**3GPP TSG-RAN WG2 Meeting #115e R2-21XXXX**

**E-Meeting, 9th - 27th Aug 2021**

**Source: Xiaomi**

**Title:****Report of [Offline-616]**

**Agenda Item:** **8.7.2.1**

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

# Introduction

This contribution is to discuss following offline discussion.

* [AT115-e][616][Relay] Proposals from control plane summary (Xiaomi)

 Scope: Briefly discuss P1/P4/P5 and P8/P9/P10 of R2-2108824 and attempt to reach consensus. Also confirm if P18 is agreeable.

 Intended outcome: Report to comeback session, in R2-2108948

 Deadline: Tuesday 2021-08-24 2000 UTC

# Discussion

## 2.1 Uu RLC configuration for remote UE’s SRB0/1

Regarding Uu RLC configuration for remote UE’s SRB0 message, companies’ views are observed as following,

Option 1, Fixed/specified [1], [6], [33], [36]

Option 2, Default [7], [9], [13]

Option 3, NW configured [4], [7], [9], [13], [15], [20], [26]

Proponents of option 1 prefer the same principle as PC-5 RLC configuration should be reused for Uu. Proponents of option 3 believes the NW is able to provide Uu RLC configuration since relay UE shall enter CONNECTED to relay remote UE’s SRB0 message. Meanwhile, [7], [9] and [13] also supports default configuration in case NW doesn’t provide dedicated configuration. There is no clear majority view. P1 in [39] propose RAN2 to discuss following question,

**Question 1: which Uu RLC configuration is used for remote UE’s SRB0 message.**

**Option 1, Fixed/specified.**

**Option 2, Default,**

**Option 3, NW configured.**

|  |  |  |
| --- | --- | --- |
| Company | Option | Comments |
| Apple | Option 1 | We think it is simple for relay UE implementation to just use fixed/specified option for SRB0 in both PC5 and Uu hop. |
|  |  |  |
|  |  |  |
|  |  |  |

Regarding Uu RLC configuration for remote UE’s SRB1 message, companies’ views are observed as following,

Option 1, Fixed/specified [33]

Option 2, Default [1], [6], [7], [9], [13], [36]

Option 3, NW configured [4], [7], [9], [13], [15], [20], [26], [36]

Only one company prefers fixed/specified configuration. 6 companies prefer to use default configuration. 8 companies prefer to use NW configured configuration. RAN2 had agreed Uu RLC configuration for remote UE’s SRB1 message such as RRCResume and RRCReestablishment message could be (re-)configured by NW via dedicated signalling. It’s still FFS whether default configuration is supported. P4 in [39] propose RAN2 to discuss following question,

**Question 2: Do you agree default Uu RLC configuration for remote UE’s SRB1 message is supported.**

|  |  |  |
| --- | --- | --- |
| Company | Yes/No | Comments |
| Apple | Yes | It can be overridden by network configuration |
|  |  |  |
|  |  |  |

[7] further discuss which RLC configuration is used for RRCReconfigurationComplete in path switch to indirect path. P5 in [39] propose RAN2 to discuss following question,

**Question 3: Do you agree dedicated signalling is used for the PC5 RLC and Uu RLC configuration of remote UE SRB1 for RRCReconfigurationComplete in path switch to indirect path.**

|  |  |  |
| --- | --- | --- |
| Company | Yes/No | Comments |
| Apple | Yes  | This can be part of RRCReconfiguration message to the remote UE. |
|  |  |  |
|  |  |  |
|  |  |  |

## 2.3 Sharing of ID/DRX information for paging forward

In RAN2 114 meeting, it’s agreed that When Relay UE in RRC IDLE/RRC INACTVE and Remote UE in RRC IDLE/RRC INACTIVE, the Relay UE monitors paging occasions of its PC5-RRC connected Remote UE(s). However, it’s FFS how relay UE obtain remote UE’s paging occasions. Many companies support remote UE provides UE ID, i.e. 5G-S-TMSI/I-RNTI to relay UE. Relay UE could decode paging message to derive the UE ID and forward the paging message accordingly. P8/P9 in [39] propose RAN2 to discuss following question,

**Question 4: Do you agree IDLE/INACTIVE remote UE provides 5G-S-TMSI/I-RNTI to IDLE/INACTIVE relay UE.**

|  |  |  |
| --- | --- | --- |
| Company | Yes/No | Comments |
| Apple | Yes | As SA3 has confirmed there is no security concern on exposing the 5G-S-TMSI/I-RNTI, it is OK to share those with relay UE. |
|  |  |  |
|  |  |  |
|  |  |  |

**Question 5: Do you agree IDLE/INACTIVE Relay UE decodes received paging message to derive the 5G-S-TSMI/I-RNTI and forward the paging message accordingly.**

|  |  |  |
| --- | --- | --- |
| Company | Yes/No | Comments |
| Apple |  Yes |  |
|  |  |  |
|  |  |  |
|  |  |  |

Relay UE shall be aware of remote UE’s PO to perform monitoring. [2], [8], [12], [27] propose to provide remote UE’s DRX cycle to relay UE. [21] propose to provide remote UE’s PO to relay UE. [30] believes the PO of remote UE is configured via SIB. However, according to 38.304 specification, the PO is calculated in MAC and the essential parameters, e.g. DRX cycle, may come from SIB or upper layer. It’s unclear how SIB could configure remote UE’s PO. P10 in [39] propose RAN2 to discuss following question,

