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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| --- | --- | --- |
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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. | Ok, will be removed in v3\_Rapp. |
| 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 | Ok. |
| 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. | The indirect path definition in Multi-path is: …and one indirect path on which the UE connects to the same gNB via another UE using PC5 unicast link or Non-3GPP Connection. So at least the intention is to name the whole transmission path between remote and gNB via relay UE as the indirect path. If anything misleading, rewording suggestion on SL indirect path is welcome. |
| 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. | Please see above reply. |
| 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. | Sorry for the mistake. It will be updated in v3\_Rapp. |
| 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. | Please see above reply. |
| 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. | For clarification, it is e.g., so the content in bracket is supposed not to exclude other cases. But ok to remove. |
| 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. | This is copied from MCGFailureInfo and SCGFailureInfo. But ok to remove. |
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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*; | The suggestion makes sense, so will be updated in v3. |
| 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 | For 1), I agree and was going to define new SRAP Config.For 2), I understand this is just the case that SRAP configuration is from NW which is based on SUI, it does not relevant to idle/inactive/OoC when the UE figures out configuration by itself. |
| 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? | Will be removed. |
| 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 | Sorry I did not get the point, do you mean “if the U2U Relay UE threshold conditions as specified in 5.8.X1.2 are met” is not a mandate condition? |
| 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? | It is reusing the same format defined for L2/L3 U2N in Rel-17.So is there any issue? |
| 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 | Although I do not see any difference in this case, but ok to update as suggested. |
| 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. | This is report QoS to NW, and NW can provide the mapping of the multiplexing.  |
| 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 | You mean capability not QoS, right? then, capa is added now. |
| 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 | Agree. will be added in v3. |
| 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* | Sorry for the mistake, will be corrected. |
| 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 | Agree. |
| 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” | Agree. |
| 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”. | Thanks for the comments, right, the current wording is not so accurate. So I try to modify to “derived based on the per-hop QoS of the end-to-end SLRB according to *SIB12*”, and update the NOTE 3: how to merge the split per-flow QoS on the first/second hop into a per-SLRB level QoS for RLC channel configuration derivation is up to UE implementation.If this is still not clear, we can add the EN as suggested. |
| 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”. | Yes, when/how to release PC5 link has not been discussed in last meeting, we can add this EN like “FFS whether/how to indicate PC5 release/maintain for 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. | Good point. will be updated as suggested. |
