**3GPP TSG RAN WG2 Meeting #116-e R2-211xxxx  
Electronic Meeting, 1st - 12th November 2021**

**Agenda item: 8.7.1**

**Source: CATT**

**Title: Summary [AT116-e][620][Relay] Reply LS to SA2 on discovery and relay (re)selection (CATT)**

**Document for: Discussion and Decision**

# Introduction

This is email discussion for below offline discussion:

* [AT116-e][620][Relay] Reply LS to SA2 on discovery and relay (re)selection (CATT)

Scope: Discuss the questions in R2-2111236 and draft a reply, taking into account decisions of this meeting.

Intended outcome: Approvable LS and report

Deadline: Thursday 2021-11-11 0100 UTC

The above email discussion is divided in two phases:

* **Phase I:** Companies are invited to provide feedback on the questions of this email discussion by 9th Nov 01:00am UTC.
* **Phase II:** Rapporteur submits a summary and proposals based on the feedback with draft LS reply, and companies can comment on the summary and draft LS reply by 11th Nov 01:00am UTC.

# Discussion

## Q1 of SA2 LS

1) SA2 has assumed 5G MOCN architecture is supported for 5G ProSe Layer-2 UE-to-Network Relay as described in clause 4.2.7.2 of TS 23.304, and would like to ask RAN2 to confirm this assumption. SA2 has also realized PLMN IDs are required (before Layer-2 link has been established) for the Layer-2 Remote UE to perform PLMN selection as well as Relay selection under 5G MOCN architecture, and would like to know whether PLMN IDs are forwarded by Layer-2 UE-to-Network Relay to Layer-2 Remote UE via the AS layer message.

Since the 5G MOCN architecture for 5G ProSe Layer-2 UE-to-Network Relay described in clause 4.2.7.2 of TS 23.304 supports RAN sharing, during the online session, some company proposed to discuss whether RAN sharing is supported for the NG-RAN node of Layer-2 UE-to-Network Relay firstly.



**Figure-1 5G ProSe Layer-2 UE-to-Network Relay reference architecture (Figure 4.2.7.2-1 in TS 23.304)**

**Question 1-1: Do you think RAN sharing can be supported for the NG-RAN node for Rel-17 Layer-2 UE-to-Network Relay? Please give your comments.**

|  |  |  |
| --- | --- | --- |
| **Companies** | **Yes/No** | **Comments** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**Question 1-2: If answered “Yes” on question 1-1, do companies think RAN2 can confirm 5G MOCN architecture is supported for 5G ProSe Layer-2 UE-to-Network Relay as described in clause 4.2.7.2 of TS 23.304?**

|  |  |  |
| --- | --- | --- |
| **Companies** | **Yes/No** | **Comments** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

Both [2] and [3] point out that PLMN IDs specified in Q1 is focused on the non-serving case since the serving NCGI has been agreed to be included in discovery message already in SA2 [1].

Furthermore, it was clarified that the remote UE needs to acquire the non-serving PLMN IDs before PC5 link establishment as indicated by SA2. In [2], two solutions on how to deliver the non-serving PLMN IDs were given as below:

- RRC container in discovery message

- Broadcast PC5-RRC

In [3], it is proposed to include the PLMN IDs in Relay UE’s discovery message.

**Question 1-3: If answered “Yes” on question 1-1, which option do companies prefer on how to deliver the non-serving PLMN IDs to the remote UE? Please give your comments.**

* **Option 1: Discovery message, detail is decided by SA2.**
* **Option 2: RRC container in discovery message.**
* **Option 3: PC5-RRC broadcast message.**
* **Option 4: Others (if any, please give the detailed description).**

|  |  |  |
| --- | --- | --- |
| **Companies** | **Option** | **Comments** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

## Q2 of SA2 LS

2) SA2 has realized TAI is needed for 5G ProSe Layer-2 Remote UE to determine the type of initial access message (Mobility Registration Update or Service Request), and would like to ask whether TAI is forwarded by 5G ProSe Layer-2 UE-to-Network Relay to the 5G ProSe Layer-2 Remote UE via the AS layer message.

Both [2] and [3] considered that remote UE can acquire TAI after PC5 connection establishment. TAI included in SIB1 which is forwarded by 5G ProSe Layer-2 UE-to-Network Relay to the 5G ProSe Layer-2 Remote UE via the PC5-RRC message is sufficient.

