**3GPP TSG-RAN WG2 Meeting #119bis-e R2-2210978**

**E-Meeting, 10th – 19th October, 2022**

**Source: vivo (Rapporteur)**

**Title:****Summary of [AT119bis-e][411][Relay] Relay cause value**

**Agenda Item:** **6.7.1**

**Document for:** **Discussion and Decision**

# Introduction

The following offline discussion is triggered to mainly discuss these proposals as follows:

* [AT119bis-e][411][Relay] Relay cause value (vivo)

Scope: Discuss the LS in R2-2209306 and related documents (R2-2209812 / R2-2209813 / R2-2209814 + first change from R2-2209903), consider the proposed correction, and draft a reply.

Intended outcome: Report in R2-2210900, approvable LS, and agreeable CR if needed; report of extended discussion in R2-2210978

Deadline: Friday 2022-10-14 1000 UTC – extended to Wednesday 2022-10-19 0100 UTC

## Contact Points

|  |  |  |
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# Discussion

During the first round of this email discussion CR proposal option in [1] had some support from some companies as below:



Additionally, during the email discussion there was proposal on the reflector to add sentence to NOTE 2 as ‘When simultaneously triggered by upper layer and L2 remote UE, it is up to relay UE implementation whether/how to consider the cause value in the message received from L2 remote UE".

As there was some interest from some companies to improve NOTE 2 to better reflect CT1 progress, we may further consider the following options as baseline for NOTE2 improvement:

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| --- |
| **Option 1: Modified based on ZTE’s paper (first change in R2-2209903)**  NOTE 2: In case the L2 U2N Relay UE initiates RRC connection establishment triggered by reception of message from a L2 U2N Remote UE via SL-RLC0 or SL-RLC1 as specified in 5.3.3.1a (including simultaneously triggered by L2 U2N Relay UE’s own service), the L2 U2N Relay UE sets the *establishmentCause* by implementation, but it can only set the *emergency*, *mps-PriorityAccess*, or *mcs-PriorityAccess* as *establishmentCause* if the same cause value is in the message received from the L2 U2N Remote UE via SL-RLC0 or received from the L2 U2N Relay UE’s upper layers. |

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| **Option 2: Suggested by APPLE via email reflector**  NOTE 2: In case the L2 U2N Relay UE initiates RRC connection establishment triggered by reception of message from a L2 U2N Remote UE via SL-RLC0 or SL-RLC1 as specified in 5.3.3.1a, the L2 U2N Relay UE sets the *establishmentCause* by implementation, but it can only set the *emergency*, *mps-PriorityAccess*, or *mcs-PriorityAccess* as *establishmentCause* if the same cause value is in the message received from the L2 U2N Remote UE via SL-RLC0. When simultaneously triggered by the L2 U2N Relay UE’s own service and the L2 remote UE, it is up to Relay UE implementation whether/how to consider the cause value in the message received from L2 remote UE. |

**Q1: If RAN2 have to improve NOTE2 to better reflect the simultaneously triggered by Lthe L2 U2N Relay UE’s own service and the L2 remote UE case, which option do you prefer as a CR baseline?**

1. **Option 1: Modified based on ZTE’s paper (first change in R2-2209903), see as above**
2. **Option 2: Suggested by APPLE via email reflector, see as above**
3. **Other (please specify)**