| 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 | Updated. |
| ASUSTeK | 5.3.5.2 |  | Suggest to add a bullet in 5.3.5.2 for establishment of PC5 Relay RLC channels to support L2 U2U Remote UE and L2 U2U Relay UE. | Agree. |
| ASUSTeK | *RRCReconfiguration* | RRCReconfiguration-v18xx-IEs ::= SEQUENCE { … sl-L2RelayUE-ConfigU2U-r18 SetupRelease { SL-L2RelayUE-Config-r17 } OPTIONAL, -- Need M …}SL-RemoteUE-ToAddMod-r17 ::= SEQUENCE { sl-L2IdentityRemote-r17 SL-DestinationIdentity-r16, sl-SRAP-ConfigRelay-r17 SL-SRAP-Config-r17 OPTIONAL, -- Need M ...} | In our understanding, the mapping from a radio bearer to egress PC5 Relay RLC channel should be associated with each U2U Remote UE pair according to section 4.5 in the Running SRAP CR. If this is correct understanding, we think the *RRCReconfiguration* message sent to the L2 U2U Relay UE needs to include a new IEto identify the source L2 U2U Remote UE, considering that the target L2 U2U Remote UE may communicate with multiple source L2 U2U Remote UEs via the same Relay UE.Here is a text proposal.SL-RemoteUE-ToAddMod-r17 ::= SEQUENCE { sl-L2IdentityRemote-r17 SL-DestinationIdentity-r16, sl-L2IdentityRemotePeer-r17 SL-DestinationIdentity-r16, sl-SRAP-ConfigRelay-r17 SL-SRAP-Config-r17 OPTIONAL, -- Need M ...} | Agree. also as OPPO comment, the SRAP config for U2N is not fully applicable to U2U, so a new IE will be added for U2U SRAP config, and sl-L2RelayUE-ConfigU2U will be removed. |
| ASUSTeK | *SidelinkUEInformationNR*  | SL-QoS-InfoL2U2U-r18 ::= SEQUENCE { sl-RemoteUE-SLRB-Identity-r18 SLRB-Uu-ConfigIndex-r16, sl-QoS-InfoL2U2U-r18 SL-QoS-Profile-r16 OPTIONAL} | To enable the gNB to include the new IE, in the *RRCReconfiguration* message,to identify the source L2 U2U Remote UE as mentioned in the previous comment, the SUI message sent by the L2 U2U Relay UE to request sidelink resources for the second hop toward the target L2 U2U Remote UE also needs to include a *sl-SourceIdentityRemoteUE* to identify the source L2 U2U Remote UE.Here is a text proposal.SL-QoS-InfoL2U2U-r18 ::= SEQUENCE { sl-SourceIdentityRemoteUE-r18 SL-DestinationIdentity-r16 OPTIONAL,sl-RemoteUE-SLRB-Identity-r18 SLRB-Uu-ConfigIndex-r16, sl-QoS-InfoL2U2U-r18 SL-QoS-Profile-r16 OPTIONAL} | Right, thanks for the point. The asn.1 is reorganized as below, and sl-U2U-Identity is used to indicate the source remote UE ID on top of relay reporting target remote UE for the second hop, and to indicate the target remote UE ID on top of source remote reporting relay UE ID for the first hop. Hope this clarifies.SL-U2U-Info-r18 ::= SEQUENCE { sl-U2U-Identity-r18 ::= CHOICE { sl-TargetUE-Identity-r18 SL-DestinationIdentity-r16, sl-SourceUE-Identity-r18 SL-SourceIdentity-r17 } sl-E2E-QoS-InfoList-r18 SEQUENCE (SIZE (1.. maxNrofSL-QFIsPerDest-r16)) OF SL-QoS-Info-r16 OPTIONAL, sl-PerHop-QoS-InfoList-r18 SEQUENCE (SIZE (1.. maxNrofSL-QFIsPerDest-r16)) OF SL-SplitQoS-Info-r18 OPTIONAL, sl-PerSLRB-QoS-InfoList-r18 SEQUENCE (SIZE (1..maxNrofSLRB-r16)) OF SL-PerSLRB-QoS-Info-r18 OPTIONAL}SL-SplitQoS-Info-r18 ::= SEQUENCE { sl-QoS-FlowIdentity-r18 SL-QoS-FlowIdentity-r16, sl-SplitPacketDelayBudget-r18 INTEGER (0..1023) OPTIONAL, …}SL-PerSLRB-QoS-Info-r18 SEQUENCE { sl-RemoteUE-SLRB-Identity-r18 SLRB-Uu-ConfigIndex-r16, sl-QoS-ProfilePerSLRB-r18 SL-QoS-Profile-r16 OPTIONAL} |
| ASUSTeK | Field description on *sl-L2RelayUE-Config* | ***sl-L2RelayUE-Config***Contains L2 U2N relay operation related configurations used by a UE acting as or to be acting as a L2 U2N Relay UE. The field is absent if *conditionalReconfiguration* is configured for CHO. | Since this IE is also used for U2U Relay, it should be further clarified.***sl-L2RelayUE-Config***Contains L2 U2N relay operation related configurations used by a UE acting as or to be acting as a L2 U2N Relay UE or L2 U2U relay operation related configurations used by a UE acting as a L2 U2U Relay UE. The field is absent if *conditionalReconfiguration* is configured for CHO. | Agree, thanks for pointing this out. |
