**3GPP TSG-RAN WG2 #116bis-e *R2-220xxxx***

**E-meeting, January 2022**

Agenda Item: 8.7.1

Source: OPPO

Title: Remaining Open issue list of R17 Sidelink Relay WI

Document for: Discussion, Decision

# Introduction

This is for the remaining open issues of R17 Sidelink Relay WI in RAN2.

# Discussion

# WID Scope

In RP-212819, the scope of the work item is described as follows:

The objective of this work item is to specify solutions to enable single-hop, sidelink-based, L2 and L3 based UE-to-Network (U2N) relaying.

Work Item objectives on aspects common to both L2 and L3:

1. Specify mechanisms for U2N **relay discovery and (re)selection** for L3 and L2 relaying [RAN2, RAN4]
   1. Re-use LTE relay discovery and (re)selection as baseline
2. Specify mechanisms for **Relay and Remote UE authorization** for L3 and L2 relaying [RAN3]
   1. Re-use LTE as baseline

Work Item objectives specific to Layer-2 (L2) relaying:

1. Specify mechanisms for E2E, i.e. PC5 and Uu, **QoS management** [RAN2]:
2. Specify mechanisms for **service continuity**
   1. Limited to intra-gNB cases [RAN2]
3. Specify mechanisms for U2N **Adaptation layer design** [RAN2]
   1. For bearer mapping and Remote UE identification, incl. RAN related security aspects if any
4. Specify **Control Plane procedures** for U2N, including RRC connection management, system information delivery, paging mechanism and access control for Remote UE [RAN2, RAN3]

Secondly, the objective of this work item also covers the non-relay discovery (i.e. 5G ProSe Direct Discovery).

1. Specify mechanisms for 5G ProSe Direct Discovery [RAN2, RAN3, RAN4];

# Open Issue list

### Objective-1/7: Relay discovery and (re)selection, Non-relay discovery

NOTE: The issues below may be applicable to non-relay discovery (O7) as well.

