**3GPP TSG-RAN WG2 #125 *R2-2400239***

**Athens, Greece, February 2024**

Agenda Item: 7.0.3

Source: OPPO

Title: Discussion on [O310, O311]

Document for: Discussion, Decision

# Introduction

This is to discuss the RIL of O310, O311.

# Discussion

For O310 (similar issue for O311).

**[RIL]**: O310 **[Delegate]**: OPPO (Qianxi Lu) **[WI]**:Pos, SL, SLrelay, MULTI **[Class]**:2 **[Status]**: ToDo **[TDoc]**: R2-24xxxx **[Proposed Conclusion]**: v95

**[Description]**: Previously, R2 did not include two SIBs with the same IE definition, now here we have SIB12 and SIB23 here. It is not clear whether the two SIBs 1) aim at different IEs, or 2) there might be overlapping IEs in-between. And in case of 1) good to separate the IEs out using a different structure, and in case of 2), whether the two SIBs tend to give different/same values for the overlapping IEs. If different values, what is the reason, and if same values, what is the benefit to do duplicate configuration? (the overhead issue is obvious by seeing B012 request to do segmentation operation like SIB12).

**[Proposed Change]**: We will bring a paper for R2 to further discuss the motivation to have a separate SIB via same IE.

On the one hand, for O310, i.e., for SIB

SIB12-r16 ::= SEQUENCE {

segmentNumber-r16 INTEGER (0..63),

segmentType-r16 ENUMERATED {notLastSegment, lastSegment},

segmentContainer-r16 OCTET STRING

}

SIB12-IEs-r16 ::= SEQUENCE {

sl-ConfigCommonNR-r16 SL-ConfigCommonNR-r16,

lateNonCriticalExtension OCTET STRING OPTIONAL,

...,

[[

sl-DRX-ConfigCommonGC-BC-r17 SL-DRX-ConfigGC-BC-r17 OPTIONAL, -- Need R

sl-DiscConfigCommon-r17 SL-DiscConfigCommon-r17 OPTIONAL, -- Need R

sl-L2U2N-Relay-r17 ENUMERATED {enabled} OPTIONAL, -- Need R

sl-NonRelayDiscovery-r17 ENUMERATED {enabled} OPTIONAL, -- Need R

sl-L3U2N-RelayDiscovery-r17 ENUMERATED {enabled} OPTIONAL, -- Need R

sl-TimersAndConstantsRemoteUE-r17 UE-TimersAndConstantsRemoteUE-r17 OPTIONAL -- Need R

]],

[[

sl-FreqInfoListSizeExt-v1800 SEQUENCE (SIZE (1..maxNrofFreqSL-1-r18)) OF SL-FreqConfigCommon-r16 OPTIONAL, -- Need R

sl-RLC-BearerConfigListSizeExt-v1800 SEQUENCE (SIZE (1..maxSL-LCID-r16)) OF SL-RLC-BearerConfig-r16 OPTIONAL, -- Need R

sl-SyncFreqList-r18 SEQUENCE (SIZE (1..maxNrofFreqSL-r16)) OF SL-Freq-Id-r16 OPTIONAL, -- Need R

sl-SyncTxMultiFreq-r18 ENUMERATED {true} OPTIONAL, -- Need R

sl-MaxTransPowerCA-r18 P-Max OPTIONAL, -- Need R

sl-DiscConfigCommon-v1800 SL-DiscConfigCommon-v1800 OPTIONAL -- Need R

]]

}

SIB23-r18 ::= SEQUENCE {

sl-PosConfigCommonNR-r18 SL-ConfigCommonNR-r16,

lateNonCriticalExtension OCTET STRING OPTIONAL,

...

}

It can be seen that the same IE was used to define the two SIBs, and this IE includes some fields that are useful also for both SL Communication/Discovery and SL Positioning.

SL-ConfigCommonNR-r16 ::= SEQUENCE {

sl-FreqInfoList-r16 SEQUENCE (SIZE (1..maxNrofFreqSL-r16)) OF SL-FreqConfigCommon-r16 OPTIONAL, -- Need R

sl-UE-SelectedConfig-r16 SL-UE-SelectedConfig-r16 OPTIONAL, -- Need R

sl-NR-AnchorCarrierFreqList-r16 SL-NR-AnchorCarrierFreqList-r16 OPTIONAL, -- Need R

sl-EUTRA-AnchorCarrierFreqList-r16 SL-EUTRA-AnchorCarrierFreqList-r16 OPTIONAL, -- Need R

sl-RadioBearerConfigList-r16 SEQUENCE (SIZE (1..maxNrofSLRB-r16)) OF SL-RadioBearerConfig-r16 OPTIONAL, -- Need R