| ASUSTeK | Field description on *sl-L2RemoteUE-Config* | ***sl-L2RemoteUE-Config***Contains L2 U2N relay operation related configurations used by a UE acting as or to be acting as a L2 U2N Remote UE. The field is absent if *conditionalReconfiguration* is configured for CHO, or if *appLayerMeasConfig* or SRB4 is configured/not released. | Since this IE is also used for U2U Relay, it should be further clarified.***sl-L2RemoteUE-Config***Contains L2 U2N relay operation related configurations used by a UE acting as or to be acting as a L2 U2N Remote UE or L2 U2U relay operation related configurations used by a UE acting as a L2 U2U Remote UE. The field is absent if *conditionalReconfiguration* is configured for CHO, or if *appLayerMeasConfig* or SRB4 is configured/not released. | Agree, thanks for pointing this out. |
| ASUSTeK | *SL-QoS-FlowIdentity* |  | In R16 SL, a UE includes both *SL-QoS-FlowIdentity* and destination L2 ID in the SUI message, while the *RRCReconfiguration* message replied to the UE only includes the *SL-QoS-FlowIdentity*. The destination L2 ID is not included in the *RRCReconfiguration* message because the *SL-QoS-FlowIdentity*, in our understating, *is associated with* the destination L2 ID and thus the UE is able to identify the peer UE according to the *SL-QoS-FlowIdentity*.In the scenario of L2 U2U Relay, a source L2 U2U Remote UE communicates with a target L2 U2U Remote UE via a L2 U2U Relay UE. Thus, the source remote UE has the relay UE as the destination on the first hop and also the target remote UE as the end-to-end destination. In this situation, the definition of *SL-QoS-FlowIdentity* for L2 U2U Relay is not clear. This may concern the contents of the SUI message reported by the source remote UE and the *RRCReconfiguration* message replied by the gNB. We suggest to clarify the definition of *SL-QoS-FlowIdentity* for L2 U2U Relay.  | My understanding is that even for U2U case, the QoS flow ID is still the ID for end-to-end flow, so it should be similar to R16, not sure what would be the additional impact on configuration part?  |
| ASUSTeK | *UEInformationRequestSidelink* and *UEInformationResponseSidelink* |  | *SL-PQFI-r16* is used in *SL-SDAP-ConfigPC5-r16* included in *RRCReconfigurationSidelink* message for PC5 QoS flow identification, while *SL-QoS-FlowIdentity-r16* is used in *UEInformationRequestSidelink* message and *UEInformationResponseSidelink* message for PC5 QoS flow identification. We think they should be aligned i.e. *SL-PQFI-r16* should beused in *UEInformationRequestSidelink* message and *UEInformationResponseSidelink* message. | My understanding is that here the intention is to reuse SL-QoS-Info to include QoS profile, for remote UE notifying E2E QoS to relay UE. If we change to SL-PQFI-r16, a new IE needs to be created with duplicated info as SL-QoS-Info. So if the current structure is workable, I prefer to keep it as it is. |
| ASUSTeK | *RRCReconfigurationSidelink* |  | In the current running CR, *sl-DestinationIdentityRemoteUE* is included in both *UEInformationRequestSidelink* message and *UEInformationResponseSidelink* message to identify the target L2 U2U Remote UE. For the same reason, we think *sl-DestinationIdentityRemoteUE* should also be included in *RRCReconfigurationSidelink* messagewhen a source L2 U2U Remote UE provides *SL-SDAP-ConfigPC5* to the Relay UE for indicating PC5 QoS flow-to-SLRB mapping. | My understanding is the current logic is similar to Rel-16 SUI->reconfiguration. For instance, remote UE uses sperate value range of QoS flow ID for different E2E link in QoS split procedure, so that when it indicate QoS flow to DRB mapping to relay in RRC reconfiguration message, relay can match to the corresponding L2 ID received during QoS split procedure. But please let me know if there is anything missing.  |