**Question 2-1: Do companies agree that TAI can be forwarded by Relay UE to the Remote UE via PC5-RRC message? Please give your comments.**

|  |  |  |
| --- | --- | --- |
| **Companies** | **Yes/No** | **Comments** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

## Q3 of SA2 LS

|  |
| --- |
| 3) SA2 has discussed the Editor’s Note in TS 23.304 clause 6.4.3.6:  Editor’s Note Whether the Layer-2 link modification procedure is also applicable to ProSe Communication via 5G ProSe Layer-2 UE-to-Network Relay requires cooperation with RAN2.  SA2 understands that during the Layer-2 link establishment procedure the 5G ProSe Layer-2 UE-to-Network Relay and 5G ProSe Layer-2 Remote UE do not interact with the QoS Info (the information about PC5 QoS Flows), meaning there is no PC5 QoS Flow established in the PC5 unicast link between Layer-2 UE-to-Network Relay and Layer-2 Remote UE and the QoS handing is therefore setup by RAN. SA2 would like to ask as the Layer-2 link modification procedure is used to add/modify/remove PC5 QoS Flow(s) in the PC5 unicast link, whether this procedure is applicable or not to the Layer-2 UE-to-Network Relay? |

[3] clarified that the QoS Flow of Layer-2 Remote UE is Uu QoS Flow. SDAP layer for Layer-2 UE-to-Network Relay is located between Layer-2 Remote UE and gNB to perform the Uu QoS flow to DRB mapping. From AS perspective, there is no PC5 QoS flow for Layer-2 U2N relay. [3] proposed whether the Layer-2 link modification procedure is used can be decided by SA2 itself. [2] considered the view point by SA2 is valid, and suggested RAN2 to confirm SA2 understanding.

**Question 3-1: Do companies agree that RAN2 can confirm SA2 understanding (during the Layer-2 link establishment procedure the Relay UE and Remote UE do not interact with the PC5 QoS Flows Info)? Please give your comments.**

|  |  |  |
| --- | --- | --- |
| **Companies** | **Yes/No** | **Comments** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**Question 3-2: Regarding to the issue that whether the Layer-2 link modification procedure is applicable to the Layer-2 UE-to-Network Relay, which option do companies prefer? Please give your comments.**

* **Option 1:** **Whether the Layer-2 link modification procedure is used can be decided by SA2 itself.**
* **Option 2: RAN2 can decide that Layer-2 link modification procedure is not used and reply to SA2.**
* **Option 3: Others (if any, please give the detailed description).**

|  |  |  |
| --- | --- | --- |
| **Companies** | **Options** | **Comments** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

## Q4 of SA2 LS

4) Per TS 23.304 clause 6.6.2, NG-RAN is provided with 5G ProSe authorised information indicating whether a UE is authorized to use 5G ProSe Direct Discovery, 5G ProSe Direct Communication, to act as a 5G ProSe Layer-2 UE-to-Network Relay, a 5G ProSe Layer-3 UE-to-Network Relay and a 5G ProSe Layer-2 Remote UE. NG-RAN is not provided with authorisation information for whether a UE is authorised to act as a 5G ProSe Layer-3 Remote UE.

Is the authorisation information for whether a UE can act as a 5G ProSe Layer-3 Remote UE needed by NG-RAN to enable configuring the UE with correct discovery configuration information via dedicated signalling?

In RAN2#113bis-e, RAN2 reached the below agreement which is common for L2 and L3:

|  |
| --- |
| Proposal 4 [Easy][23/23]: Relay UE and remote UE (IC) in RRC CONNECTED can use the discovery configuration provided via dedicated signalling if available. |

In [2], it thinks authorisation information for L3 remote UE is needed for NG-RAN to decide on the dedicated discovery configuration. In [3], it suggested that authorisation information for whether a UE is authorised to act as a 5G ProSe Layer-3 Remote UE RAN2 should be discussed in RAN3, and from RAN2’s perspective, Layer-3 remote UE (IC) in RRC CONNECTED can use the discovery configuration provided via dedicated signalling if available.

**Question 4-1: Regarding to the authorisation information for L3 remote UE, companies are encouraged to provide your views/preference to the following options. Please give your comments.**

* **Option 1:** **RAN2 confirm that authorization information for L3 remote UE is needed for NG-RAN.**
* **Option 2: Whether authorization information for L3 remote UE is needed for NG-RAN can be decided by RAN3.**
* **Option 3: RAN2 only confirm that dedicated signaling for discovery information configuration is feasible for L3 remote UE to SA2 and whether authorization information for L3 remote UE is needed for NG-RAN can be decided by SA2.**
* **Option 4: Others (if any, please give the detailed description).**

|  |  |  |
| --- | --- | --- |
| **Companies** | **Options** | **Comments** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

# Conclusion

# References

1. R2-2111236 Reply LS on discovery and relay (re)selection (S2-2107972; contact: CATT) SA2
2. R2-2111123 Discussion on LS on discovery and relay (re)selection OPPO
3. R2-2111253 Discussion on LS on discovery and relay (re)selection CATT
4. TS23.304 Proximity based Services (ProSe) in the 5G System (5GS) (Release 17) V17.0.0