRFor the first change, the current logic in the spec is that the remote UE first applies SL-RLC1 for SRB1, and then replace it with dedicated configuration if provided. The moderator agrees that it would also work that the remote UE does not apply SL-RLC1 until it finds out the dedicated configuration is not provided. But considering the current way works without blocking issue, the moderator suggests to keep what it is and not change legacy UE behavior.For the change #2 and #3, the change is about relay UE handling of SL-RLC0 and SL-RLC1 upon released to idle/inactive state. The logic in current spec is, following existing Uu behavior, remote UE and relay UE shall release all the radio resource including RLC bearer upon going to idle/inactive. For remote UE, it would be fine because it will establish SL-RLC0 when it needs to send SRB0 RRC message, and establish SL-RLC1 when it needs to send/receive SRB1 RRC message, no matter the PC5 unicast link is old or new established. For reception at relay, if SL-RLC0 and SL-RLC1 are release, relay UE may need to establish SL-RLC0 and SL-RLC1 again, which can be achieved by PC5 unicast link release and establishment, or by UE smart implementation. Otherwise, the remote UE may end up in PC5 RLC failure due to SRB0 transmission failure. But this can be recovery by relay reselection. On the other hand, the change proposed in this CR seems to be NBC, i.e. forbid relay UE releasing SL-RLC0 and SL-RLC1. In this case, the moderator wonder whether we can make this as a suggestion to relay UE implementation that relay UE can reestablish SL-RLC0/SL-RLC1/SRAP entity or not release SL-RLC0/SL-RLC1 /SRAP entity, but not a requirement, to avoid NBC change.The change #4 is editorial and correct.**Thus the moderator suggests to agree the changes in or related to R2-2307755:****In 5.3.8.3 and 5.3.11, clarify that relay UE can establish SL-RLC0/SL-RLC1/SRAP entity or not release SL-RLC0/SL-RLC1 /SRAP entity after released to idle/inactive state.****In 9.2.5, added “RRCResumeRequest1” and changed “Identity” to “identity”.** |
| [R2-2307853](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_123/Docs/R2-2307853.zip) | Corrections on the reporting of L2 ID for L2 U2N relay operation | Apple | 1. In the procedure text in 5.5.5.1, clarified that the Src L2 ID is the one “used in the measured SL data transmission”. Also, made the change in NOTE 1 to clarify the L2 ID for relay discovery message transmission is used if SD-RSRP is used.
2. In 5.8.3.3, moved the inclusion of “sl-SourceIdentityRemoteUE“ to one level up (from level-4 to level-3), so that it can be decided independently from the level-3 Rx Discovery conditions.
 | 38.331 CRThe moderator understands the two changes are in line with the intention of the current spec. But there seems no big gap between the first change and the current wording. Thus the change is not needed. The second change can avoid some misinterpretation, thus **the moderator suggests to agree the second change in** [**R2-2307853**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_123/Docs/R2-2307853.zip)**:****In 5.8.3.3, moved the inclusion of “sl-SourceIdentityRemoteUE“ to one level up (from level-4 to level-3), so that it can be decided independently from the level-3 Rx Discovery conditions.** |
| [R2-2307955](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_123/Docs/R2-2307955.zip) | Correction on CHO and Path Switching of Remote UE | NEC Corporation | In clause 9.2.3.4.1, stop CHO evaluation upon receiving the path switching command. | 38.331 CRIt was agreed that remote UE and relay UE cannot be configured with CHO, which is captured in the field description of the *conditionalReconfiguration* as blow:“…The field is absent if any DAPS bearer is configured or if the *masterCellGroup* includes *ReconfigurationWithSync* or if the *sl-L2RemoteUE-Config* or *sl-L2RelayUE-Config* is configured.”Therefore, the proposed change is not needed. |