| ASUSTeK | *slrb-Uu-ConfigIndex* |  | It was agreed that BEARER ID is set to the 5 LSBs of PC5 configuration index (i.e. *slrb-PC5-ConfigIndex*). In our understanding, the *slrb-PC5-ConfigIndex* is set according to the *slrb-Uu-ConfigIndex* allocated by gNB for L2 U2U Remote UE in RRC\_CONNECTED. To avoid 5 LSBs of PC5 configuration index conflict, we think the network needs to ensure the 5 LSBs of the *slrb-Uu-ConfigIndex* is unique within the same L2 U2U Remote UE. Thus, it is better to add a note for this field. | This is also my understanding, but proper NW implementation should handle this, usually we do not specify NW behavior too much. |
| ASUSTeK | 5.8.9.2 |  | In RAN2#124, we have the following agreement:Clarify E2E UE capability transfer AS layer procedure in the figure in L2 U2U relay in stage 2 CR (R2-2312029, Figure 16.12.x-1: Procedure for L2 U2U Remote UE connection establishment).We think this agreement should also be reflected in 5.8.9.2 (Sidelink UE capability transfer). | The current description seems to be generic. TP would be helpful to see how to reflect this agreement.  |
| ASUSTeK | 5.8.9.X.1 | This purpose of this procedure is to transfer the UE information in sidelink. For instance, the L2 U2N Remote UE informs its end-to-end QoS information to its connected L2 U2U Relay UE in the *UEInformationRequestSidelink* message, and the L2 U2U Relay UE delivers the split QoS information of the first-hop to the Remote UE in the *UEInformationResponseSidelink* message. | This purpose of this procedure is to transfer the UE information in sidelink. For instance, the L2 U2U~~U2N~~ Remote UE informs its end-to-end QoS information to its connected L2 U2U Relay UE in the *UEInformationRequestSidelink* message, and the L2 U2U Relay UE delivers the split QoS information of the first-hop to the Remote UE in the *UEInformationResponseSidelink* message. | Thanks, it is corrected now. |
| ASUSTeK | 6.6.2 | SL-SRAP-ConfigPC5-r18 ::= SEQUENCE { sl-RemoteUE-LocalIdentity-Config-r18 SEQUENCE {  sl-RemoteUE-LocalIdentity-r18 INTEGER (0..255) OPTIONAL, -- Need M sl-RemoteUE-L2Identity-r18 SL-DestinationIdentity-r16 OPTIONAL -- Need M } OPTIONAL, -- Need M sl-PeerRemoteUE-LocalIdentity-Config-r18 SEQUENCE {  sl-PeerRemoteUE-LocalIdentity-r18 INTEGER (0..255) OPTIONAL, -- Need M sl-PeerRemoteUE-L2Identity-r18 SL-DestinationIdentity-r16 OPTIONAL -- Need M } OPTIONAL -- Need M} | Currently, the *SL-SRAP-ConfigPC5-r18* carries one local UE ID for peer remote UE at one time.Considering that the source L2 U2U Remote UE may communicate with multiple target L2 U2U Remote UEs via the same Relay UE, there is a need for the L2 U2U Relay UE to indicate multiple local UE IDs of peer U2U remote UEs for a U2U remote UE within the *RRCReconfigurationSidelink* message. | Thanks for the good point. two lists sl-LocalID-PairToReleaseList, sl-LocalID-PairToAddModList are added in RRCReconfigurationSidelink. |
| ZTE | 3.1 | **Uu Relay RLC channel**: An RLC channel between L2 U2N Relay UE and gNB, which is used to transport packets over Uu for L2 UE-to-Network relay**.** | Also used in scenario 2 (though no SRAP entity), according to the description in 5.3.5.5.12/13. | Agree. |