|  |  |  |
| --- | --- | --- |
| **Company** | **Option?** | **Comment** |
| Apple | Option 2 | We think the Option 1 has two problems:   1. It is wrong to allow relay UE to choose the arbitrary cause value based on UE implementation in “non-emergency” simultaneous trigger case. We think the relay UE shall still use the upper layer cause value, if it does not want to consider the trigger from L2 remote UE. 2. In “emergency”-kind of simultaneous trigger case, there is ambiguity about how to determine which “*the same cause value*” is to be set, if both upper layer and L2 remote UE provide two different cause values respectively from the set of <emergency, mps-priorityAccess, mcs-priorityAccess>. Probably, we have to still add another sentence to explain that this is up to UE implementation how to compare two sorts of emergency cause values.   Option 2 has avoided those issues and is less complex and more aligned with CT1 LS. |
| Huawei, HiSilicon | None | Similar view as Apple on Option 1 that it is not in line with CT1’s CR. To be specific, CT1’s CR is saying when there is relay UE’s own service, it is possible to use the cause value generated by AS layer. There is no extra rules on how to handle high priority cause value.  However, we do not see the point to repeat in AS spec that it is up to UE implementation when CT1 already capture a NOTE to clarify it is possible to use the value provided by NAS or the value generated by AS.  [Rapp] CT1 refers to RAN2 spec, now in RAN2 we point back to CT1 spec for reference. It seems we are going in to a close loop without clear explanation |
| LG | None | We think the current RRC spec is fine. The CT1 CR already describes the possibility of simultaneous triggering cases. We think it seems a rare case and we don't think it is not necessary for a double description.  [Rapp] CT1 refers to RAN2 spec, now in RAN2 we point back to CT1 spec for reference. It seems we are going in to a close loop without clear explanation |
| OPPO | None | Same view as HW and LG.  Given all this objection / debate, I thought it is very straightforward that we do not need to further work on this CR, in the same manner as we handle other CR?  [Rapp] Agree with you to consider other manner, such sending Ls reply to CT1 for further clarification. |
| Ericsson | None | When there is a simultaneous occurrence, there is no additional information/guidance for the U2N relay UE with the proposed text options, it is still up to UE implementation. There is no requirement to mention all the possible (corner) cases when it is left up to UE implementation given the fact the CT1 has already captured it in their note.  [Rapp] CT1 refers to RAN2 spec, now in RAN2 we point back to CT1 spec for reference. It seems we are going in to a close loop without clear explanation |
| Nokia | None (or Option 2 with modifications) | Our understanding is that in principle the current NOTE 2 covers the simultaneous case, which is a corner case, as well: it is up-to UE implementation which cause value is used. Actually, when the NAS provided cause value is used can be considered as the case when the NAS triggered the request first (processed by AS before the Remote UE trigger). Some clarification may be added, but it is not necessary.  If the majority supports Option 2 then we can accept it with some modification (see text highlighted by yellow):  When simultaneously triggered by the L2 U2N Relay UE’s own service and the L2 remote UE, it is up to Relay UE implementation whether/how to consider the cause value in the message received from L2 remote UE and the cause value received from the upper layer. |
| Samsung | None | We share the companies views that RAN2 specification does not repeat what CT1 specification captures.  [Rapp] CT1 refers to RAN2 spec, now in RAN2 we point back to CT1 spec for reference. It seems we are going in to a close loop without clear explanation |
| ZTE | Option 1, also open to better clarification for simultaneous case | We disagree the 2 points on option 1 from APPLE:  To 1), as CT1’s LS, for simultaneous case, it is possible for lower layer to decide cause value. That is, lower layer is allowed to set cause value different from upper layer, for non-emergency service. It doesn’t restrict that “non-emergency” service must use upper layer cause value. To 2), for this case, anyway, UE implementation to set cause value.  On the other hand, Option 2 -- relay UE implementation whether/how to consider cause value from remote UE, it may also allow relay UE to choose the arbitrary cause value based on UE implementation in “non-emergency” simultaneous trigger case.  In Option 1, it wants to clarify that for simultaneous case, relay UE sets cause value by implementation and relay UE **can only** set these three cause value if the same cause value is from remote UE or from its own upper layer. It **doesn’t require relay UE must** set the three cause value when the same cause value comes from remote UE or its own upper layer.  CT1’s CR refers to TS 38.331 for relay UE lower layer to decide cause value, however we are not sure what’s the common understanding on how the relay UE handle the simultaneous case with current RRC spec (without any changes), following legacy upper layer trigger case, or following remote UE trigger case, or following either case is ok? |
| Qualcomm | None | We think the current spec is clear. It is already specificed in CT1 spec that it is upto UE implementation, so we do not see a need for further NOTE updates to clarify the implementation details.  [Rapp] CT1 refers to RAN2 spec, now in RAN2 we point back to CT1 spec for reference. It seems we are going in to a close loop without clear explanation |
| vivo | No strong view |  |
| CATT | None | There is no need to further clarify in NOTE2 due to CT1’s LS in. |
| Peraton Labs | None. New text proposed. | Either Option 1 or 2 do not add any more specific handling compared to the existing NOTE 2 text. Also, when behavior is left to the UE implementation it is not meant to be arbitrary, but it is meant to follow a logical path: E.g. in simultaneously triggered case, the Relay UE should use a high priority cause value if such a value is used by either of the two triggers. Our suggestions are:  1. Clarify the use of “only” as it appears to confuse many.  2. Include the resume case. Thus we have two Notes in total.  3. We think the NOTE 2 should be normative text and not just a note.  Our proposed text is two notes as follows:  There is a note for RRCSetup Request:  NOTE 2:  In case the L2 U2N Relay UE initiates RRC connection establishment triggered by reception of message from a L2 U2N Remote UE via SL-RLC0 or SL-RLC1 as specified in 5.3.3.1a, the L2 U2N Relay UE sets the *establishmentCause* by implementation, but it can only set the *emergency*, *mps-PriorityAccess*, or *mcs-PriorityAccess* as *establishmentCause* to match the remote UE’s *establishmentCause* or *resumeCause,*if that cause value is used in the RRC Setup Request or RRC Resume message received from the L2 U2N Remote UE via SL-RLC0.  This is a new note for Resume:  NOTE 2:  In case the L2 U2N Relay UE initiates RRC connection resume triggered by reception of message from a L2 U2N Remote UE via SL-RLC0 or SL-RLC1 as specified in 5.3.13.1a, the L2 U2N Relay UE sets the *resumeCause* by implementation, but it can only set the *emergency*, *mps-PriorityAccess*, or *mcs-PriorityAccess* as *resumeCause* to match the remote UE’s *establishmentCause* or *resumeCause*, if that cause value is used in the RRC Setup Request or RRC Resume message received from the L2 U2N Remote UE via SL-RLC0. |