|  |  |  |  |
| --- | --- | --- | --- |
| **Issue Index** | **Description** | **Suggested handling** | **Reason for add/remove this open issue** |
| O1.01 | [FFS point from R2#116 agreement] FFS if network can also configure a setting where both shared and dedicated pools can be used for SL discovery.. | Resolved and can be closed | Due to the following agreement made in RAN2 #116bis-e:  Proposal 1.1:[12/18] The use of both dedicated and shared resource pools for discovery transmission, when both pools have been configured, is not supported in this release.  We can remove this open issue |
| O1.02 | [FFS point from R2#116 agreement] LCP impact due to dedicated pool for discovery traffic. | Resolved and can be closed | Since we have the the following agreement:  Proposal 2.2: [18/19] For SL LCP procedure, only L2 destination IDs associated to discovery can be selected for grants from the dedicated discovery resource pool.  Proposal 2.3 (modified): [19/20] For SL LCP procedure, when the dedicated discovery pool is configured/used, only L2 destination IDs associated to communication can be selected for grants from the shared resource pool. When the dedicated resource pool is not configured/used, this restriction is not applied.  This open issue can be removed |
| O1.03 | [Open issue from tdoc R2-2200943] any impact to SUI message report due to the discovery and relay. | CR rapporteur handled | Since we have the following agreement:  Proposal 3.2:[19/20] SUI includes an indication of whether a particular destination L2 ID is associated to discovery.  This open issue is mostly resolved, there could be further details that are up to running-CR to handle, e.g.,  Proposal 5 (discussion) Regarding how to indicate L2 ID of remote UE in the SUI message by relay UE, RAN2 to down select the following options:  a. Option 1: add a new IE to carry L2 ID of remote UE  b. Option 2: reuse the existing field sl-DestinationIdentity to request TX resources, in addition, introduce an indicator indicating that the destination ID is for relay purpose |
| O1.04 | [FFS point from R2#116 agreement] Details on the new PC5-RRC signaling triggered by handover, Uu-RLF and cell (re)selection of relay UE | Resolved and can be closed | Since we have the following agreements:  Proposal 5: Upon reception of the PC5 RRC message for notification, it is up to remote UE implementation whether to release or keep the unicast PC5 link. And if remote UE decides to release the unicast PC5 link, it triggers the legacy L2 release procedure and performs relay reselection.  Proposal 6: For remote UE to make decision on whether to trigger relay （re）selection, the PC5-RRC notification message sent by relay UE includes the cause value, i.e., HO or cell (re)selection or Uu RLF.  This open issue can be removed. |
| Q1.05 | [FFS point from R2#116 agreement] How to differentiate a gNB that is relay-capable/relay-incapable and discovery-capable/discovery-incapable | Resolved and can be closed | Since we have the following agreements:  The UE can determine from SIB12 whether the gNB supports relay discovery and/or non-relay discovery. Details (including whether SIB12 signalling can differentiate between support of relay vs. non-relay discovery and whether the support is indicated explicitly or implicitly) can be discussed as part of stage 3 CR drafting.  Proposal 4.3: [18/19] Whether gNB supports L2 relay is explicitly indicated in SIB12.  Proposal 4.5: [18/19] No additional indication in SIB12 is required to signal that operation as a L3 relay is not allowed.  Whether L3 relaying support is signalled implicitly by indicating the support of discovery, or signalled independently from support of discovery, can be discussed in stage 3 drafting.  The left open issue is updated to O1.18 |
| O1.06 | [EN from running-CR of 38.322] The establishment and release for transmitting/receiving RLC entities for SL-SRB4 | CR rapporteur handled | Due to the following ENs in RLC running CR:  *Editor’s Note: FFS for RLC receiving entity establishment for SL-SRB4*  *Editor’s Note: FFS for transmitting/receiving RLC entities release for SL-SRB4*  We have the corresponding open issue |
| O1.07 | [EN from running-CR of 38.322] Whether/How to maintain RX\_Next\_Reassembly and RX\_Next\_Highest for SL-SRB4 | CR rapporteur handled | Due to the following ENs in RLC running CR:  *Editor’s Note: FFS for RX\_Next\_Reassembly for SL-SRB4*  *Editor’s Note: FFS for RX\_Next\_Highest for SL-SRB4*  We have the corresponding open issue |
| O1.08 | [EN from running-CR of 38.323] FFS for receiving PDCP\_entity\_establishment for SL-SRB4 | CR rapporteur handled | Due to the following ENs in PDCP running CR:  *Editor’s note: FFS for receiving PDCP entity establishment for SL-SRB4*  We have the corresponding open issue |
| O1.09 | [EN from running-CR of 38.323] FFS whether SL-SRB4 is a part of NR sidelink communication or new definition on sidelink relay discovery/non-relay discovery for SL-SRB4 is needed in PDCP spec | CR rapporteur handled | Due to the following ENs in PDCP running CR:  *Editor’s note: FFS whether SL-SRB4 is a part of NR sidelink communication or new definition on sidelink relay discovery/sidelink non-relay discovery for SL-SRB4 is needed.*  We have the corresponding open issue |
| O1.10 | [EN from running-CR of 38.323] FFS whether to define a separate PDCP Data PDU format for unicast SL-SRB4 | CR rapporteur handled | Due to the following ENs in PDCP running CR:  *Editor’s note: FFS whether to define a separate PDCP Data PDU format for unicast SL-SRB4*  We have the corresponding open issue |
| O1.11 | [EN from running-CR of 38.323 ]FFS for initial value for RX\_NEXT/RX\_DELIV for SL-SRB4 | CR rapporteur handled | Due to the following ENs in PDCP running CR:  *Editor’s Note: FFS for initial value for RX\_NEXT for SL-SRB4*  *Editor’s Note: FFS for initial value for RX\_DELIV for SL-SRB4*  We have the corresponding open issue |
| O1.12 | [EN from running-CR of 38.300] FFS if we use the term sidelink discovery, Non-Relay Discovery, or other term. | CR rapporteur handled | Due to the following EN in 38.300 running CR:  *Editor's Note: FFS if we use the term sidelink discovery, Non-Relay Discovery, or other terms.*  We have the corresponding open issue |
| O1.13 | [EN from running-CR of 38.304] Whether a new section should be created for NR sidelink discovery in 304 | CR rapporteur handled | Due to the following EN in 38.304 running CR:  *Editor’s Note: FFS whether a new section (i.e., Section 9) should be created for NR Sidelink discovery.*  We have the corresponding open issue |
| O1.14 | [EN from running-CR of 38.304] Whether remote and relay UE behaviour should be captured in section 8.2 in 304 | CR rapporteur handled | Due to the following EN in 38.304 running CR:  *Editor’s Note: FFS whether U2N Remote UE and/or U2N Relay UE behavior should be captured in this section.*  We have the corresponding open issue |
| O1.15 | [Open issue from tdoc R2-2201508] Whether the PC5-RRC indications (NotificationMessageSidelink message) applies to both L2 relay and L3 relay | Pre117-e-offline | Due to the proposal in R2-2201508 related to 38.331 stage-3 open issue:  Proposal 7: RAN2 to confirm the PC5-RRC indications (included in NotificationMessageSidelink message) applies to both L2 relay and L3 relay.  We have the corresponding open issue |
| O1.16 | [Open issue from tdoc R2-2201508] FFS on the definition of out-of-coverage UE in RRC CR | CR rapporteur handled | Due to the proposal in R2-2201508 related 38.331 stage-3 open issue:  Proposal 8: Agree the update on 5.8.x3.3 Selection and reselection of NR sidelink U2N Relay UE in RRC running CR.  We have the corresponding open issue |
| O1.17 | [FFS point from R2#116b agreement] Whether L3 relaying support is signalled implicitly or explicitly in SIB12. | CR rapporteur handled | Due to the agreement made in RAN2 #116b:  Whether L3 relaying support is signalled implicitly by indicating the support of discovery, or signalled independently from support of discovery, can be discussed in stage 3 drafting.  We have the corresponding open issue |
| O1.18 | [FFS point from R2#116b agreement]FFS on detailed signalling to differentiate between support of relay vs. non-relay discovery in SIB12. | CR rapporteur handled | Due to the agreement made in RAN2 #116b:  The UE can determine from SIB12 whether the gNB supports relay discovery and/or non-relay discovery. Details (including whether SIB12 signalling can differentiate between support of relay vs. non-relay discovery and whether the support is indicated explicitly or implicitly) can be discussed as part of stage 3 CR drafting.  We have the corresponding open issue |