| [R2-2308210](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_123/Docs/R2-2308210.zip) | Miscellaneous corrections for SL relay | Huawei, HiSilicon | * Change #1: In clause 5.8.15.2, add “PCell” before “camping cell”, to cover connected state, i.e. when RSRP of PCell is evaluated, Remote UE should take Relay UE’s serving cell as PCell.
* Change #2: In clause 6.3.2, add discovery case into the IE description of *ReportConfigNR-SL*, and related field description.
* Change #3: In clause 6.3.5, add discovery case into the IE description of *SL-BWP-Config*, and *SL-ConfigDedicatedNR*.
* Change #4: In 5.3.3.7, 5.3.3.8, 5.3.5.5.2, 5.3.13.5, 5.3.15.2, “Notification message” is replaced with “*NotificationMessageSidelink*” in the sentence "sends Notification message to the connected L2 U2N Remote UE(s) in accordance with 5.8.9.10.”.
* Change #5: In 5.3.7.7, fix typo “receiption”.
 | 38.331 CRThe changes are almost editorial and non-controversial, thus **the moderator suggests to agree the changes in R2-2308210.** |
| [R2-2308271](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_123/Docs/R2-2308271.zip) | Corrections to TS 38.331 on SL relay (re)selection | ZTE, CAICT, Sanechips | 1. In clause 5.3.5.15.3, remove “SRB1 is not included in *sl-MappingToAddModList*, or”.
2. In clause 5.8.15.3, add the case “if the UE detects Uu radio link failure” for remote UE relay selection.
3. In clause 5.8.15.3, add the case that upon receiving PC5 notification from relay UE, the remote UE may trigger relay reselection.
 | 38.331 CRThe moderator understands the first change is not correct, because the original text is to cover the case when network does not provide dedicated configuration of PC5 RLC channel for remote UE’s SRB1 which means relay UE should apply SL-RLC1. For the second change, the RRC reestablishment procedure in 5.3.7.2 already provides an entry to relay selection by saying “2> if the UE is capable of L2 U2N Remote UE: 3> perform either cell selection as specified in TS 38.304 [20], or relay selection as specified in clause 5.8.15.3, or both;”. Similarly, in 5.3.8.3 upon entering inactive state, and in 5.3.11 upon going idle state, relay selection can be triggered aside cell selection. So the logic should be for a UE capable of L2 U2N Remote UE, it can perform relay selection when cell selection is triggered, which can be added as a unified condition of relay selection in 5.8.15.3.For the third change, the moderator agree with the intention. But according to 5.8.9.10.4, if the UE decides to release the PC5 unicast link, it will “4> indicate upper layers to trigger PC5 unicast link release”, which is already covered by the existing condition of “2> if the UE has a selected NR sidelink U2N Relay UE, and upper layers request the release of the PC5-RRC connection; or”, then the proposed change is not needed.**Thus the moderator suggests to agree the change modified according to** [R2-2308271](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_123/Docs/R2-2308271.zip):**For a UE capable of L2 U2N Remote UE, it can perform relay selection when cell selection is triggered, which can be added as a unified condition of relay selection in 5.8.15.3.** |
| [R2-2308275](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_123/Docs/R2-2308275.zip) | Correction to 38.331 on U2N relay (re)selection | vivo | In subclause 5.5.3.2, there are two changes:* add the “for U2N Relay (re)selection evaluation” entry to apply Layer 3 filtering.
* remove “L2” to cover both L2 and L3 U2N Relay UEs (if applicable).

