3GPP TSG-RAN WG2#124 R2-23XXXXX

Chicago, USA, 13 – 17 November, 2023

Agenda Item: 7.9.1

Source: Huawei, HiSilicon

Title: [Post124][403][Relay] Rel-18 relay RRC CR (Huawei)

Document for: Discussion and decision

# 1 Introduction

This document is the report of the following discussion:

* [Post124][403][Relay] Rel-18 relay RRC CR (Huawei)

 Scope: Review and finalise the Rel-18 relay RRC CR.

 Intended outcome: Agreed CR

 Deadline: Short (for RP)

Please provide your comments by Thursday November 30th 10:00 UTC to allow 24h for the rapporteur to update the CR before the deadline.

Companies providing input to this email discussion are requested to leave contact information below.

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| --- | --- | --- |
| **Company** | **Delegate name** | **Email address** |
| Xiaomi | Yang Xing | Yangxing1@xiaomi.com |
| OPPO | Bingxue Leng | lengbingxue@oppo.com |
| Apple | Zhibin |  |
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# 2 Comments collection

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| **Company** | **Clause number** | **Original text in CR** | **Suggested modification or comments** | **Rapporteur response** |
| Xiaomi | 4.1 | **Split DRB**: In MR-DC or MP, a DRB that supports transmission via MCG (i.e. direct path in MP) and SCG/indirect path in MP, as well as duplication of PDCP PDUs as defined in TS 37.340 [41]. | Since split DRB is also applied to MR-DC, MCG is enough. Bracket part, i.e. (i.e. direct path in MP), shall be removed, since it’s only applied to MP. |  |
| Xiaomi | 4.1 | **Split SRB**: In MR-DC or MP, an SRB that supports transmission via MCG (i.e. direct path in MP) and SCG/indirect path in MP, as well as duplication of RRC PDUs as defined in TS 37.340 [41]. | Similar comment as above |  |
| Xiaomi | 5.3.5.xx.1 | 5.3.5.xx.1 Configuration of SL indirect path 5.3.5.xx.1.1 GeneralFor SL indirect path:- the L2 U2N Remote UE is provided with sidelink dedicated configuration as specified in 5.3.5.14, L2 U2N Remote UE configuration as specified in 5.3.5.16, and SL indirect path specific configuration as specified in 5.3.5.xx.1.2;- the L2 U2N Relay UE is provided with sidelink dedicated configuration as specified in 5.3.5.14, L2 U2N Relay UE configuration as specified in 5.3.5.15, as well as Uu Relay RLC channel as specified in 5.3.5.5.12 and 5.3.5.5.13. | According to the definition in 3.1, SL indirect path only includes the PC5 unicast link.**SL indirect path:** In Multi-path, the indirect path using PC5 unicast link.So, the Uu Relay RLC channel is not part of SL indirect path. ‘, as well as Uu Relay RLC channel as specified in 5.3.5.5.12 and 5.3.5.5.13’ can be removed. |  |
| Xiaomi | 5.3.5.xx.2 | 5.3.5.xx.2 Configuration of N3C indirect path5.3.5.xx.2.1 GeneralFor N3C indirect path, - the N3C remote UE is provided with non-3GPP indirect path configuration including relay UE identification as specified in 5.3.5.xx.2.2;- the N3C relay UE is provided with non-3GPP indirect path configuration including bearer mapping configurations as specified in 5.3. 5.xx.2.3, as well as Uu Relay RLC channel as specified in 5.3.5.5.12 and 5.3.5.5.13. | Similar comment as above. |  |
| Xiaomi | 5.3.5.15.3 | The L2 U2U Relay UE shall:1> if no SRAP entity has been established:2> establish a SRAP entity as specified in TS 38.351 [66];1> for each *sl-L2IdentityRemote* value included in the *sl-RemoteUE-ToAddModList* that is not part of the current UE configuration (L2 U2U Remote UE Addition):2> configure the parameters to SRAP entity in accordance with the *sl-SRAP-ConfigRelayU2U*;1> for each *sl-L2IdentityRemote* value included in the *sl-RemoteUE-ToAddModList* that is part of the current UE configuration (L2 U2U Remote UE modification):2> modify the configuration in accordance with the *sl-SRAP-ConfigRelayU2U*; | *sl-SRAP-ConfigRelayU2U* is not defined in the spec. |  |
| Xiaomi | 5.3.5.15.6 | The L2 U2U Remote UE shall:1> if *sl-L2RemoteUE-Config* is set to *setup*:2> if the *sl-L2RemoteUE-Config* contains the *sl-SRAP-ConfigRemoteU2U*:3> if no SRAP entity has been established:4> establish a SRAP entity as specified in TS 38.351 [66];3> configure the parameters to SRAP entity in accordance with the *sl-SRAP-ConfigRemoteU2U*;1> else if *sl-L2RemoteUE-Config* is set to *release*:2> release the relay operation related configurations. | *sl-SRAP-ConfigRemoteU2U* is not defined in the spec. |  |