#### Company input table

|  |  |  |  |
| --- | --- | --- | --- |
| Company | Issue Index | Description | Suggested handling |
| CATT | O1.04 | We are fine with the current PC5 RRC part. But wonder there are still some FFSs for the PC5-S part, right? | Pre117-e-offline |
| Apple | A1.01 | Whether to include RRC state in PC5 discovery message for L2 relay.  As remote UE has an optional capability to support IDLE/INACTIVE relay (working assumption), in-coverage remote UE does not need to report measurement results for IDLE/INACTIVE relay candidates to gNB. Thus, it is better to include RRC state in the discovery message so that the remote UE can tell which relay(s) are to be measured for service continuity. | Pre117-e-offline |
| Qualcomm | O1.15 | This issue has been closed because we made below agreement:  Proposal 7: RAN2 confirm that the PC5-RRC message for notification is applied to both L2 and L3 relay. | Closed |
| Qualcomm | O1.04 | Agree with CATT. It is still not clear what is PC5-S message and its signalling details. And it is also not clear its relationship with PC5-RRC message (do we need duplicated functions?) | Pre117-e-offline |
| Qualcomm | New | Below issue seems to be missed:  Proposal 10: RAN2 to discuss whether remote UE can perform autonomous relay reselection in other cases besides SL RLF, e.g. upon relay UE’s handover and relay UE’s RLF. | Pre117-e-offline |
| vivo | V1.01 | Which indication message to be sent (i.e. PC5-RRC or PC5-S) from relay UE to remote UE when HO/cell reselection/RLF happens to relay UE.  As we agree both PC5-S and PC5-RRC message to be used to inform remote UE about relay UE’s HO/Cell reselection/RLF, it should be clarified how the relay UE decides which one to send.  Alternatives can be e.g. based on the cause to send that message (e.g. when RLF the relay UE send PC5-S, which was discussed in RAN2 #116bis-e but not agreed), based on whether there is PC5-RRC connection (e.g. use PC5-RRC message when there is RRC connection and otherwise PC5-S), or Relay UE implementation. | Pre117-e-offline |
| vivo | V1.02 | Remaining proposal in R2-2111382, about whether other cases for sending indication from relay UE to remote UE should be supported.  [12/19] Proposal 2: For the case when Uu RLF is recovered by relay UE, no new indication from relay UE to remote UE is introduced in Rel-17.  [14/19] Proposal 3-1: Relay UE Uu Recovery failure is not specified as a new case for the relay UE to send indication/message to remote UE.  [12/19] Proposal 3-2: Relay UE HO failure is not specified as a new case for the relay UE to send indication/message to remote UE.  [13/19] proposal 3-3: Relay UE Uu RRC reconfiguration failure is not specified as a new case for the relay UE to send indication/message to remote UE. | Pre117-e-offline |
| vivo | V1.03 | Whether ***SL-CBR-PriorityTxConfigList*** or ***SL-CBR-CommonTxConfigList*** is used in discovery dedicated pool.  In dedicated pool for discovery, the pool configuration can be different to communication pool, as all the message in that pool is discovery and the priority is 1, so if the discovery message transmitting parameters are adjusted due to CBR, it can be considered whether the IE ***SL-CBR-PriorityTxConfigList*** or ***SL-CBR-CommonTxConfigList***is used in dedicated discovery pool configuration. | CR rapporteur handled |
| vivo | V1.04 | Multiplexing impacts.  For the following agreement, it is based on the assumption that L2 ID for data/discovery are surely to be different, but we are actually waiting for SA2 confirmation, and if they indicate that the L2 IDs can be the same, then we need to reconsider whether we support multiplexing of data/discovery.  This can be a ‘conditional’ open issue.  *Proposal 2.1: [17/19] RAN2 assumes that discovery and data transmitted by a UE cannot be multiplexed into the same TB because they are always associated to different destination L2 IDs. RAN2 sends this assumption in an LS to SA2.* | Pre117-e-offline (Conditional needed based on SA2 reply LS) |

### Objective-3: QoS

|  |  |  |  |
| --- | --- | --- | --- |
| **Issue Index** | **Description** | **Suggested handling** | **Reason for add/remove this open issue** |
| O3.01 | [Unhandled issue from Pre-R2#116b summary] FFS on further enhancement of L2 relay QoS to support flow control | (pending CB decision) | Due to the proposal raised in QoS A.I. summary:  Proposal 1. RAN2 to discuss whether to support flow control in L2 U2N Relay.  We have the corresponding open issue  On the other hand, it is pending CB decision from 619  Proposal 1 (13/17) Control PDU is not supported in neither PC5 SRAP layer nor Uu SRAP layer in this release. |
| O3.02 | [Unhandled issue from Pre-R2#116b summary ]FFS on further enhancement of L2 relay QoS to support pre-emptive BSR | Pre117-e-offline | Due to the proposal raised in QoS A.I. summary  Proposal 2. RAN2 to discuss whether to support pre-emptive BSR transmission by a Relay UE to gNB.  We have the corresponding open issue |
| O3.03 | [Unhandled issue from Pre-R2#116b summary] FFS on further enhancement of L2 relay QoS to support bit rate recommendation | Pre117-e-offline | Due to the proposal raised in QoS A.I. summary  Proposal 3. RAN2 to discuss whether to support the bit rate recommendation procedure.  We have the corresponding open issue |
| O3.04 | [Unhandled issue from Pre-R2#116b summary] FFS on further enhancement of L2 relay QoS to support dedicated resources for relay traffic | Pre117-e-offline | Due to the proposal raised in QoS A.I. summary  Proposal 7. RAN2 to discuss the need of dedicated resources at Relay UE for relayed traffic.  We have the corresponding open issue |
| O3.05 | [Unhandled issue from Pre-R2#116b summary] FFS on QoS information report in SUI for SL discovery. | Pre117-e-offline | Due to the proposal raised in QoS A.I. summary  Proposal 5. RAN2 to discuss that UE does not need to report PC5 QoS information in SUI for SL discovery.  We have the corresponding open issue |
| O3.06 | [FFS point from R2#116 agreement] FFS signalling details for PC5 QoS configuration via Uu RRC signalling | CR rapporteur handled | Due to the following agreement made in RAN2 #116:  Proposal 2(20/21) (modified): [Easy] gNB directly configures relay UE for PC5 QoS configuration via Uu RRC signalling. And gNB also directly configures remote UE for PC5 QoS configuration via Uu RRC signalling. FFS signaling details.  We have the corresponding open issue |

