**3GPP TSG-RAN WG3 #119bis-e [R3-231863](file:///C%3A%5C%5Ctemporary%5C%5CRAN3%5C%5CRAN3%20April%2023%5C%5CCB%20discussions%5C%5CCB%206%20R17IAB%5C%5CInbox%5C%5CR3-231863.zip)**

**17th – 26th April 2023**

**Online**

Agenda Item: 9.2.4

Source: ZTE (moderator)

**Title: Summary of CB: # 6\_R17IAB**

Document for: Approval

# Introduction

This paper is for the following offline discussion:

|  |
| --- |
| **CB: # 6\_R17IAB****- Check reply LS from RAN1 in [R3-231105](file:///C%3A%5C%5Ctemporary%5C%5CRAN3%5C%5CRAN3%20April%2023%5C%5CCB%20discussions%5C%5CCB%206%20R17IAB%5C%5CInbox%5C%5CR3-231105.zip) and the corresponding corrections proposed in RAN3****- SA3 LS related: The source/initial IAB-donor can obtain the new IP address(es) for F1-C from the target/new IAB donor via XnAP, i.e. XnAP HANDOVER REQUEST ACKNOWLEDGE, UE CONTEXT RELEASE messages?****- Update the IAB Barred IE’s configuration granularity from per cell to per PLMN/NPN in F1 interface?**(moderator - ZTE)Summary of offline disc [R3-231863](file:///C%3A%5C%5Ctemporary%5C%5CRAN3%5C%5CRAN3%20April%2023%5C%5CCB%20discussions%5C%5CCB%206%20R17IAB%5C%5CInbox%5C%5CR3-231863.zip) |

This discussion has two phases:

**Phase 1:** Converge on potential proposals. Please give your feedback before **Thursday, April 20th at 23.59 UTC**

**Phase 2: TBD**

The following contributions will be discussed in this CB:

|  |  |  |
| --- | --- | --- |
| [R3-231105](file:///D%3A%5C%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5C%5CTSGR3_119bis-e%5C%5CDocs%5C%5CR3-231105.zip) | Reply LS on RB set configuration (RAN1, ZTE) | LS inR17 |
| [R3-231360](file:///D%3A%5C%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5C%5CTSGR3_119bis-e%5C%5CDocs%5C%5CR3-231360.zip) | Correction to TS 38.423 on RB Set Configuration (ZTE, Lenovo, Qualcomm, Nokia, Nokia Shanghai Bell, CATT) | CR1014r, TS 38.423 v17.4.0, Rel-17, Cat. F |
| [R3-231361](file:///D%3A%5C%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5C%5CTSGR3_119bis-e%5C%5CDocs%5C%5CR3-231361.zip) | Correction to TS 38.473 on RB Set Configuration (ZTE, Lenovo, Qualcomm, Nokia, Nokia Shanghai Bell, CATT) | CR1145r, TS 38.473 v17.4.1, Rel-17, Cat. F |
| [R3-231855](file:///D%3A%5C%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5C%5CTSGR3_119bis-e%5C%5CDocs%5C%5CR3-231855.zip) | (CR TS 38.423) Correction of RB Set Configuration (Ericsson) | CR1047r, TS 38.423 v17.4.0, Rel-17, Cat. F |
| [R3-](file:///D%3A%5C%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5C%5CTSGR3_119bis-e%5C%5CDocs%5C%5CR3-231311.zip)[231311](file:///D%3A%5C%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5C%5CTSGR3_119bis-e%5C%5CDocs%5C%5CR3-231311.zip) | Discussion on SA3 LS related to dynamic PSK for IAB inter-CU topology adaptation (Qualcomm Inc.) | discussion |
| [R3-2](file:///D%3A%5C%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5C%5CTSGR3_119bis-e%5C%5CDocs%5C%5CR3-231495.zip)[314](file:///D%3A%5C%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5C%5CTSGR3_119bis-e%5C%5CDocs%5C%5CR3-231495.zip)[95](file:///D%3A%5C%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5C%5CTSGR3_119bis-e%5C%5CDocs%5C%5CR3-231495.zip) | Discussion on the F1-C IP addresses mapping issue from SA3 LS R3-230872 (Huawei) | discussion |
| [R3-231787](file:///D%3A%5C%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5C%5CTSGR3_119bis-e%5C%5CDocs%5C%5CR3-231787.zip) | Discussion on SA3 LS on Mapping of F1-C IP addresses (ZTE) | discussion |
| [R3-231](file:///D%3A%5C%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5C%5CTSGR3_119bis-e%5C%5CDocs%5C%5CR3-231788.zip)[788](file:///D%3A%5C%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5C%5CTSGR3_119bis-e%5C%5CDocs%5C%5CR3-231788.zip) | [draft] Reply LS on Mapping of F1-C IP addresses (ZTE) | LS out To: SA3 CC:  |
| [R3-231](file:///D%3A%5C%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5C%5CTSGR3_119bis-e%5C%5CDocs%5C%5CR3-231481.zip)[481](file:///D%3A%5C%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5C%5CTSGR3_119bis-e%5C%5CDocs%5C%5CR3-231481.zip) | Correction on IAB bar configuration (Huawei, Qualcomm, Xiaomi) | CR1152r, TS 38.473 v17.4.1, Rel-17, Cat. A |
| [R3-231856](file:///D%3A%5C%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5C%5CTSGR3_119bis-e%5C%5CDocs%5C%5CR3-231856.zip) | Correction on IAB bar configuration (Huawei, Qualcomm, Xiaomi) | CR1151r1, TS 38.473 v16.13.0, Rel-16, Cat. F |