| Xiaomi | 5.3.7.2 | 5.3.7.2 Initiation…1> else (e.g. acting as L2 U2N Remote UE configured with MP):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;2> else:3> perform cell selection in accordance with the cell selection process as specified in TS 38.304 [20].NOTE 2: For L2 U2N Remote UE, if both a suitable cell and a suitable relay are available, the UE can select either one based on its implementation. | We understand the else part covers both remote UE with MP and non-remote UE. The bracket only covers the first case. It’s clearer to remove the bracket. Current description without bracket is already clear enough. |  |
| 5.7.3c.4 | Xiaomi | 5.7.3c.4 Actions related to transmission of *IndirectPathFailureInformation* messageThe UE shall set the contents of the *IndiretPathFailureInformation* message as follows:…1> for each *MeasObjectNR* configured by a *MeasConfig* associated with the MCG, and for which measurement results are available:2> include an entry in *measResultFreqList*;2> if there is a *measId* configured with the *MeasObjectNR* and a *reportConfig* which has *rsType* set to *ssb*:3> set *ssbFrequency* in *measResultFreqList* to the value indicated by *ssbFrequency* as included in the *MeasObjectNR*;2> if there is a *measId* configured with the *MeasObjectNR* and a *reportConfig* which has *rsType* set to *csi-rs*:3> set *refFreqCSI-RS* in *measResultFreqList* to the value indicated by *refFreqCSI-RS* as included in the associated measurement object;2> if a serving cell is associated with the *MeasObjectNR*:3> set *measResultServingCell* in *measResultFreqList* to include the available quantities of the concerned cell and in accordance with the performance requirements in TS 38.133 [14];2> set the *measResultNeighCellList* in *measResultFreqList* to include the best measured cells, ordered such that the best cell is listed first, and based on measurements collected up to the moment the UE detected the failure, and set its fields as follows;3> ordering the cells with sorting as follows:4> based on SS/PBCH block if SS/PBCH block measurement results are available and otherwise based on CSI-RS;4> using RSRP if RSRP measurement results are available, otherwise using RSRQ if RSRQ measurement results are available, otherwise using SINR;3> for each neighbour cell included:4> include the optional fields that are available.NOTE 1: The measured quantities are filtered by the L3 filter as configured in the mobility measurement configuration. The measurements are based on the time domain measurement resource restriction, if configured. Exclude-listed cells are not required to be reported. | RAN2 didn’t agree to report cell measurement result in indirect path failure information report. We don’t think it’s necessary to include cell measurement result, since direct path is still available. |  |
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| Xiaomi | 6.2.2 | N3C-RelayUE-InfoList-r18 ::= SEQUENCE (SIZE (1..ffs8)) OF N3C-RelayUE-Info-r18 | Since remote UE shall report if reported N3C relay UE becomes unavailable as following spec, remote UE shall be allowed to report an empty list if all reported N3C relay UE become unavailable. So we suggest to change the minimum size to (0…ffs).1> if configured to report relay UE information with non-3GPP connection(s);2> if the UE did not transmit a *UEAssistanceInformation* message with *n3c-relayUE-InfoList* since it was configured to report available relay UE information with non-3GPP connection(s); or2> if the UE has new available non-3GPP conection(s); or2> if the non-3GPP connection(s) with the reported relay UE(s) is not available: 3> initiate transmission of the *UEAssistanceInformation* message in accordance with 5.7.4.3 to report relay UE information with non-3GPP connection(s) included in the *n3c-relayUE-InfoList*; |  |
| OPPO | 5.3.5.3/5.3.5.15/ | 1> if the *RRCReconfiguration* message includes the *sl-L2RelayUE-Config*:2> perform the L2 U2N or U2U Relay UE configuration procedure as specified in 5.3.5.15;1> if the *RRCReconfiguration* message includes the *sl-L2RemoteUE-Config*:2> perform the L2 U2N or U2U Remote UE configuration procedure as specified in 5.3.5.16; | We prefer not reuse *sl-L2RelayUE-Config* and *sl-L2RemoteUE-Config* for U2U case since different from U2N:1/ the local ID is assigned by relay;2/ the remote add/mod especially release is not determined by the NW |  |