#### Company input table

|  |  |  |  |
| --- | --- | --- | --- |
| Company | Issue Index | Description | Suggested handling |
| CATT | O3.01 | For the suggested handling, it should be Pre117-e-offline. Today’s CB decision from 619 is just for adaptation layer, it is not related to the FFS in QoS. | Pre117-e-offline |
|  |  |  |  |

### Objective-4: Service Continuity

|  |  |  |  |
| --- | --- | --- | --- |
| **Issue Index** | **Description** | **Suggested handling** | **Reason for add/remove this open issue** |
| O4.01 | [FFS point from R2#116b agreement] Confirm the working assumptions of supporting IDLE/INACTIVE relay UE in path switch. | Pre117-e-offline | Due to the following two WAs made in RAN2 #116b:  WA: The gNB can select a relay UE in any RRC state i.e., RRC\_IDLE/INACTIVE/CONNECTED as a target Relay UE when triggering the direct to indirect path switch procedure for the Remote UE by the Remote UE oriented solution, i.e. after receiving the path switch command, Remote UE establishes PC5 link with the Relay UE and sends HO complete message via the Relay UE which will trigger the Relay UE to enter CONNECTED state.  WA: UE capability for support by the remote UE of handover to idle/inactive UE.  We have the corresponding open issue |
| O4.02 | [FFS point from R2#116 agreement] Whether legacy PDCP behaviour can be reused for remote UE | Resolved and can be closed. | Due to the following agreement made in RAN2 #116:  No spec impact for ensuring UL PDCP lossless behaviour in indirect-to-direct path switch (assume it is a corner case or can be addressed by network implementation).  This open issue can be removed |
| O4.03 | [Unhandled issue from RAN2#116 At-meeting emails] Stopping condition of T304-like new timer for direct-to-indirect switching | Pre117-e-offline | Due to the proposal made in RAN2 #116 service continuity A.I.:  Proposal 14-2: FFS which option is taken as stop condition of the new T304-like timer in Remote UE:  ‐ Option1: Upon successfully sending RRCReconfigurationComplete (i.e., lower layer acknowledge is received from target relay);  ‐ Option2: Upon the PC5 unicast link is successfully established with the target Relay UE;  ‐ Option3: Upon reception of RRCReconfigurationCompleteSidelink message from target Relay UE;  ‐ Option4: Upon reception of an explicit indication from the target Relay UE.  We have the corresponding open issue |
| O4.04 | [FFS point from R2#116 agreement]Left issue on measure configuration and reporting (e.g., which ID to report for serving cell of relay UE (NCGI/NCI/PCI), allow/black-list configuration) | Resolved and can be closed. | Due to the following agreement made in RAN2 #116b:  Allow-list/block-list of relay UE during direct-to-indirect path switch is not introduced.  If RAN sharing is determined to be supported, relay UE’s cell ID included in measurement report is NCGI; otherwise it is NCI.  This open issue can be removed |
| O4.05 | [FFS point from R2#116 agreement] Confirm the working assumption to use reconfigurationWithSync to indicate direct-to-indirect path switch | CR rapporteur handled | Due to the working assumption made in RAN2#116：  Working assumption:  The existing reconfigurationWithSync is used to indicate direct-to-indirect path switch to Remote UE.  We have the corresponding open issue |
| O4.06 | [FFS point from R2#116 agreement]FFS on how to configure the threshold and use of SD-RSRP | Pre117-e-offline | Due to the following agreement made in RAN2 116:  Agreement:  Proposal 4 (modified): When SL-RSRP of the serving relay is not available, SD-RSRP is used as the SL measurement quantity. FFS how to measure SD-RSRP and if there would be a separate threshold for this case.  We have the corresponding open issue |