# For the Chair’s Notes

Propose the following:

**Proposal 1: Agree the CRs in R3-231360/R3-231361.**

**Proposal 2: RAN3 not to support dynamic PSK for IAB inter-CU topology adaptation in R17. A reply LS is sent to SA3 to inform the RAN3 agreement.**

**Proposal 3: The 2 CRs (R3-231481/R3-231856) are not agreed.**

# PHASE 1: Discussion

## Reply LS/CRs on RB set configuration ([R3-231105](file:///D%3A%5C%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5C%5CTSGR3_119bis-e%5C%5CDocs%5C%5CR3-231105.zip)/[R3-231360](file:///D%3A%5C%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5C%5CTSGR3_119bis-e%5C%5CDocs%5C%5CR3-231360.zip)/[R3-231361](file:///D%3A%5C%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5C%5CTSGR3_119bis-e%5C%5CDocs%5C%5CR3-231361.zip)/[R3-231855](file:///D%3A%5C%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5C%5CTSGR3_119bis-e%5C%5CDocs%5C%5CR3-231855.zip))

In reply LS on RB set configuration was received in [1] which is copied in the below:

|  |  |
| --- | --- |
| RAN1 thanks RAN3 for the LS R1-2300006(R3-226781) on RB set configuration where the following question was asked:

|  |
| --- |
| **Question:** RAN3 has uncertainty on how to define the start RB index for the Rel-17 IAB-DU HSNA resource configuration of an IAB-DU cell. RAN3 has two different understandings:* Understanding 1: the start RB index for the Rel-17 IAB-DU HSNA resource configuration of the IAB-DU cell is point A plus the SCS-specific offset defined in the *NR Carrier List* IE based on the SCS included in the *RB Set Configuration* IE.
* Understanding 2: the start RB index for the Rel-17 IAB-DU HSNA resource configuration of the IAB-DU cell is point A plus the smallest SCS-specific frequency offset across all numerologies provided by the *NR Carrier List* IE for this cell. Note that in this understanding, the start RB index does not depend on the SCS value included in the *RB Set Configuration* IE in TS 38.473.

In both understandings, the start RB is aligned with point A in case the *NR Carrier List* IE is not present.RAN3 kindly asks RAN1 to provide clarification on which of the two understandings is correct. |

**Answer:** RAN1 has discussed the above question and would like to clarify that the modified understanding 2 as below is correct:* The start RB index for the Rel-17 IAB-DU HSNA resource configuration of the IAB-DU cell is the RB index of the lowest common RB with the reference SCS, which overlaps with the lowest usable RB across all SCS-specific carriers provided by the NR Carrier List IE for this cell.
 |

Based on the reply LS from RAN1, the semantics description for the start RB index of the first RB set in the *RB Set Configuration* IE in TS 38.423/38.473 needs to be corrected to reflect the latest RAN1 agreement.