| ZTE | 5.3.3.4 | 1> perform the L2 U2N or U2U Remote UE configuration procedure in accordance with the received *sl-L2RemoteUE-Config* as specified in 5.3.5.16; | For L2 U2U remote UE, we think it is not necessary (and not feasible) to config *SL*-*L2RemoteUE-Config* (SRAP config) in RRCSetup message. | Agree. |
| ZTE | 5.3.5.3 | 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; | For L2 U2U relay UE, the config IE is sl-L2RelayUE-ConfigU2U, not *sl-L2RelayUE-Config.*sl-L2RelayUE-ConfigU2U-r18 SetupRelease { SL-L2RelayUE-Config-r17 }Similar issue for L2 U2U remote UE. | This part is updated by taking above comments into account, please double check v3. |
| ZTE | 5.3.5.15.3 | 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*; | No such IE in ASN.1 / wrong IE name is used. (*sl-SRAP-ConfigRelay* insl-L2RelayUE-ConfigU2U ?) | This part is updated by taking above comments into account, please double check v3. |
| ZTE | 5.3.5.16 | 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. | Wrong IE name, should besl-L2RemoteUE-ConfigU2U-r18 SetupRelease { SL-L2RemoteUE-Config-r17 }No such IE in ASN.1. similar issue as above. | This part is updated by taking above comments into account, please double check v3. |
| ZTE | 5.7.3c.4 | The UE shall set the contents of the *IndiretPathFailureInformation* message as follows: | Typo, “c” is missing.*IndirectPathFailureInformation* | Thanks! |
| ZTE | 5.8.9.1 | the release of sidelink DRBs associated with the peer UE, or L2 U2U Relay UE and peer L2 U2U Remote UE in case of L2 U2U Relay operation, as specified in clause 5.8.9.1a.1;- the establishment of sidelink DRBs associated with the peer UE, or L2 U2U Relay UE and peer L2 U2U Remote UE in case of L2 U2U Relay operation, as specified in clause 5.8.9.1a.2; | Agreement:The Tx Remote UE informs the flow-to-SLRB mapping (i.e., SDAP configuration) to the relay UE via PC5-RRC.The Tx Remote UE informs the SLRB configuration index (i.e., slrb-PC5-ConfigIndex) to the relay UE via PC5-RRC.For the above two agreements, The sidelink DRB config with the L2 U2U relay UE can not be reused for Tx remote UE to inform SDAP config and SLRB config index (e2e SLRB ID) of a specific peer remote UE to relay UE. New IE structure is needed.  | Do you mean the SDAP configuration can not be used to include QoS flow to DRB mapping? Not sure why, but TP is welcome. |
| ZTE | 5.8.9.1.2 | 1> if the UE is acting as L2 U2U Relay UE, and if the procedure is initiated to configure local ID to the connected L2 U2U Remote UEs:2> if both the PC5-RRC connection with L2 U2U Remote UE and the PC5-RRC connection with peer L2 U2U Remote UE are successfully established:3> for the (re-)configuration used for NR sidelink L2 U2U Relay communication on the corresponding PC5-RRC connection with L2 U2U Remote UE:4> assign a new local UE ID for L2 U2U Remote UE according to association between User Info and L2 ID as specified in TS 23.304 [65], and set *sl-RemoteUE-LocalIdentity-config* in the *SL-SRAP-ConfigPC5* to include the new local UE ID and L2 ID of L2 U2U Remote UE, if needed; 3> for the (re-)configuration used for NR sidelink L2 U2U Relay communication on the corresponding PC5-RRC connection with peer L2 U2U Remote UE:4> assign a new local UE ID for peer L2 U2U Remote UE according to association between User Info and L2 ID as specified in TS 23.304 [65], and set *sl-RemoteUE-LocalIdentity-config* in the *SL-SRAP-ConfigPC5* to include the new local UE ID and L2 ID of peer L2 U2U Remote UE, if needed; | For the two bullet 3>, It seems the relay UE sends the local ID of (src) remote UE to (src) remote UE and sends the local ID of peer remote UE to peer remote UE respectively, but not reflect that: the relay UE also sends local ID of peer remote UE to (src) remote UE and sends local ID of (src) remote UE to peer remote UE.What’s the bullet 3> used for? The two bullet 3> can be removed? | Agree, will updated as suggested. |