#### Company input table

|  |  |  |  |
| --- | --- | --- | --- |
| Company | Issue Index | Description | Suggested handling |
| Apple | A3.01 | How relay UE and gNB handling the Src L2 ID change issue in service continuity procedures (e.g, relay UE ID reporting) and how gNB to deal with Src L2 ID collision issue. | Pre117-e-offline |
| Apple | A3.02 | How to configure the relay UE and remote UE for PC5 RLC bearer used for the forwarding of RRCReconfigurationComplete message in HO procedure of direct-to-indirect switch | Pre117-e-offline |
| Apple | A3.03 | When the new T304-like timer in Remote UE stops, the direct-to-indirect path switch may still fail because the IDLE/INACTIVE relay UE may still fail to establish the correct Uu hop of indirect path (e.g., due to cell reselection), How remote UE/gNB can identify and process this Handover failure? | Pre-117-e-offline |
| vivo | O4.03 | Issue itself is fine. However, with the next meeting being the last meeting, stage-2 level discussion only is not sufficient. For example, it makes not no sense to only mention “i.e., lower layer acknowledge is received from target relay” as in the current Option 1. We need to make it crystal-clear what such lower layer Ack actually is, and whether any Spec impacts is expected for such operations (e.g. adding normative texts or just NOTE). Note that such details cannot be simply left to CR Rapp handling, as the issue on which layer to Ack involves functional aspect. | [Unhandled issue from RAN2#116 At-meeting emails] Stopping condition of T304-like new timer for direct-to-indirect switching (including all stage-3 details like which specific layer’s ACK is needed, which Spec impacts is expected, etc.) |
| vivo | O4.06 | Besides what the current issue includes, we think we need to clarify the intended behaviour on how the Remote UE measures SD-RSRP in CONNECTED, i.e. up to UE implementation, always measure or up to NW configuration. | [FFS point from R2#116 agreement] FFS on how to configure the threshold and use of SD-RSRP (including intended CONNECTED Remote UE behaviour on whether/when to measure SD-RSRP measurement, i.e. up to UE implementation, always measure or up to NW configuration) |
| Qualcomm | O4.03 | For vivo’s comment on what is lower layer acknowledgement, we think it is RLC ACK. Please note that RLC acknowledgement is always available because *RRCReconfigurationComplete* message is specified to use RLC AM in TS 38.331. |  |
| Qualcomm | New | We think a lot of issues on how to support relay UE in IDLE/INACTIVE state need to conclude in next RAN2 meeting:  1) How remote UE to handle the case that relay UE’s L2 ID has changed during the time gap b/w MR report and path switch execution  2) How remote UE to handle the case that relay UE reselects to another cell during the time gap  3) If relay UE failed to enter CONENCTED state upon reception of RRCReconfigurationComplete (e.g. rejected by target gNB), how remote UE and relay UE to handle it? What is the required signaling change?  4) If remote UE local ID is included in path switch command, then target UE is not aware of it when it receives the remote UE’s RRCReconfigurationComplete message with remote UE local ID in SRAP header (which is different from agreed RRC establishment procedure). How relay UE can handle this case?  For 1), 2), 3), even if majority prefer to treat it as corner case (although we disagree they are corner case), it indeed may happen. So, at least RAN2 need to specify corresponding failure handling behaviour. | Pre117-e-offline |
| Qualcomm | New | We agreed that remote UE’s L2 ID is included in path switch command. However, in direct to indirect path switch, remote UE doesn’t report its L2 ID to gNB (current agreement is only relay UE to report its L2 ID), and so gNB can’t include its L2 ID in path switch command. We think some signaling gap is there. | Pre117-e-offline |

### Objective-5: Adaptation Layer

|  |  |  |  |
| --- | --- | --- | --- |
| **Issue Index** | **Description** | **Suggested handling** | **Reason for add/remove this open issue** |
| O5.01 | [FFS point from R2#116 agreement]Data PDU format for adaptation layer over Uu hop and PC5 hop. | Resolved and can be closed | Due to the following agreement and WA made in RAN2#116bis:  The size of remote UE Uu RB ID is of 5 bits in the adaptation layer header.  Remote local UE ID is 8 bits.  Remote UE ID is always present in PC5 adaptation layer header. RAN2 does not pursue procedural spec impact for handling it beyond P6 of R2-2200943. To be revisited this meeting in light of any conclusion on P6.  This open issue can be removed and updated to 02 and 03. |
| O5.02 | [Unhandled issue from RAN2#116b summary] Further RRC configuration details, e.g., the adaptation layer field configuration for remote UE, dependent on the field for PC5 hop | (pending CB decision) | Due to the proposal made in adaptation layer A.I. summary  Proposal 6 (discussion) If remote UE local ID is present in PC5 adaption layer header, RAN2 to down select the following options based on which remote UE can obtain the local ID from the gNB:  a. Option 1: via Uu RRC messages, including RRCSetup/RRCReconfiguration/RRCResume/RRCReestablishment  b. Option 2: Via SRAP header of RRCResume / RRCReestablishment  c. Option 3: relay UE forwards the local ID to remote UE via PC5 RRC message  We have the corresponding open issue |
| O5.03 | [Unhandled issue from RAN2#116b summary] Whether control PDU for adaptation layer is needed, and if yes, what is the format. | (pending CB decision) | Due to the proposal made in adaptation layer A.I. summary  Proposal 3 (discussion) Control PDU is not supported for the adaptation layer in this release.  We have the corresponding open issue |
| O5.04 | [FFS point from R2#116b agreement] Confirm the working assumption of length of remote local UE ID. | Pre117-e-offline | Due to the working assumption made in RAN2 #116b:  Working assumption:  Remote local UE ID is 8 bits.  We have the corresponding open issue. |
| O5.05 | [FFS point from R2#116b agreement] Confirm the working assumption of presenting remote UE ID in PC5 adaptation layer header. | Pre117-e-offline | Due to the working assumption made in RAN2 #116b:  Working assumption:  Remote UE ID is always present in PC5 adaptation layer header. RAN2 does not pursue procedural spec impact for handling it beyond P6 of R2-2200943. To be revisited this meeting in light of any conclusion on P6.We have the corresponding open issue. |
| O5.06 | [Unhandled issue from RAN2#116b summary] FFS on the configuration of LCID for PC5 RLC channel of Uu SRB0. | Pre117-e-offline | Due to the proposal made in adaptation layer A.I. summary  Proposal 9 (discussion) RAN2 to discuss whether LCID for PC5 RLC channel is to be allocated by UE as in R16 or specified for Uu SRB0.  We have the corresponding open issue |
| O5.07 | [EN from running-CR of 38.351] The length of R-bit is to be decided. | CR rapporteur handled | Due to the following EN in 38.351 running CR:  Editor’s Note: The length of R-bit is to be decided.  We have the corresponding open issue |
| O5.08 | [FFS point from R2#116 agreement] SUI content to enable reporting the remote UE’s L2ID via SUI message to gNB | CR rapporteur handled | Due to the following agreement made in RAN2 #116:  Proposal 15 (modified): Relay UE is configured by gNB with the local/temp remote UE ID to be used in adaptation layer by RRCReconfiguration message, after reporting the remote UE’s L2ID via SUI message to gNB and before forwarding the first SRB0 UL message of the remote UE. FFS if impact to the SUI contents is needed to enable this.  We have the corresponding open issue. |