* Contribution [2][3] provide CRs to TS 38.423/38.473 respectively with the following correction:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Number of RB Sets | M |  | INTEGER(1.. *maxnoofRBsetsPerCell)* | Number of configured RB sets. The RB sets are contiguous and non-overlapping. If *NR Carrier List* IE(9.2.2.63) is provided, the start RB index of the first RB set is the RB index of the lowest common RB with the SCS provided by *RB Set Configuration* IE, which overlaps with the lowest usable RB across all SCS-specific carriers provided by the *NR Carrier List* IE for the IAB-DU cell. Otherwise, the lowest subcarrier of the start RB of the first RB set is aligned with point A for the IAB-DU cell.  |

* Contribution [4] provides the CR to TS 38.423 with the following correction:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Number of RB Sets | M |  | INTEGER(1.. *maxnoofRBsetsPerCell)* | Number of configured RB sets. The RB sets are contiguous and non-overlapping. The start RB index of the first RB set is the RB index of the lowest common RB assuming the reference subcarrier spacing, which overlaps with the lowest usable RB for the IAB-DU cell. |

In the moderator’s view, the correction in [2][3] describes the two case where the IAB-DU cell has one or multiple numerologies respectively and is aligned with the answer provided in the reply LS from RAN1 [1]. While the correction in [4] describes the two cases where the IAB-DU cell has one or multiple numerologies in one sentence. However, it’s not clear whether “the lowest usable RB for the IAB-DU cell” means the lowest usable RB across all SCS-specific carriers for the IAB-DU cell or the lowest usable RB for the carrier with the the SCS provided by *RB Set Configuration* IE.

**Q1: Do you prefer option 1 (i.e. the correction in [2][3]) or option 2 (i.e. the correction in [4])? Do you have any other comments or other options?**

|  |  |  |
| --- | --- | --- |
| Company  | Option 1/2 | Comments |
| Nokia | 1 | We co-signed ZTE CRs |
| Huawei | Slightly prefer Option 1 | Both are ok, but option 1 covers both cases. |
| Qualcomm | 1 | We co-signed ZTE CRs. Option 1 includes how this IE is used in case NR Carrier List is provided vs. when it is not. Option 2 does not include this differentiation.  |
| **Ericsson** | 2 | The discussion was controversial in the past and Option 2 is better since it strictly follows the text in the LS reply from RAN1. **Regarding Option 1 above:*** The reference to SCS-specific subcarrier in the text is not required, as it is irrelevant for the relation of RBs of the IAB-DU cell and the RB set. The the RB set configuration description should also be applicable to cases when the SCS-specific carriers are not configured (see below).
* The usage of “otherwise” in Option 1 is not precise and suggests that a different RB configuration is required when a single numerology is configured by NR Carrier List or Transmission Bandwidth IEs. This is not true, since the NE carrier list IE can have a single item and configure a single numerology.

**Regarding Qualcomm’s comment:** * The Transmission BW is a special configuration case of NR carrier list and in case of a cell configured with a single numerology, the resulting RB set configuration must be the same irrespective of whether NR Carrier List or Transmission Bandwidth was used. Thus, the RB set configuration must also be applicable when using Transmission Bandwidth IE.

If companies think further clarification is required in Option 2, then we propose to add the following, but in any case, **the LS reply text should be the baseline for the addictions to be agreed**. “The start RB index of the first RB set is the RB index of the lowest common RB assuming the reference subcarrier spacing, which overlaps with the lowest usable RB for the IAB-DU cell. If the cell is configured by *Transmission Bandwidth* IE, the center of the lowest subcarrier of the start RB of the first RB set is point A.” |
| **ZTE** | 1 | Option 1 is more aligned with the answer provided in the reply LS from RAN1. For option 2, it’s not clear whether “the lowest usable RB for the IAB-DU cell” means the lowest usable RB across all SCS-specific carriers for the IAB-DU cell or the lowest usable RB for the carrier with the the SCS provided by *RB Set Configuration* IE. |
|  |  |  |

**Summary:**

5 companies provided feedback on Q1.

4 companies prefer option 1, i.e. the CRs provided in [R3-231360][R3-231361]

1 company prefers option 2, i.e. the CR provided in [R3-231855].