**Summary:**

11 companies provide feedback to this email discussion.

1 company prefers option 1.

1 company prefers option 2.

2 companies can accept option 2.

One company has no strong view.

8 companies prefer NOT to introduce RAN2 CR, as there is no need for further clarification to update NOTE2 (no need for option 1 or option 2).

One of the the reason is expressed, for not to update NOTE2, by Huawei, HiSilicon, LG, Ericsson, Samsung, and Qualcomm is that the UE behavior is already captured in CT1 spec.

**Observation: One the reason not to update NOTE2 to further capture Relay UE behavior for simultaneously triggered by both Relay UE and remote UE cause is because Relay behavior is already captured in CT1 spec.**

Form rapporteur point of view there is a confusion on how to further proceed, because CT1 spec is referring to RAN2 spec for relay UE behavior clarification and in RAN2 companies are referring back to CT1 spec for clarification on relay UE behavior. From that point, it is hard to say that RAN2 spec NOTET2 has a clear explanation on relay UE behavior. It seems a close loop deadlock. From rapporteur point of view RAN2 should make a clear opinion on Relay UE behavior or notify back CT1 that RAN2 just relies on their specification for relay UE behavior, so Rapporteur proposes the following way forward proposals:

**Proposal 1: RAN2 to confirm that “from RAN2 perspective it is up to Relay UE implementation how to handle the cause value in the message received from L2 remote UE and the cause value received from the upper layer in case simultaneously triggered by the L2 U2N Relay UE’s own service and the L2 remote UE.”**

**Proposal 1a: If RAN2 could not make an agreement on Proposal 1, RAN2 to send an Ls relay to CT1 to notify them that “RAN2 relies on CT1 specification on Relay UE behavior for the case that: when simultaneously triggered by the L2 U2N Relay UE’s own service and the L2 remote UE, it is up to Relay UE implementation whether/how to consider the cause value in the message received from L2 remote UE and the cause value received from the upper layer.”**

# Conclusion

The summary concludes with the following proposals:

**Observation: One the reason not to update NOTE2 to further capture Relay UE behavior for simultaneously triggered by both Relay UE and remote UE cause is because Relay behavior is already captured in CT1 spec.**

**Proposal 1: RAN2 to confirm that “from RAN2 perspective it is up to Relay UE implementation how to handle the cause value in the message received from L2 remote UE and the cause value received from the upper layer in case simultaneously triggered by the L2 U2N Relay UE’s own service and the L2 remote UE.”**

**Proposal 1a: If RAN2 could not make an agreement on Proposal 1, RAN2 to send an Ls relay to CT1 to notify them that “RAN2 relies on CT1 specification on Relay UE behavior for the case that: when simultaneously triggered by the L2 U2N Relay UE’s own service and the L2 remote UE, it is up to Relay UE implementation whether/how to consider the cause value in the message received from L2 remote UE and the cause value received from the upper layer.”**

1. Reference
2. R2-2209903 Correction on control plane for L2 U2N relay ZTE, Sanechips draftCR Rel-17 38.331 17.2.0 F NR\_SL\_relay-Core