#### Company input table

|  |  |  |  |
| --- | --- | --- | --- |
| Company | Issue Index | Description | Suggested handling |
| CATT | O5.06 | For the suggested handling part, I think it should be (pending CB decision,619 easy agreement), right? | (pending CB decision) |
| vivo | O5.06 | We already concluded how the PC5 LCID value for Uu SRB0 should be determined (specified). Then we can further discuss how the PC5 LCID for SRB1, SRB2 and DRBs should be configured, if this is not handled in the RRC running CR discussion. This is a left-over from Pre-116bs discussion, and two alternatives (for SRB2 and DRBs) are reusing gNB configuration as in Uu and reuse UE autonomous assignment as in R16 NR SL. SRB1 may be separately discussed, as it can sometimes use default configuration, sometimes use gNB configuration. | [Unhandled issue from RAN2#116b summary] FFS on the configuration of LCID for PC5 RLC channel of Uu SRB0SRB1, SRB2 and DRBs. |
| Qualcomm | O5.06 | Agree with vivo’s comment. It has been captured as one of summary proposal:  [Proposal 10 (low priority) RAN2 to discuss whether the specified PC5 RLC channel for Uu SRB0 should be RLC UM mode.](#_Toc93052899)  [Proposal 11 (low priority) Regarding how to allocate LCID for PC5 RLC channel of remote UE Uu RBs including SRB2 and DRBs, RAN2 to down select the following options. FFS on SRB1](#_Toc93052900)  [a. Option 1:  allocated by UE same as in R16 SL](#_Toc93052901)  [b. Option 2: up to gNB dedicated configuration same as in Uu](#_Toc93052902) | Pre117-e-offline |