The moderater agrees that the correction should take the text in RAN3’s LS[[R3-226781](Inbox%5C%5CR3-226781.zip)] and RAN1’s reply LS[R3-231105] as baseline. Most companies believes that option 1 is aligned with RAN3’s LS and RAN1’s reply LS. And there is no issue found in option 1 while option 2 have some issues. Please refer to the detailed comments in the above. So the moderater proposes:

**Proposal 1: Agree the CRs in R3-231360/R3-231361.**

## On SA3 LS related to dynamic PSK for IAB inter-CU topology adaptation (R3-231311/R3-231495/R3-231787/R3-231788)

During RAN3#119 meeting, an LS on Mapping of F1-C IP addresses in the IAB inter-CU topology adaptation and backhaul RLF recovery procedures (R3-230872) was received from SA3. In the LS, SA3 requests RAN3 to provide a suitable method for Source/Initial Donor-IAB node to know the mapping between these F1-C IP addresses in the IAB inter-CU topology adaptation and backhaul RLF recovery procedures in order for SA3 to progress with its security work.

|  |
| --- |
| 1 Overall descriptionSA3 is currently trying to specify the security handling of IAB inter-CU topology adaptation and backhaul RLF recovery procedures.In this work, SA3 would need more information for defining one aspect in a way sympathetic to the current flows in TS 38.401, when using dynamic PSK. SA3 believe that the Source/Initial Donor IAB-node needs to know the mapping between the old IP address of the F1-C interface and the new IP address. This mapping is needed to identify the security credentials that will be used to re-establish (using IKE) the IPsec connection used to protect the FI-C interface. In particular this needs to be done for IPsec transport mode and also when there are one or more old/new IP addresses.SA3 requests RAN3 to provide a suitable method for Source/Initial Donor-IAB node to know the mapping between these IP addresses in order for SA3 to progress with its security work.2 Actions**To RAN3** **ACTION: SA3 asks RAN3 to provide a suitable method for Source/Initial Donor-IAB node to know the mapping between the old and new IP addresses in order for SA3 to progress with its security work.** |

In [R3-231311 QC], it was observed that the issue raised by SA3 only applies to 1) the use of dynamic PSK-based authentication for F1, whose support is not mandated; 2) when IAB-MT and IAB-DU connect to different CUs, a scenario that was not considered when the dynamic PSK-based authentication was designed. And it was further observed that the solutions to the issue raised by SA3 require NBC changes to St3 and St2, which add signaling and processing overhead, and increase the overall complexity of the procedures. And it was proposed that dynamic PSK-authentication is only supported when IAB-MT and IAB-DU connect to the same donor.

For the [R3-231495 HW][R3-231787 ZTE], enhancements to Xn signaling are suggested to support the dynamic PSK-authentication for IAB inter-CU topology adaptation and backhaul RLF recovery procedures in SA3. In moderator’s view, the first question is whether dynamic PSK-authentication is to be supported for IAB inter-CU topology adaptation/backhaul RLF recovery/redundancy procedures from RAN3 perspective.

**Q2: Do you agree that RAN3 to support dynamic PSK-authentication for IAB inter-CU topology adaptation/backhaul RLF recovery/redundancy procedures?**

|  |  |  |
| --- | --- | --- |
| Company  | Y/N | Comments |
| Nokia | N | We agree with the analysis from QC.  |
| Huawei | Y | Whether the dynamic PSK is adopted or not should be determined by SA3. The LS from SA3 indicates they have already agreed to support dynamic PSK at least as an option. But we think there is no issue for redundancy procedures. Because the IAB-node know which donor is the F1 terminating donor, and it can use the according KgNB and the IP address to derive the PSK. |
| Qualcomm | N | SA3 introduced Dynamic PSK in Rel-16 based on the fundamental assumption that the IAB-node had only one CU. This assumption is not met in Rel-17. **Support for Dynamic PSK with two donors is a new feature, not a correction! We should not support new Rel-17 features at this stage.**The technical discussion in Qs 3 and 4 show the technical complexity to accommodate SA3’s feature request. Note that SA3 considers Dynamic PSK only as optional while they consider Digital Certificates and Preconfigured PSK are mandatory. Therefore, not supporting Dynamic PSK is not a big deal!We do not agree with Huawei that it is up to SA3 to decide if Dynamic PSK is supported. Dynamic PSK for two-donor scenario is a new feature, which relies on RAN3-based solution. RAN3 can decide if this solution is feasible or not.  |
| **Ericsson** | No | We are reluctant to introduce such major changes into Rel-17 specs. |
| **ZTE** | No strong view | Maybe SA3 rather than RAN3 is in responsible to decide whether dynamic PSK is supported in inter-donor topology adaptation.  |
|  |  |  |

**Summary**

5 companies provided feedback on Q2.