| OPPO | 5.7.3c.4 | 1> for each *MeasObjectNR* configured by a *MeasConfig* associated with the MCG, and for which measurement results are available:… | We didn’t agree to include this Uu measurement result in indirect path failure report, what is the reason for this? |  |
| OPPO | 5.8.3.2 | 4> if the UE is capable of U2U Relay UE, and if *SIB12* includes *sl-RelayUE-ConfigCommonU2U*, and if the U2U Relay UE threshold conditions as specified in 5.8.X1.2 are met; or4> if the UE is selecting a U2U Relay UE / has a selected U2U Relay UE, and if *SIB12* includes *sl-RemoteUE-ConfigCommonU2U*, and if the U2N Remote UE threshold conditions as specified in 5.8.X2.2 are met:5> initiate transmission of the *SidelinkUEInformationNR* message to indicate the NR sidelink relay discovery messages resources required by the UE in accordance with 5.8.3.3; | Relay UE can also perform discovery transmission in the following condition according to clause 5.8.13.33> if the UE acting as U2U Relay UE is performing U2U Relay Discovery with Model A or Model B response message as specified in TS 23.304[65]; or |  |
| OPPO | 5.8.3.2 | 2> if configured by upper layer to transmit NR sidelink L2 U2N relay communication on the frequency included in *sl-FreqInfoList* in *SIB12* of the PCell including *sl-L2U2N-Relay*; or if configured by upper layer to transmit NR sidelink L3 U2N relay communication on the frequency included in *sl-FreqInfoList* in *SIB12* of the PCell including *sl-L3U2N-RelayDiscovery*; or if configured by upper layer to transmit NR sidelink L2 U2U relay communication on the frequency included in *sl-FreqInfoList* in *SIB12* of the PCell including [*FFS gNB capability indication*]; or if configured by upper layer to transmit NR sidelink L3 U2U relay communication on the frequency included in *sl-FreqInfoList* in *SIB12* of the PCell including [*FFS gNB capability indication*]: | What is the reason to report the L3 U2U Relay communication to NW? |  |
| OPPO | 5.8.3.2 | 4> include *sl-TxResourceReqL2U2U-Relay* in *sl-TxResourceReqListCommRelay* and set its fields (if needed) as follows for each destination for which it requests network to assign NR sidelink L2 U2U relay communication resource: | A new IE name (e.g., *sl-TxResourceReqListCommU2URelay*) is needed rather than reusing *sl-TxResourceReqListCommRelay,* since the same IE name usually used in the extension case, while here they are different features |  |
| OPPO | 5.8.3.3 | 5> set *sl-PerSLRBQoS-InfoListL2U2U* to include the per-SLRB second-hop QoS profile and the corresponding *SLRB-Uu-ConfigIndex* which is set to the same value as the *SLRB-PC5-ConfigIndex* received in *RRCReconfigurationSidelink* message from the L2 U2U Remote UE;  | This cannot be set to the same value as SLRB-PC5-ConfigIndex since multiplexing of different source remote UE’s bearer in the same RLC channel to the same target remote UE is supported and the SLRB-PC5-ConfigIndex value from different source remote UE may collide with each other.RAN2 confirms that multiplexing of the different bearers from the different source remote UEs into the same RLC channel in the second hop is supported. |  |
| OPPO | 5.8.3.3 | 5> include *sl-RemoteUE-InfoListL2U2U* and set its fields (if needed) as follows to report the e2e QoS and split QoS for each peer L2 U2U Remote UE:  | The capability (related to PDCP/SDAP) from the target remote UE is also needed |  |
| OPPO | 5.8.9.1.2 | 1> if the UE is acting as L2 U2U Remote UE (i.e. Tx UE), and if the procedure is initiated to configure the first hop RLC channel of a end-to-end sidelink DRB to the connected L2 U2N Relay UE (i.e. Rx UE), based on configuration in SIB12 or SidelinkPreconfigNR; or1. if the UE is acting as L2 U2U Relay UE (i.e. Tx UE), and if the procedure is initiated to configure the second hop RLC channel to the connected L2 U2N Remote UE(i.e. Rx UE) based on configuration in SIB12 or SidelinkPreconfigNR:
2. if a PC5 Relay RLC channel is to be established:
 | Maybe the explicit condition on “not RRC CONNECTED UE” is needed to prevent RRC CONNECTED UE for the following procedures |  |