### Objective-6: CP Procedure

|  |  |  |  |
| --- | --- | --- | --- |
| **Issue Index** | **Description** | **Suggested handling** | **Reason for add/remove this open issue** |
| O6.01 | [FFS point from R2#116 agreement]Uu RLC configuration for SRB0/1 message | Resolved and can be closed | Due to the agreement in 116b:  RAN2 not pursue default or fixed Uu RLC configuration for SRB0 messages and SRB1 messages of RRCReestablishment and RRCresume for remote UE, i.e. rely on network configuration.  This issue is solved and can be closed |
| O6.02 | [Unhandled issue from RAN2#116b summary]Detailed stage-3 signaling format on paging forwarding message from relay UE to remote UE | (pending CB decision) | Due to the proposal made in CP A.I. summary:  Recommendation 2-1: RAN2 further discuss to select between option-1) Paging message sent over PC5-RRC uses PagingRecordList IE and rely on relay UE implementation to select between either sending the entire paging record received by the relay UE or sending only information relevant to that remote UE, option-2) Sending the entire PagingRecordList received by the relay UE, and option-3) sending only PagingRecord relevant to that remote UE.  Recommendation 2-2: RAN2 further discuss the PC5-RRC signalling content, which is used for Relay UE in RRC\_CONNECTED configured with paging CSS, to determine whether to monitor POs for a remote UE, between 1) using explicit signalling indicating RRC-state of remote-UE, 2) not using explicit signalling indicating RRC-state of remote-UE.  We have the corresponding open issue |
| O6.03 | [Unhandled issue from RAN2#116b summary] Cause value setting for relay UE access due to remote UE traffic | (pending CB decision) | Due to the proposal made in CP A.I. summary:  Recommendation 3-1: RAN2 further discuss to select between using existing or new cause value for relay UE to establish/resume an RRC connection due to a connection of remote UE, without introducing new AS-layer signalling from remote UE to relay UE.  We have the corresponding open issue |
| O6.04 | [Unhandled issue from RAN2#116b summary]Whether/how to support minimum/essential SI | (pending CB decision) | Due to the proposal made in CP A.I. summary:  Recommendation 1-1: For SIB-update in case of RRC\_IDLE/RRC\_INACTIVE remote UE(s), RAN2 further discuss to select between option-1) to forward either all updated SI, option-2) only the SI(s) requested by remote UE(s), or option-3) leave it to relay-UE implementation to select between option-1 or option-2. RAN2 do not pursue further work on enhance the SI-request signalling by remote UE.  Recommendation 1-2: For SIB-update in case of RRC\_CONNECTED remote-UE, no short message forwarding by relay UE, and RAN2 discuss to select between option-1) rely on network implementation to send either all updated SIBs or only the updated SIBs requested by remote UE, and option-2) rely on relay UE to send all updated SIB to remote UE.  Recommendation 1-3a (modified): [wrt forwarding of cellAccessRelatedInfo] RAN2 further discuss to select 1) rely on SA2 to decide which discovery message (primary message or the additional information message), or 2) decide it in RAN2 (if so, discuss to make the selection). FFS on whether cellBarred should be included as well.  Recommendation 1-4: For SIB1, RAN2 discuss how to deliver it, between 1) using discovery message, reuse the conclusion for cellAccessRelatedInfo, or 2) using PC5-RRC message, in the same way as for other SIBs.  The relay UE always forwards SIB1 if SIB1 changes at least for remote UE in idle/inactive (FFS RRC\_CONNECTED). The remote UE always is considered to request SIB1 if it has not received it directly from the gNB; FFS if the request is explicit or implicit.  FFS (for further offline discussion this meeting) unsolicited SIB1 forwarding or whether the request-based solution is always used.  And due to the proposal in R2-2201508 related 38.331 stage-3 open issue:  Proposal 6: RAN2 to confirm that the whole MIB is not forwarded to Remote UE, while cellBarred is forwarded to Remote UE in discovery message.  We have the corresponding open issue. |
| O6.05 | [FFS point from R2#116 agreement] Handling of new T30x-like timers that used by SL-relay scenario | Resolved and can be closed | Due to the agreement made in RAN2 #116b:  For these timers, on top of existing stop conditions as for the legacy timers, add extra stop condition for relayed scenario, i.e., “the (re)selected relay becomes unsuitable” for T300-like timer, “relay (re)selection” for T319-like timer, and “the (re)selected relay becomes unsuitable” for T301-like timer. FFS whether the legacy stop-condition of “when the selected cell becomes unsuitable” is still applicable to T301.  The open issue can be removed. |
| O6.06 | [FFS point from R2#116b agreement] FFS on SIBs acquiring of remote UE when it is in RRC\_CONNECTED state. | (pending CB decision) | Due to the agreement made in RAN2 #116b:  For SIBs that have been requested by the remote UE from the relay UE, the relay UE forwards them in case of SIB update at least for remote UE in idle/inactive (FFS RRC\_CONNECTED).  The relay UE always forwards SIB1 if SIB1 changes at least for remote UE in idle/inactive (FFS RRC\_CONNECTED). The remote UE always is considered to request SIB1 if it has not received it directly from the gNB; FFS if the request is explicit or implicit.  We have the corresponding open issue. |
| O6.07 | [Unhandled issue from RAN2#116b summary] FFS on the way of C-RNTI value delivery. | (pending CB decision) | Due to the proposal made in CP A.I. summary:  Recommendation 4-4: RAN2 discuss whether to deliver C-RNTI value via RRCRelease message.  We have the corresponding open issue. |
| O6.08 | [Unhandled issue from RAN2#116b summary] FFS on how to support RAN sharing in RAN2. | (pending CB decision) | Due to the proposal made in CP A.I. summary:  Recommendation 4-1: RAN2 agree the support of RAN sharing scenario for L2 UE-to-Network relay when the remote UE registers to the same PLMN as the relay UE. For the RAN sharing scenario for L2 UE-to-Network relay when the remote UE registers to the different PLMN as the relay UE, RAN2 further discuss to conclude on whether major additional RAN2 specification work is needed.RAN2 send LS to SA2 (and SA3 and RAN3) about RAN2 conclusion.  We have the corresponding open issue. |
| O6.09 | [FFS point from R2#116 agreement] FFS on the signalling for the U2N Relay UE to determine to monitor POs for a U2N Remote UE | (pending CB decision) | Due to the agreement made in RAN2 #116:  Proposal 1 (modified): Relay UE in RRC\_CONNECTED, if configured with paging CSS, can determine whether to monitor POs for a remote UE based on PC5-RRC signalling received from the remote UE. FFS on the signalling contents and for the case of idle/inactive relay UE. [18/23]  We have the corresponding open issue. |
| O6.10 | [EN from running-CR of 38.304] U2N Relay UE behaviour on how to receive short messaage*(i.e., only in its POs or also on the POs of the U2N Remote UE)* | CR rapporteur handled | Due to the EN in 38.304 running CR:  Editor’s Note: U2N Relay UE behaviour on how to receive short message (i.e., only in its POs or also on the POs of the U2N Remote UE) to be capture once discussed in RAN2.  We have the corresponding open issue. |
| O6.11 | [EN from running-CR of 38.304] Whether to capture SIB forwarding by the U2N Relay UE upon reception of short message. | CR rapporteur handled | Due to the EN in 38.304 running CR:  Editor’s Note: Whether to capture SIB forwarding by the U2N Relay UE upon reception of short message is FFS.  We have the corresponding open issue. |
| O6.12 | [Open issue from tdoc R2-2201508] FFS on the configuration of Uu RLC bearer for relaying service | CR rapporteur handled | Due to the proposal in R2-2201508 related 38.331 stage-3 open issue:  Proposal 1: RAN2 to select one alternative to configure Uu RLC bearer for relaying service (i.e. the bearers associated with Uu SRAP):  ‐ Option 1: reusing existing RLC-BearerConfig, by handling the servedRadioBearer as   1a: modifying the condition as NW will only configure the field to a configured SRB or DRB i.e. non-relaying RLC channel.   1b: L2 U2N Relay UE ignoring the field.  ‐ Option 2: introducing new RLC configuration.  We have the corresponding open issue |
| O6.13 | [Open issue from tdoc R2-2201508] FFS on the terminology of Uu/PC5 RLC channel would be used for L2 U2N Relay operation. | CR rapporteur handled | Due to the proposal in R2-2201508 related 38.331 stage-3 open issue:  Proposal 2: The terminology of Uu/PC5 RLC channel would be used for L2 U2N Relay operation.  We have the corresponding open issue. |
| O6.14 | [Open issue from tdoc R2-2201508] FFS on the handling of *useT312* | Pre117\_e offline | Due to the proposal in R2-2201508 related 38.331 stage-3 open issue:  Proposal 3: useT312 can be configured to event Y (on condition that no other spec impact), but cannot be configured to event X.  We have the corresponding open issue. |
| O6.15 | [Open issue from tdoc R2-2201508 ]FFS on whether to use the same message (Remote InformationSidelink) for SIB request and Paging information provision, and same message (UuMessageTransferSidelink) for SIB forwarding and Paging delivery | CR rapporteur handled | Due to the proposal in R2-2201508 related 38.331 stage-3 open issue:  Proposal 4: RAN2 to confirm that the same message (RemoteInformationSidelink) is used for SIB request and Paging information provision.  Proposal 5: RAN2 to confirm that the same message (UuMessageTransferSidelink) is used for SIB forwarding and Paging delivery.  We have the corresponding open issue. |
| O6.16 | [FFS point from R2#116 agreement] FFS value and name for T300-like, T301-like, T319-like | CR rapporteur handled | Due to the agreement made in RAN2 #116:  Proposal 17: Remote UE uses different timers (FFS: value and/or name) for access (T300-like), resume (T319-like) and re-establishment (T301-like) compared to those for legacy Uu procedures [23/23]  We have the corresponding open issue. |
| O6.17 | [Unhandled issue from RAN2#116b summary]Whether network use RRCReconfiguration, to carry remote UE paging message to the RRC\_CONNECTED relay | (pending CB decision) | Due to the proposal made in CP A.I. summary:  Recommendation 2-5: Network uses RRCReconfiguration, to carry remote UE paging message to the RRC\_CONNECTED relay UE in dedicated fashion.  We have the corresponding open issue |