3/5 companies don’t agree RAN3 to support dynamic PSK-authentication for IAB inter-CU topology adaptation.

1 company agrees RAN3 to support dynamic PSK for IAB inter-CU topology adaptation and thinks

Regarding whether it’s RAN3 or SA3 to decide whether dynamic PSK is supported, 1 company think it’s in SA3 scope while 1 company think RAN3 can decide it by itself.

1 company has no strong view.

Based on the discussion, RAN3 is not ready to support dynamic PSK for IAB inter-CU topology adaptation at this stage. So the moderator proposes:

**Proposal 2: RAN3 not to support dynamic PSK for IAB inter-CU topology adaptation in R17. A reply LS is sent to SA3 to inform the RAN3 agreement.**

If the question to Q2 is yes, RAN3 needs to discuss how to support dynamic PSK-authentication for IAB inter-CU topology adaptation/backhaul RLF recovery/redundancy procedures.

In [R3-231311 QC] and [R3-231787 ZTE], it observed/proposed that the problem could be solved by providing explicit copy of the IAB-DU’s new IP addresses to the source CU/initial via Xn before the IAB-DU uses these IP addresses for an IKE exchange with the source CU. In [R3-231311 QC], it further observes that an indicator needs to be included as well to indicate that the same IP addresses will be sent to the IAB-node shortly for the inter-donor RLF recovery procedure.

In [R3-231495 HW], it is proposed that for F1-C, the mapping of old IP and new IP should be known by source CU and IAB-node, before any SCTP handshake message on target path. And it is suggested that the mapping of old IP and new IP address, TNL address index and the TNL address usage are informed to the source/initial donor via Xn.

**Q3-1: If the answer to Q2 is yes, do you agree that the IAB-DU’s new IP address(es) for F1-C are informed to the F1-terminating donor from non F1-terminating donor via Xn?**

**Q3-2: Do you think any of old IP address info, IP address usage or additional indicator needs to be informed to the F1-terminating donor as well? What else information besides the IAB-DU’s new IP address(es) needs to be informed to the F1-terminating donor?**

|  |  |  |
| --- | --- | --- |
| Company  | Y/N | Comments |
| **Nokia** | N | Refer to comments on Q2 |
| **Huawei** | Q3-1: YQ3-2:At least the old IP address info is needed. | At first, we should clarify that which solution to be used for protecting F1 interface for IAB should be up to SA3 discussion. The LS R3-230872 has stated that “*SA3 believe that the Source/Initial Donor IAB-node needs to know the mapping between the old IP address of the F1-C interface and the new IP address. This mapping is needed to identify the security credentials that will be used to re-establish (using IKE) the IPsec connection used to protect the FI-C interface*.” It is clear enough that SA3 asks RAN3 for supporting the source/initial CU and the IAB-node know the new and old IP address(es) mapping relation in the LS, this is useful for the CU and IAB-DU to identify the corresponding security credentials (e.g. the KIAB), thus **RAN3 should not degrade that into just knowing the new IP address(es)**. Then, taking the case of the boundary node in partial migration as an example, if we have the consensus on the mapping relation should be known, **the mapping relation shall be directly informed from the target CU to the source CU via an explicit IE in HANDOVER REQUEST ACK, and from the target CU to the boundary IAB-node in the RRC Container which is transported by the source CU**. There is no time that the source CU generates the mapping relation based on the new and old IP addresses and sends it to the IAB-node, because the boundary node will perform RA to the target cell when receiving the RRC reconfiguration. |
| Qualcomm |  | This is a new feature discussion. We should not have this discussion for Rel-17 Wis. |
| **Ericsson** | **No** | See our answer to Q2. |
| **ZTE** |  | Same comment to Q2. SA3 should decide whether dynamic PSK needs to be supported in inter-donor topology adaptation before discussion of the detailed solution.  |
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**Summary**

RAN3 needs to decide whether to support dynamic PSK first. If it is to be supported, the detailed signaling enhancement needs to be discussed; Otherwise, there is no need to discuss it. So there is no proposal here.