sl-RLC-BearerConfigList-r16 SEQUENCE (SIZE (1..maxSL-LCID-r16)) OF SL-RLC-BearerConfig-r16 OPTIONAL, -- Need R

sl-MeasConfigCommon-r16 SL-MeasConfigCommon-r16 OPTIONAL, -- Need R

sl-CSI-Acquisition-r16 ENUMERATED {enabled} OPTIONAL, -- Need R

sl-OffsetDFN-r16 INTEGER (1..1000) OPTIONAL, -- Need R

t400-r16 ENUMERATED {ms100, ms200, ms300, ms400, ms600, ms1000, ms1500, ms2000} OPTIONAL, -- Need R

sl-MaxNumConsecutiveDTX-r16 ENUMERATED {n1, n2, n3, n4, n6, n8, n16, n32} OPTIONAL, -- Need R

sl-SSB-PriorityNR-r16 INTEGER (1..8) OPTIONAL -- Need R

}

SL-FreqConfigCommon-r16 ::= SEQUENCE {

sl-SCS-SpecificCarrierList-r16 SEQUENCE (SIZE (1..maxSCSs)) OF SCS-SpecificCarrier,

sl-AbsoluteFrequencyPointA-r16 ARFCN-ValueNR,

sl-AbsoluteFrequencySSB-r16 ARFCN-ValueNR OPTIONAL, -- Need R

frequencyShift7p5khzSL-r16 ENUMERATED {true} OPTIONAL, -- Cond V2X-SL-Shared

valueN-r16 INTEGER (-1..1),

sl-BWP-List-r16 SEQUENCE (SIZE (1..maxNrofSL-BWPs-r16)) OF SL-BWP-ConfigCommon-r16 OPTIONAL, -- Need R

sl-SyncPriority-r16 ENUMERATED {gnss, gnbEnb} OPTIONAL, -- Need R

sl-NbAsSync-r16 BOOLEAN OPTIONAL, -- Need R

sl-SyncConfigList-r16 SL-SyncConfigList-r16 OPTIONAL, -- Need R

...,

[[

absenceOfAnyOtherTechnology-r18 ENUMERATED {true} OPTIONAL, -- Need R

sl-FreqSelectionConfig-r18 SL-FreqSelectionConfig-r18 OPTIONAL, -- Need R

sl-SyncTxDisabled-r18 ENUMERATED {true} OPTIONAL, -- Need R

sl-EnergyDetectionConfig-r18 CHOICE {

sl-MaxEnergyDetectionThreshold-r18 INTEGER (-85..-52),

sl-EnergyDetectionThresholdOffset-r18 INTEGER (-13..20)

} OPTIONAL, -- Need R

ue-toUE-COT-SharingED-Threshold-r18 INTEGER (-85..-52) OPTIONAL, -- Need R

harq-ACKFeedbackRatioforContentionWindowAdjustmentGC-Option2-r18 INTEGER (10..100) OPTIONAL -- Need R

]]

}

1. Within SL-ConfigCommonNR-r16, there are fields useful for both NR sidelink communication / discovery and NR sidelink positioning.

Then it is not clear what is the intention,

1. Alt1: network would set the overlapping fields in SIB12 **only**
2. Alt2: network would set the overlapping fields in **both** SIB12 and SIB23 (for this alternative, it is not clear whether the fields, when included in the two SIBs, maybe be set as different values, or shall be set as same values)

The different alternatives may cause different UE behavior

1. Alt1: a UE performing SL positioning will need to perform both SIB23 and SIB12 acquisition
2. Alt2: a UE performing SL positioning will need to perform SIB23 acquisition only, but if a UE performing both SL communication/discovery and SL Positioning, it is not clear how for the UE to perform SL when the overlapping fields are set with different values in the two SIBs.
3. How to set the overlapping fields in SIB12 and/or SIB23 would impact UE behavior.

If based on the current procedural text below

5.2.2.4.25 Actions upon reception of *SIB23*

Upon receiving *SIB23*, the UE shall:

1> if *sl-FreqInfoList* is included in *sl-PosConfigCommonNR*:

2> if configured to receive sidelink control information for SL-PRS measurement:

3> use the resource pool(s) indicated by *sl-RxPool* and/or *sl-PRS-RxPool* for sidelink control information reception for SL-PRS , as specified in 5.8.18.2;

2> if configured to transmit SL-PRS:

3> use the resource pool(s) indicated by *sl-TxPoolSelectedNormal*, *sl-TxPoolExceptional, sl-PRS-TxPoolSelectedNormal* or *sl-PRS-TxPoolExceptional* for SL-PRS transmission, as specified in 5.8.18.3;