**Question 6: Do you agree IDLE/INACTIVE remote UE provide its Uu DRX cycle T to IDLE/INACTIVE relay UE.**

|  |  |  |
| --- | --- | --- |
| Company | Yes/No | Comments |
| Apple | Yes |  |
|  |  |  |
|  |  |  |
|  |  |  |

## 2.4 Connection establishment for relay and remote UE

If both remote UE and relay UE are not in CONNECTED, both UEs need to enter CONNECTED for service transmission. [9] assumes remote UE and relay UE performs connection establishment/resume independently. [33] propose to discuss combined relay UE and remote UE’s RRC connection establishment/assumption. Rapporteur understands second option may require additional impact in RAN1, since current msg3 is not enough for two RRC messages. Furthermore, in TR, it’s agreed if the Relay UE had not started in RRC\_CONNECTED, it would need to do its own connection establishment upon reception of a message on the default L2 configuration on PC5. P10 in [39] propose RAN2 to discuss following question,

**Question 7: Do you agree, as baseline, Remote UE and relay UE performs connection establishment/resume independently, i.e. relay UE shall enter CONNECTED to be able to forward remote UE’s initial RRC messages.**

|  |  |  |
| --- | --- | --- |
| Company | Yes/No | Comments |
| Apple | Yes |  |
|  |  |  |
|  |  |  |
|  |  |  |

# Report

Following proposals are made,

# Reference

[1] R2-2106989 Control Plane Procedures of L2 Relay CATT

[2] R2-2107039 Discussion on Control Plane Aspects for L2 Relay OPPO

[3] R2-2107044 Stage 2 level procedure for Connection Establishment MediaTek Inc.

[4] R2-2107103 Further discussion on RRC connection management of L2 U2N relay Qualcomm Incorporated

[5] R2-2107104 Further discussion on paging and SIB forwarding in L2 U2N relay Qualcomm Incorporated

[6] R2-2107176 Remaining issues on RRC connection management Samsung Electronics GmbH

[7] R2-2107231 Discussion on RRC connection management for L2 sidelink relay Huawei, HiSilicon

[8] R2-2107232 SI forwarding and paging for L2 sidelink relay Huawei, HiSilicon discussion

[9] R2-2107273 Connection Establishment Procedure for L2 UE to NW Relays InterDigital

[10] R2-2107274 Paging Procedures for L2 UE to NW Relays InterDigital discussion

[11] R2-2107275 SI Forwarding for L2 UE to NW Relays InterDigital discussion

[12] R2-2107304 Discussion on paging forwarding for a remote UE SHARP Corporation discussion

[13] R2-2107306 Remaining issues of L2 Relay connection management Intel Corporation

[14] R2-2107367 Discussion on control plane procedures for L2 U2N relay Spreadtrum Communications

[15] R2-2107541 Configuration of Uu Interface for Sidelink Relay Futurewei

[16] R2-2107622 Remaining issues on SIB forwarding for IDLE/INACTIVE remote UE Apple

[17] R2-2107623 Unified Access Control on Relay UE Apple

[18] R2-2107625 RNA Update via L2 UE-to-NW relay Apple

[19] R2-2107709 Paging delivery via L2 Relay in RRC\_CONNECTED Samsung

[20] R2-2107757 Way forward for L2 U2N Remote UE SRB0 SRB1 configuration vivo

[21] R2-2107966 Discussion on SI and paging delivery Xiaomi communications

[22] R2-2107967 Discussion on connection control Xiaomi communications

[23] R2-2108007 SI acquisition, CN Registration and RNAU Lenovo Mobile Com. Technology

[24] R2-2108008 Monitoring Paging by a U2N Relay Lenovo Mobile Com. Technology

[25] R2-2108060 L2 relay control plane procedures Sony discussion

[26] R2-2108145 Consideration on the connection management of SL relay ZTE, Sanechips

[27] R2-2108146 Consideration on the system information acquisition and paging in SL relay ZTE, Sanechips

[28] R2-2108153 SIB Delivery & Paging for Remote UE LG Electronics Inc

[29] R2-2108154 Connection Establishment LG Electronics Inc

[30] R2-2108192 Discussion on paging and SIB handling for L2 sidelink relay Ericsson

[31] R2-2108195 Discussion on RRC connection management procedures for L2 SL relay Ericsson

[32] R2-2108414 Discussion on SI and paging forwarding

[33] R2-2108458 Discussion on RRC connection establishment of remote UE in L2 U2N relay Nokia, Nokia Shanghai Bell

[34] R2-2108462 Support of idle mode mobility for remote-UE in SL UE-to-Nwk relay Nokia, Nokia Shanghai Bell

[35] R2-2108510 Control plane procedure CMCC

[36] R2-2108250 Sidelink Relay Uu RLC for Remote UE and Adaptation Layer Design Beijing Xiaomi Mobile Software

[37] R2-2108156 Relay reselection when Relay UE performs HO LG Electronics Inc

[38] R2-2108144 Further discussion on Relay selection ZTE, Sanechips

[39] R2-2108824 Summary of AI 8.7.2.1 Xiaomi Technology