#### Company input table

|  |  |  |  |
| --- | --- | --- | --- |
| Company | Issue Index | Description | Suggested handling |
| CATT | O6.09 | I think the CB decision is just related to relay UE in RRC\_CONNECTED. But for latter FFS part(and for the case of idle/inactive relay UE. [18/23]), we still need further discussion, right? | Pre117\_e offline |
| vivo | V6.01 | RAN2 to discuss the RRC Release procedure of Remote UE or Relay UE.  To align with SA2 ( 6.5.2.1.2 of TS 23.304), it should be guaranteed that when the Remote UE is released to RRC IDLE or RRC INACTIVE, the PC5 link is kept i.e., should not be released by the NW. | Handle by Pre117-e-offline. |
| vivo | V6.02 | For relay specific link, RAN2 to discuss whether and how to use Rel-16 *RRCReconfigurationSidelink* message/procedure (with the following fields) by Remote UE or Relay UE. Confirm if there is any specification impact.  - *sl-MeasConfig* - *sl-CSI-RS-Config* - *sl-LatencyBoundCSI-Report*  - *slrb-ConfigToAddModList* - *slrb-ConfigToReleaseList* - *sl-ResetConfig* | Handle by Pre117-e-offline. |
| vivo | V6.03 | For SI delivery and Paging of Remote UE, the following Editor Notes in running CR 38.331 should be addressed.  *Editor’s note: Updates would be needed if it is conclude two separate messagas for paging information and SIB request at later meetings.*  *Editor’s note: Updates would be needed if it is conclude two separate messagas for paging and SIB forwarding at later meetings.* | Handle by Pre117-e-offline. |
| Qualcomm | New | It is not clear whether Adaptation layer related configuration is stored as remote UE’s Inactive AS context.  And it is not clear whether Adaptation layer related configuration is stored as relay UE’s Inactive AS context. | Pre117\_e offline |
|  |  |  |  |

### UE Capability

[Since all the issues are up to CB decision, this section would be in pending state and to be updated after CB decision]

# Reference

1. RP-212819, revised WID on SL Relay, OPPO, CMCC