3> perform CBR measurement on the transmission resource pool(s) indicated by *sl-TxPoolSelectedNormal*, *sl-TxPoolExceptional, sl-PRS-TxPoolSelectedNormal* or *sl-PRS-TxPoolExceptional* for SL-PRS transmission, as specified in 5.5.3.1;

3> use the synchronization configuration parameters for NR sidelink positioning on frequencies included in *sl-FreqInfoList*, as specified in 5.8.5;

Seems the intention is to go for **Alt2** above, but then

1. It is unclear how to solve the issue above
2. Or if the intention is to mandate the **same** value for **same** fields duplicated in the two SIBs, one may ask why not reduce the signaling overhead by sending these fields only once in a single SIB.
3. Furthermore, one needs to note that the UE performing SL position may be finally **hard/infeasible** to focus on SIB23 only, due to the additional fields which are included in SIB12 only, as follows, i.e., the feasibility of Alt2 is questionable.

SIB12-IEs-r16 ::= SEQUENCE {

sl-ConfigCommonNR-r16 SL-ConfigCommonNR-r16,

lateNonCriticalExtension OCTET STRING OPTIONAL,

...,

[[

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sl-L2U2N-Relay-r17 ENUMERATED {enabled} OPTIONAL, -- Need R

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sl-SyncTxMultiFreq-r18 ENUMERATED {true} OPTIONAL, -- Need R

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sl-DiscConfigCommon-v1800 SL-DiscConfigCommon-v1800 OPTIONAL -- Need R

]]

}

1. The current procedural text in clause 5.2.2.4.25 implies that the UE performing SL Positioning would focus on SIB23 to obtain the overlapping fields, yet that would cause additional issues for the overlapping fields (either collision or redundancy), and it is not feasible since SIB12 also includes additional necessary fields that have not been included in SIB23 yet.

In general, it seems more reasonable to adopt either way below

**Solution-1**: Rely on SIB12 only, not defined another SIB23, and all UE (SL communication, SL discovery, SL positioning) would acquire SIB12, relying on sub-set of fields, when applicable.

**Solution-2**: Define a separate SIB23, limited to non-overlapping fields, only related SL Positioning, to reduce ambiguity at UE side, and to reduce signaling overhead due to duplicated singaling, and SL Positioning UEs would need to acquire both SIB12 for the overlapping fields and SL Pos dedicated parameters.

Between the two, seems solution-1 is of lower complexity.

1. R2 discuss the two solutions, 1) rely on SIB12 only and not define SIB23, 2) define a SIB23, but clarify the separation between SIB12 and SIB23 to avoid parameter overlapping.

Same logic holds for Preconfiguration, i.e., O311.

**[RIL]**: O311 **[Delegate]**: OPPO (Qianxi Lu) **[WI]**:Pos, SL, SLrelay, MULTI **[Class]**: 2 **[Status]**: ToDo **[TDoc]**: R2-24xxxx **[Proposed Conclusion]**: v95

**[Description]**: Previously, R2 did not include two SIBs /Preconfigurations with the same IE definition, now here we have SIB12 and SIB23 here, and SL-PreconfigurationNR and SL-PosPreconfigurationNR . It is not clear whether the two SIBs/Preconfigurations 1) aim at different IEs, or 2) there might be overlapping IEs in-between. And in case of 1) good to separate the IEs out using a different structure, and in case of 2), whether the two SIBs tend to give different/same values for the overlapping IEs. If different values, what is the reason, and if same values, what is the benefit to do duplicate configuration? (the overhead issue is obvious by seeing B012 request to do segmentaion operation like SIB12).

**[Proposed Change]**: We will bring a paper for R2 to further discuss the motivation to have a separate Preconfiguration although the included IE is the same

1. R2 discuss the two solutions, 1) rely on SL-PreconfigurationNR only and not define SL-PosPreconfigurationNR, 2) define a SL-PosPreconfigurationNR, but clarify the separation between SL-PreconfigurationNR and SIB23 to avoid parameter overlapping.

# Conclusion

We have the following proposals:

[Proposal 1 R2 discuss the two solutions, 1) rely on SIB12 only and not define SIB23, 2) define a SIB23, but clarify the separation between SIB12 and SIB23 to avoid parameter overlapping.](#_Toc158644285)

[Proposal 2 R2 discuss the two solutions, 1) rely on SL-PreconfigurationNR only and not define SL-PosPreconfigurationNR, 2) define a SL-PosPreconfigurationNR, but clarify the separation between SL-PreconfigurationNR and SIB23 to avoid parameter overlapping.](#_Toc158644286)