In subclause 5.5.3.4, there are two changes:* remove “L2” to cover both L2 and L3 U2N Relay UEs (if applicable).
* clarify that the UE may derive measurements for U2N Relay (re)selection evaluation.
 | 38.331 CRThe first two changes in 5.5.3.2 are reasonable to the moderator, as indeed 5.5.3.2 are referred to by relay (re)selection procedure. But on the other hand the last two changes in 5.5.3.4 seems not needed. Because 5.5.3.4 is not necessarily linked to relay (re)selection procedure, when 5.8.15.3 already is.**Thus the moderator suggests to agree the first two changes in R2-2308275:****In subclause 5.5.3.2,*** **add the “for U2N Relay (re)selection evaluation” entry to apply Layer 3 filtering.**
* **remove “L2” to cover both L2 and L3 U2N Relay UEs (if applicable).**
 |
| R2-2308550 | Miscellaneous Corrections for SL Relays | Ericsson España S.A. | Section 5.3.7.2* Text levels have been modified to reflect the applicability of *sl-L2RelayUE-Config and sl-L2RemoteUE-Config* only when the UE acts as a U2N Remote UE and U2N Relay UE respectively.
* Clarification of UE having the capability for U2N relay operation and acting as a U2N Remote UE.

 Section 6.3.5* Remove “, e.g. SRAP-Config” from the IE description of *SL*-*L2RelayUE-Config*
 | 38.331 CRFor the first two changes in 5.3.7.2, it should be already clear that only remote UE will be configured with *sl-L2RemoteUE-Config, and* only relay UE will be configured with *sl-L2RelayUE-Config*. And for the third change, the expression of “capable of Remote UE” has been discussed and used in multiple places in the spec. Therefore there would be no misunderstanding without the changes.The last change in 6.3.5 is to correct a wrong field name, thus can be agreed.**The moderator suggests to agree the change in R2-2308550:****Section 6.3.5****Remove “, e.g. SRAP-Config” from the IE description of *SL*-*L2RelayUE-Config*** |
| [R2-2308714](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_123/Docs/R2-2308714.zip) | Corrections on U2N Relay | ASUSTeK | In clause 5.2.2.2.1, “clause 5.8.9.8.3” in the corresponding statement is modified as “clause 5.8.9.9.3”.In clause 5.8.13.3, the condition “*2> if the UE is acting as L3 U2N Relay UE; or*” is removed. | 38.331 CRThe first change is to correct the wrong section number, so should be agree.The second change is not needed, because it is about the scenario that relay is OoC of SL frequency, but not Uu frequency, in this case the L3 relay can work based on pre-configuration, but since Uu threshold is missing from pre-configuration, thus it was agreed that L3 relay can consider the AS criteria is met always.**Thus the moderator suggests to agree the first change in** [**R2-2308714**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_123/Docs/R2-2308714.zip)**:****In clause 5.2.2.2.1, “clause 5.8.9.8.3” in the corresponding statement is modified as “clause 5.8.9.9.3”.** |

**Proposal 2: The following RRC changes are agreeable. Can further discuss whether to merge into one Miscellaneous CR or have separate CRs.**

1. **the change in R2-2307194: Updated the text to clarify that *UuMessageTransferSidelink* message includes only one *PagingRecord*.**
2. **the change in R2-2307239: Adding trigger condition “or if the information carried by the *sl-PagingInfo-RemoteUE* has changed since the last transmission of the *RemoteUEInformationSidelink* message”.**
3. **the changes in R2-2307727: Change #1: In 5.3.3.1a, added the conditions to check SIB12 whether the network supports L2 U2N relay discovery or L3 U2N relay discovery or non-relay discovery. Change #2: In 5.3.13.a1, added the conditions to check SIB12 whether the network supports L2 U2N relay discovery or L3 U2N relay discovery or non-relay discovery.**
4. **the change in R2-2307755: Correct the “*ue-TimersAndConstantsRemoteUE*” in the specification text to “*sl-TimersAndConstantsRemoteUE*”.**
5. **the changes in or related to R2-2307852: In 5.3.8.3 and 5.3.11, clarify that relay UE can reestablish SL-RLC0/SL-RLC1/SRAP entity after release or not release SL-RLC0/SL-RLC1 /SRAP entity upon going to idle/inactive state. In 9.2.5, added “*RRCResumeRequest1*” and changed “Identity” to “identity”.**
6. **the change in** [**R2-2307853**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_123/Docs/R2-2307853.zip)**: In 5.8.3.3, moved the inclusion of “*sl-SourceIdentityRemoteUE*“ to one level up (from level-4 to level-3), so that it can be decided independently from the level-3 Rx Discovery conditions.**
7. **the changes in R2-2308210: Change #1: In clause 5.8.15.2, add “PCell” before “camping cell”, to cover connected state, i.e. when RSRP of Pcell is evaluated, Remote UE should take Relay UE’s serving cell as Pcell. Change #2: In clause 6.3.2, add discovery case into the IE description of *ReportConfigNR-SL*, and related field description. Change #3: In clause 6.3.5, add discovery case into the IE description of *SL-BWP-Config*, and *SL-ConfigDedicatedNR*. Change #4: In 5.3.3.7, 5.3.3.8, 5.3.5.5.2, 5.3.13.5, 5.3.15.2, “Notification message” is replaced with “*NotificationMessageSidelink*” in the sentence “sends Notification message to the connected L2 U2N Remote UE(s) in accordance with 5.8.9.10.”. Change #5: In 5.3.7.7, fix typo “receiption”.**
8. **the change related to** [**R2-2308271**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_123/Docs/R2-2308271.zip)**: For a UE capable of L2 U2N Remote UE, it can perform relay selection when cell selection is triggered, which can be added as a unified condition of relay selection in 5.8.15.3.**
9. **the changes in R2-2308275: In subclause 5.5.3.2, add the “for U2N Relay (re)selection evaluation” entry to apply Layer 3 filtering, and remove “L2” to cover both L2 and L3 U2N Relay UEs (if applicable).**
10. **the change in R2-2308550: in Section 6.3.5, remove “, e.g. *SRAP-Config*” from the IE description of *SL-L2RelayUE-Config*.**
11. **the change in** [**R2-2308714**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_123/Docs/R2-2308714.zip)**: In clause 5.2.2.2.1, “clause 5.8.9.8.3” in the corresponding statement is modified as “clause 5.8.9.9.3”.**