If RAN3 agree that additional information needs to be informed to F1-terminating donor via Xn to support dynamic PSK-authentication for IAB inter-CU topology adaptation/backhaul RLF recovery/redundancy procedures, it needs to be discussed which message is to be enhanced.

* For inter-donor topology adaptation (partial migration):

In [R3-231311 QC], [R3-231787 ZTE] and [R3-231495 HW], it is suggested that the additional information is explicitly included in the Xn HANDOVER REQUEST ACKNOWLEDGE message.

* For inter-donor BH RLF recovery

In [R3-231311 QC], it is observed that the additional information would have to be included in an additional Xn TMM signaling.

In [R3-231787 ZTE], it is suggested that the additional information is included in the Xn UE CONTEXT RELEASE message.

In [R3-231495 HW], it is suggested that the additional information is included in a newly defined Xn message.

* For inter-donor redundancy

In [R3-231311 QC], it is observed that the additional information is sent to CU1 via the Xn TM Management Response and/or via Xn TM Modification Request.

**Q4-1: If the answer to Q2/Q3-1 are yes, do you agree that Xn HANDOVER REQUEST ACKNOWLEDGE message is enhanced to support dynamic PSK-authentication for inter-donor migration procedure? If no, please provide the reason and your preferred option.**

|  |  |  |
| --- | --- | --- |
| Company  | Y/N | Comments |
| **Nokia** | N | Refer to comments on Q2 |
| **Huawei** | Y | The new and old IP address(es) mapping relation should be added as an explicit IE in Xn HANDOVER REQUEST ACKNOWLEDGE message. |
| Qualcomm |  | This is a new feature discussion. We should not have this discussion for Rel-17 Wis. |
| **Ericsson** | **No** | See our answer to Q2. |
| **ZTE** |  | Same comment to Q2. SA3 should decide whether dynamic PSK needs to be supported in inter-donor topology adaptation before discussion of the detailed solution.  |
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**Summary**

RAN3 needs to decide whether to support dynamic PSK first. If it is to be supported, the detailed signaling enhancement needs to be discussed; Otherwise, there is no need to discuss it. So there is no proposal here.

**Q4-2: If the answer to Q2/Q3-1 are yes, which option do you prefer to support dynamic PSK-authentication for inter-donor BH RLF recovery procedure?**

**- Option 1: an additional Xn TMM signaling (i.e. IAB TRANSPORT MIGRATION MODIFICATION REQUEST) is sent to transfer additional information**

**- Option 2: the Xn UE CONTEXT RELEASE message is enhanced to transfer additional information**

**- Option 3: a new Xn message is defined to transfer additional information**

|  |  |  |
| --- | --- | --- |
| Company  | Option 1/2/3 | Comments |
| **Huawei** | Option 3 or 1 | Option 2 is unreasonable, because the IP address mapping is irrelevant to the intention of UE CONTEXT RELEASE message. The other two options are acceptable for us. |
| **Qualcomm** |  | This just shows how troublesome it is to integrate this new feature in an ad hoc manner after the design has finished and the WI has concluded. Option 1: The target CU needs to initiate TMModification before it has ever received TMMigration. This is a really ugly and there may be lots of issues we haven’t even considered.Option 2: This is worse. The target would ask the source to release all the context by providing new context to be stored. This doesn’t make any sense.Option 3: We would introduce a new message just to support the corner case of Dynamic PSK for RRC Reestablishment of inter-donor partial migration.  |
| **Ericsson** | **None** | See our answer to Q2. |
| **ZTE** |  | Same comment to Q2. SA3 should decide whether dynamic PSK needs to be supported in inter-donor topology adaptation before discussion of the detailed solution.  |
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**Summary**

RAN3 needs to decide whether to support dynamic PSK first. If it is to be supported, the detailed signaling enhancement needs to be discussed; Otherwise, there is no need to discuss it. So there is no proposal here.