| ZTE | 5.8.9.1.3 | 1> if the *RRCReconfigurationSidelink* message includes the *sl-MappingToAddModListPC5* or *sl-MappingToReleaseListPC5*:2> configure lower layers to perform NR sidelink L2 U2U Relay operation according to mapping between end-to-end sidelink bearer of L2 U2U Remote UE and egress PC5 Relay RLC channel as defined in TS 38.351 [65]; | No such IE in ASN.1 | Corrected. |
| ZTE | SUI | SL-TxResourceReqListCommRelay-v18xy ::= CHOICE { sl-TxResourceReqL2U2U-Relay-r18 SL-TxResourceReqL2U2U-Relay-r18, sl-TxResourceReqL3U2U-Relay-r18 SL-TxResourceReq-r16} | The IE SL-TxResourceReqListCommRelay is a list, however the IE included are not list.sl-TxResourceReqL2U2U-Relay Should be a list?Why the new IE sl-TxResourceReqL3U2U-Relay is needed? Similar as L3 U2N relay resource request, the R16 SL resource request can be reused. | Corrected. |
| ZTE | SL-SRAP-Config | SL-MappingToAddMod-U2U-r18 ::= SEQUENCE { sl-RemoteUE-SLRB-Identity-r18 SLRB-Uu-ConfigIndex-r16, sl-EgressRLC-ChannelPC5-r18 SL-RLC-ChannelID-r17 OPTIONAL, -- Need N ...}***sl-RemoteUE-SLRB-Identity***Identity of the end-to-end sidelink bearer identity of the L2 U2U Remote UE. The value 0, 1, 2 and 3 are reservied for sidelink SRB 0, 1, 2, 3, and only value 4-31 are used to configure sidelink DRB. | For remote UE:*sl-RemoteUE-SLRB-Identity* Should be slrb-Uu-ConfigIndex ? As R16 SLRB config, by SL-SDAP-config (legacy QFI indexing is followed), remote UE can identify the SLRB config is for which peer U2U remote UE (via which U2U relay UE). Then the slrb-Uu-configIndex can be used to config the SLRB to egress RLC channel mapping.Otherwise, If it intends to identify a E2E RB, the UE ID of peer U2U remote UE should be included. Since M-to-1 mapping is supported at the first hop, one or multiple slrb-Uu-ConfigIndex may be mapped to one PC5 RLC channel. | I understand this is the simalr comment as the one raised by ASUSTeK. Please see the reply to ASUSTeK above. |
| ZTE | UEInformationRequestSidelink/ UEInformationResponseSidelink | UEInformationRequestSidelink-r18-IEs ::= SEQUENCE { sl-QoS-InfoListPC5-r18 SEQUENCE { sl-DestinationIdentityRemoteUE-r18 SL-DestinationIdentity-r16, sl-QoS-InfoList-r18 SIZE (1..maxNrofSL-QFIsPerDest-r16)) OF SL-QoS-Info-r16 } OPTIONAL, -- Need N lateNonCriticalExtension OCTET STRING OPTIONAL, nonCriticalExtension SEQUENCE {} OPTIONAL} | sl-QoS-InfoListPC5 May include QoS info(s) of a list of destination remote UEs.Similar issue for split QoS in Response message. | Thanks for the good point. the related parts are updated. |
| ZTE | 9.1.1.4 |  | Only introduce a single new LCID (e.g., LCID 55) for SCCH carrying end-to-end SL-SRB0/1/2/3 messages in L2 U2U relay in MAC spec.Need to update accordingly. | Agree. |
| Qualcomm | 5.8.8 | This clause is about communication resource selection, it should be common for all types communication, then it does not need to differentiate different communication type | Remove the following description in this clause.*if the UE is performing non-relay NR Sidelink Communication; or**if the UE is performing NR sidelink L3 U2N Relay communication; or**if the UE is performing NR Sidelink U2U Relay Communication; or**if the UE acting as U2U Relay UE is performing U2U Relay Communication with integrated Discovery as specified in TS 23.304[65] and sl-DiscConfig is included in RRCReconfiguration, and if the NR sidelink U2U Relay UE threshold conditions as specified in 5.8.X1.2 are met based on sl-RelayUE-ConfigU2U:**NOTE X: For U2U Relay UE, it can be up to UE implementation on cross-layer interaction for the AS layer condition check for Direct Communication Request message with integrated discovery forwarding.* |  |