# 3. Conclusion

38.300 corrections

38.331 corrections

# Comments if any

**If companies have comments on the above proposal, please leave your comments in the following table:**

|  |  |  |
| --- | --- | --- |
| **Contact points** | **Proposal number** | **comments** |
| **Xiaomi** | **2-2）** | **In R2-2207179 in RAN2#119, we proposed remote UE’s SIB equest change can initiate the *RemoteUEInformationSidelink* transmission. However, RAN2 understood the general description in 5.8.9.8.1 can already cover this information change initiation and the proposal was not agreed. Following the same logic, this change is not needed either.** |
| **Philips** | **2-5)** | **“the changes in or related to R2-2307755:” instead of R2-2307755, it should be R2-2307852.** |
| **Apple** | **2-2)** | **Same understanding as Xiaomi, The first sentence in 5.8.9.8.2 “**upon change in any of the information in the *RemoteUEInformationSidelink* while in RRC\_IDLE or RRC\_INACTIVE **“ has already covers the case proposed in this CR.** |
| **Apple** | **2-3)** | **For the change in 7727, our understanding is that SIB12 common pool case and “entering CONNECTED state” case for relay discovery are different as the triggering conditions are different, so we cannot simply duplicate the conditions here:****First, for the case that no common TX pool provided in SIB12, we do not think an IDLE/INACTIVE remote UE needs to enter RRC\_CONNECTED state to transmit model-B solicitation message, so at least for relay case, this change is only applicable to relay UE.****Then, we wonder how upper layer can make the relay discovery message “data available” if the AS layer of relay UE does not provide any AS-layer information (NCGI, RRC container) to the upper layer first. For example. If the SIB12 has already indicates that L2 U2N relay is not supported by the serving cell of relay UE, then why AS layer of the UE even provide the RRC container information to upper layer to make “**related data is available for transmission**“ condition satisfied? In other words, if AS layer behavior correctly follows the cue of SIB12 indication, there is no L2 relay discovery message to be generated and configured by upper layer anyway.** **Hence, we have some doubts about whether the proposed change for relay discovery is needed, maybe only the non-relay discovery is applicable.** |
| **Apple** | **2-5)** | **Thanks for Philips to point out the wrong TDOC number. Regarding the “**. On the other hand, the change proposed in this CR seems to be NBC, i.e. forbid relay UE releasing SL-RLC0 and SL-RLC1. **” comment by the rapporteur, we wonder why not releasing SL-RLC0/1 in relay UE side will cause NBC. If Remote UE releases SL-RLC0/SL-RLC1, but relay UE keeps it. There seems no issue at all. Anyway, they are just default configurations, not dedicated configurations. As only remote UE may initiate new RRC message over the existing PC5 link in the direction from remote UE🡪 relay UE, there is no harm for relay UE to keep SL-RLC0/1 and SRAP entity.** |
| **Apple** | **2-6)** | **For the first change in R2-2307853, we think the current text is at least ambiguous, because the information contained in measurement Report come from two different PC5 messages sent by two different Src L2 IDs, that will cause confusion to UE implementation.**  |
| **Apple** | **2-9)** | **We are not sure if we agree the frist change “**for each candidate U2N Relay UE measurement quantity according to 5.5.3.4” **, Then there is no impact to clause 5.5.3.4.****Also, we wonder if the current text “for each candidate L2…” includes the serving L2 U2N relay?** |