| OPPO | 5.8.9.1.3 | 1> if the *RRCReconfigurationSidelink* message includes the *sl-MappingToAddModListPC5* or *sl-MappingToReleaseListPC5*: | There is no definition of *sl-MappingToAddModListPC5* or *sl-MappingToReleaseListPC5* |  |
| OPPO | 6.3.5 | *SL-RLC-ChannelConfig*The IE *SL-RLC-ChannelConfig* specifies the configuration information for PC5 Relay RLC channel between L2 U2N Relay UE and L2 U2N Remote UE, or between L2 U2U Remote UE and L2 U2U Relay UE. | If reuse this for RLC channel configuration in U2U, need to clarify the PDB configuration is not needed for U2U Relay case |  |
| Apple  | 5.8.9.1.2 | 1> if the UE is acting as L2 U2U Remote UE (i.e. Tx UE), and if the procedure is initiated to configure the first hop RLC channel of a end-to-end sidelink DRB to the connected L2 U2N Relay UE (i.e. Rx UE), based on configuration in *SIB12* or *SidelinkPreconfigNR*; or1> if the UE is acting as L2 U2U Relay UE (i.e. Tx UE), and if the procedure is initiated to configure the second hop RLC channel to the connected L2 U2N Remote UE(i.e. Rx UE) based on configuration in *SIB12* or *SidelinkPreconfigNR*: | RLC Channel 🡪 “PC5 Relay RLC Channel” |  |
| Apple | 5.8.9.1.2 | 3> if the UE is in RRC\_IDLE or in RRC\_INACTIVE:4> set the *SL-RLC-ChannelConfigPC5* included in the *sl-RLC-ChannelToAddModListPC5* according to the *SL-RLC-BearerConfig* derived based on per-SLRB QoS according to *SIB12*;3> else if the UE is out of coverage:4> set the *SL-RLC-ChannelConfigPC5* included in the *sl-RLC-ChannelToAddModListPC5* according to the *SL-RLC-BearerConfig* derived based on per-SLRB QoS according to *SidelinkPreconfigNR*; | The phrase “derived based on per-SLRB QoS” is quite insufficient. It is very difficult to understand what this phrase means. It is clear that this PC5 Relay RLC channel configuration should be derived based on a per-hop QoS, but there is no per-hop SLRB, only end-to-end SLRB. If there is no simple way to explain this, maybe we need add an editor note “ FFS how to derive PC5 Relay RLC channel configuration for IDLE/INACTIVE/OOC case based on split QoS from SIB/Preconfig”. |  |
| Apple | 6.2.2 | RRCReconfiguration-v18xx-IEs ::= SEQUENCE { sl-IndirectPathAddChange-r18 SetupRelease { SL-IndirectPathAddChange-r18 } OPTIONAL, -- Need M n3c-IndirectPathAddChange-r18 SetupRelease { N3C-IndirectPathAddChange-r18 } OPTIONAL, -- Need M n3c-IndirectPathConfigRelay-r18 SetupRelease { N3C-IndirectPathConfigRelay-r18 } OPTIONAL, -- Need M otherConfig-v18xx OtherConfig-v18xx OPTIONAL, -- Need M sl-L2RelayUE-ConfigU2U-r18 SetupRelease { SL-L2RelayUE-Config-r17 } OPTIONAL, -- Need M sl-L2RemoteUE-ConfigU2U-r18 SetupRelease { SL-L2RemoteUE-Config-r17 } OPTIONAL, -- Need M nonCriticalExtension SEQUENCE {} OPTIONAL} | We think the current RRCReconfiguration-v18xx IE extension for MP relay is insufficient, it does not address the “indirect path release” case issue raised in R2-2312176. Also, it does not address how to distinguish “direct path add/modify” in R18 MP from R17 (indirect-to-direct path switching” case, raised in P9 of R2-2312339  If there is no enough time to fix this, maybe we need add an editor note “ FFS how to further enhance RRCReconfiguraiton to address indirect path add/modify/release”. |  |
| Apple | 6.3.5 | ***slrb-PC5-ConfigIndex***Indicates the identity of the configured sidelink RB. In case of L2 U2U relay, *slrb-PC5-ConfigIndex* value 1, 2, 3 are reseved for end-to-end sidelink SRB 1, 2, 3, and only value 4-31 can be signaled for end-to-end sidelink DRB between the two L2 U2U Remote UEs, or between the L2 U2U Relay UE and the L2 U2U Remote UE. | First, this IE is used sicne Rel-16 only for SL DRB. Not for SL-SRB. So, wee nee change this as “Indicates the identity of the configur~~ed~~ation of a sidelink DRB. Then, for the L2 U2U relay case, this is only used for end-to-end SL DRB case, we should remove *slrb-PC5-ConfigIndex* value 1, 2, 3 are reserved for end-to-end sidelink SRB 1, 2, 3,” part. We can simply say “ **All other values are reserved**”.Finally, “between the L2 U2U Relay UE and the L2 U2U Remote UE” shall be removed, because if there is no SL-DRB between L2 remote UE and L2 relay UE. |  |
| Apple | 6.3.5 | *SL-RLC-ChannelConfig*The IE *SL-RLC-ChannelConfig* specifies the configuration information for PC5 Relay RLC channel between L2 U2N Relay UE and L2 U2N Remote UE, or between L2 U2U Remote UE and L2 U2U Relay UE. | Same comment as OPPO |  |