**Q4-3: If the answer to Q2/Q3-1 are yes, do you agree that Xn IAB TRANSPORT MIGRATION MANAGEMENT RESPONSE message is enhanced to support dynamic PSK-authentication for inter-donor redundancy procedure? If no, please provide the reason and your preferred option.**

|  |  |  |
| --- | --- | --- |
| Company  | Y/N | Comments |
| **Huawei** | N | We so not see any issue for the boundary node in redundancy procedures. Because the boundary IAB-node know which donor is the F1 terminating donor, and it can use the donor’s KgNB and the IP address to derive the PSK.For redundancy case, the IP address in Xn IAB TRANSPORT MIGRATION MANAGEMENT RESPONSE message is for the descendant node. To reduce the spec impact, the TMM response message is no need to be enhanced. Different than the boundary IAB-node, the descendant node only connects to the donor CU, the donor CU can generate the new and old IP addresses mapping based on the new IP address received from the TMM response message, and send the mapping to the descendant IAB-node. |
| **Ericsson** | **No** | See our answer to Q2. |
| **ZTE** |  | Same comment to Q2. SA3 should decide whether dynamic PSK needs to be supported in inter-donor topology adaptation before discussion of the detailed solution.  |
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**Summary**

RAN3 needs to decide whether to support dynamic PSK first. If it is to be supported, the detailed signaling enhancement needs to be discussed; Otherwise, there is no need to discuss it. So there is no proposal here.

In [R3-231495 HW], it is proposed that the IP address mapping info is sent to the IAB node and an LS needs to be sent to RAN2 for checking the RRC impact. For descendant IAB node, it is suggested that the source CU generates the old and new IP address mapping for the descendant IAB-node after receiving the new IP address, and sends the mapping to descendant IAB-MT.

**Q4-4: Do you agree that the IP address mapping info needs to be informed to the (descendant) IAB node? If yes, do you agree that RRC needs to be enhanced for this purpose?**

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| Company  | Y/N | Comments |
| **Huawei** | Y | Both of the sender and receiver for the F1 transmission should know the mapping info. The mapping is mainly for identifying the security credentials, which should be align in both sides. Only one side knowing the IP address mapping is not enough.**R3 should ask RAN2 to check the RRC impact to inform the IAB-node the old and new IP address mapping relation.** |
| **Qualcomm** | N | We should not have this new-feature discussion.In any case, the proposal does not make sense. |
| **Ericsson** | **No** | See our answer to Q2. |
| **ZTE** |  | Same comment to Q2. SA3 should decide whether dynamic PSK needs to be supported in inter-donor topology adaptation before discussion of the detailed solution.  |
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**Summary**

RAN3 needs to decide whether to support dynamic PSK first. If it is to be supported, the detailed signaling enhancement needs to be discussed; Otherwise, there is no need to discuss it. So there is no proposal here.

## Correction on IAB bar configuration (R3-231481/R3-231856)

In [9][10], it is observed that the iab-Support in SIB1 is provided per PLMN/NPN. However, the existing IAB Barred IE in F1 is configured per cell, which is not aligned with the granularity of the iab-support in SIB1. And it is suggested to update the IAB Barred IE’s configuration granularity from per cell to per PLMN/NPN in F1 interface.

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| ***Reason for change:*** | The definition for *iab-support* IE in TS38.331 is: *This field combines both the support of IAB and the cell status for IAB. If the field is present, the cell supports IAB and the cell is also considered as a candidate for cell (re)selection for IAB-nodes; if the field is absent, the cell does not support IAB and/or the cell is barred for IAB-node.* And the iab-Support in SIB1 is provided per PLMN/NPN. In F1AP, CU can configure the IAB barred to the DU. However, the existing *IAB Barred* IE in F1 is configured per cell, not align with the granularity of the iab-support in SIB1. |
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| ***Summary of change:*** | Update the *IAB Barred* IE’s configuration granularity from per cell to per PLMN/NPN in F1 interface.**Impact analysis**Impact assessment towards the previous version of the specification (same release): This CR has isolated impact with the previous version of the specification (same release).This CR has impact on the configuration of IAB bar from CU to DU. The impact can be considered isolated because the change affects only the IAB related procedure.The changes are non backward compatible. |
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| ***Consequences if not approved:*** | If a cell supports multiple PLMN/NPNs, it is not possible to allow CU to provide the per PLMN/NPN level IAB barred configuration, instead, the change of IAB barred status will be applied to the whole cell. |