| Qualcomm | 5.8.9.1.2 | In clause, it should be clarified the QoS profiles is per-hop QoS profiles3> 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*; | Change to per-SLRB per-hop QoS; same comments are applied for other places in specification.For this part, it should be “out of concerned frequency coverage”, same comments are applied for other places in specification. | For 1), Agree.For 2), out of coverage is used since Rel-16 in RRC spec, it seems no ambiguity. |
| Qualcomm | 5.8.9.3 | upon reception of *NotificationMessageSidelink* indicating PC5 RLF from the U2U Relay UE for a specific destination based on the received *sl-DestinationIdentity*: | Should be L2 U2U relay UE. | Agree |
| Qualcomm | 5.8.X1.3 | RAN2 agreed that cross-layer interaction for discovery transmission is up to UE implementation, but the following description requires relay UE firstly decode discovery message.1> for each of the neighbor UE(s) configured by upper layers:2> if the SL-RSRP of the neighbor UE configured by upper layers is available and is above *sl-RSRP-Thresh-DiscConfig* if configured; or2> if the SD-RSRP of the neighbor UE configured by upper layers is available and is above *sd-RSRP-Thresh-DiscConfig* if configured:3> indicate that the neighbor UE is in proximity to upper layers. | Propose to change to:1> for each of the UE(s) in discovery messages:2> if the SL-RSRP of the UE is available and is above *sl-RSRP-Thresh-DiscConfig* if configured; or2> if the SD-RSRP of the UE is available and is above *sd-RSRP-Thresh-DiscConfig* if configured:3> Consider the UE as neighbour UE in discovery message to be transmitted. | Sorry, regarding the TP, I am a bit confused. the first bullet says the UE is already in discovery message, but the following steps are to determine whether this UE can be considered as neighbor UE and included in discovery message.I try to update to address the cross layer concern, please let me know if it is ok. |
| Qualcomm | 5.3.5.xx.1.3 | The following is not related with T4xx expires.> if the target L2 U2N Relay UE (i.e., the UE indicated by *sl-IndirectPathRelayUE-Identity* in the received *sl-IndirectPathAddChange*) changes its serving PCell to a different cell from the target cell ( i.e. the cell indicated by *sl-IndirectPathCellIdentity* in the received *sl-IndirectPathAddChange*) before path addition or change: | Move to separate clause | But the handling is the same and the title is also for change failure. |
| Qualcomm | 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*]:In this clause, there are many places about L3 U2U relay communication description, and the above is just an example. It is understood that L3 U2U relay is not visible to gNB and existing direct communication is reused on each hop. From authorization, gNB reuse direct communication for L3 U2U relay. Then L3 U2U relay should be removed in this clause. | L3 U2U relay related description should be removed in this clause | Ok. |
| Qualcomm | 5.8.3.3 | 4> include *ue-Type* and set it to *relayUE*;4> include *ue-Type* and set it to *remoteUE*;Remote UE or Relay UE does not need to indicate UE type. From the information reported by the UE, the gNB should be able to know which type of UE. | Remove UE type reporting | For L2, it is true that NW can know from other fields, thus removed. |
| Qualcomm | 5.8.3.3 | 3> if *SIB12* includes [*FFS gNB capability indication*] and if configured by upper layers to transmit NR sidelink L3 U2U relay communication:From AS layer point of view, L3 U2U relay is direct communication on each hop, then the existing direct communication part should be used instead of adding new part. | Remove L3 U2U relay. | This is the same style as U2N design. |