**Q5: Do you agree with these 2 CRs (R3-231481/R3-231856) and/or have any comments?**

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| Company  | Y/N | Comments |
| **Nokia** | N | This is for network sharing that multiple PLMN is used. But in case of network sharing, the physical DU has separate logical DU for each PLMN/operator, and have separate F1-C with each CU, so each CU can configure IAB barred for its own PLMN. Please refer to 38.401 8.11In this example message flow- **each F1-C interface instance** uses a separate signalling transport or share signalling transport with other F1-C interface instances.- the gNB-DUA/B entity shown in Figure 8.11.2-1 is a simplified representation of the gNB-DUA of PLMN A, the gNB DUB of PLMN B and respective radio resources of the shared cell.But the network sharing for IAB is not studied in RAN3, for example, in case CUa terminates IAB-MT’s RRC, how can Cub know the IAB-MT’s RRC is terminated at CUa, so Cub can initiate Xn TMM procedure towards CUa? It may need some enhancement, e.g. when IAB-DUb initiate F1 setup with Cub, it need to include the BAP address assigned by CUa, and ID of CUa. |
| **Huawei** | Y | The “iab-support” in SIB 1 is per PLMN/NPN, the granularity should be aligned.Regarding to Nokia’s comment, we found that the served PLMN list (included in the Served Cell Information) also included in the F1 message from DU to CU. So, it seems the F1 signaling is not totally separated in case of network sharing.  |
| **Qualcomm** | Y | On Nokia’s comment: We have not discussed RAN sharing scenarios where the IAB-DU supports multiple PLMN while the donor-CUs are PLMN-specific. This scenario is pretty cumbersome since the IAB-node has multiple donors that need to coordinate.There is another RAN sharing scenario, where the entire RAN is shared by multiple PLMNs. In this case, there is only one donor-CU and one IAB-DU, which broadcasts multiple PLMNs.  |
| **Ericsson** | **No** | This correction is not needed, as the iab-support indication in SIB1 is per Cell-Identifier, if absent the cell is barred for IAB-node [operation].As the CellIdentity may be associated with either a set of NPNs or PLMNs, but the iab-support is indicated for all the network identifiers contained in that set, the change in this CR is not necessary and may in fact generate configuration errors.The GNB-CU CONFIGURATION UPDATE message also contains a list of PLMNs that the cell supports and thus the cell barred indication is also to indicate that all these PLMNs that are IAB-barred. |
| **ZTE** | N | Agree with Ericsson that the PLMN/NPN list apply to the iab-support IE is indicated in the GNB-CU CONFIGURATION UPDATE message. So there is no need for correction.  |
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Summary:

5 companies provided feedback on Q5.

3/5 companies believe that the correction is not needed while 2/5 companies believe that the correction is needed.

Considering that the network sharing for IAB is has never been studied in RAN3, we don’t want to discuss/support the new feasure at this stage. So the moderator proposes:

**Proposal 3: The 2 CRs (R3-231481/R3-231856) are not agreed.**

# PHASE II: Convergence of PH1

**TBD…**

# References

1. R3-231105 Reply LS on RB set configuration (RAN1, ZTE)
2. R3-231360 Correction to TS 38.423 on RB Set Configuration (ZTE, Lenovo, Qualcomm, Nokia, Nokia Shanghai Bell, CATT)
3. R3-231361 Correction to TS 38.473 on RB Set Configuration (ZTE, Lenovo, Qualcomm, Nokia, Nokia Shanghai Bell, CATT)
4. R3-231855 (CR TS 38.423) Correction of RB Set Configuration (Ericsson)
5. R3-231311 Discussion on SA3 LS related to dynamic PSK for IAB inter-CU topology adaptation (Qualcomm Inc.)
6. R3-231495 Discussion on the F1-C IP addresses mapping issue from SA3 LS R3-230872 (Huawei)
7. R3-231787 Discussion on SA3 LS on Mapping of F1-C IP addresses (ZTE)
8. R3-231788 [draft] Reply LS on Mapping of F1-C IP addresses (ZTE)
9. R3-231481 Correction on IAB bar configuration (Huawei, Qualcomm, Xiaomi)
10. R3-231856 Correction on IAB bar configuration (Huawei, Qualcomm, Xiaomi)