**3GPP TSG-RAN WG2 Meeting #109-e R2-2xxxxx**

**Electronic meeting, 24th February - 6th March, 2020**

**Agenda item:** 6.1

**Source:** Qualcomm Incorporated

**Title:** IAB agreements from R3#107e

**Document for:** Information

# Introduction

The following agreements have been achieved for IAB in R3#107e

|  |  |  |
| --- | --- | --- |
| [R3-200016](docs\R3-200016.zip) | BL CR to 38.423: Support for IAB (Samsung) | CR0223r3, TS 38.423 v16.0.0, Rel-16, Cat. B  **Endorsed as BL** |
| [R3-200017](docs\R3-200017.zip) | CR for TS38.463 on the F1-U traffic mapping (Huawei) | CR0162r3, TS 38.463 v16.0.0, Rel-16, Cat. B  **Endorsed as BL** |
| [R3-200018](docs\R3-200018.zip) | BL CR to 36.423: Support for IAB (Samsung) | CR1303r10, TS 36.423 v16.0.0, Rel-16, Cat. B  **Endorsed as BL** |
| [R3-200019](docs\R3-200019.zip) | BL CR to 38.425: Support for IAB (Samsung) | CR0103r3, TS 38.425 v15.6.0, Rel-16, Cat. B  **Endorsed as BL** |
| [R3-200020](docs\R3-200020.zip) | BL CR to 36.413: Support for IAB (Huawei) | CR1661r10, TS 36.413 v16.0.0, Rel-16, Cat. B  **Endorsed as BL** |
| [R3-200021](docs\R3-200021.zip) | draftCR TS 38.300 Mapping of Uplink Traffic to Backhaul RLC Channels (Ericsson) | draftCRr, TS 38.300 v16.0.0, Rel-16, Cat. B  **Endorsed as BL** |
| [R3-201287](docs\R3-200022.zip) | BL CR to 38.401: Support for IAB (Huawei) | CR0033r15, TS 38.401 v16.0.0, Rel-16, Cat. B  **Endorsed as BL** |
| [R3-200023](docs\R3-200023.zip) | BL CR to 38.413: Support for IAB (Nokia Shanghai Bell) | CR0063r10, TS 38.413 v16.0.0, Rel-16, Cat. B  **Endorsed as BL** |
| [R3-201382](docs\R3-200024.zip) | BL CR to 38.470: Support for IAB (Ericsson) | CR0026r9, TS 38.470 v16.0.0, Rel-16, Cat. B  **Endorsed as BL** |
| [R3-200246](docs\R3-200246.zip) | BL CR to 38.473: Support for IAB (Ericsson) | CR0285r11, TS 38.473 v16.0.0, Rel-16, Cat. B  **Endorsed as BL** |
| [R3-200605](docs\R3-200605.zip) | Support for IAB (Nokia, Nokia Shanghai Bell) | CR0007r1, TS 38.474 v15.3.0, Rel-16, Cat. B  **Endorsed as BL** |

**IAB-node integration**:

TP for IAB TS 38.401 BL CR on various fixes: [R3-201356](Inbox\R3-201356.zip)  **Agreed**

**[Rapporteur]: Previous solution to topology discovery for OAM-configured IP address does not work. RAN3 presently has no solution for topology discovery for OAM-configured IP address.**

**Traffic mapping:**

**Agreement: At least one “non-F1 traffic” codepoint is needed**

TP for IAB F1AP BL CR on UL mapping for CP traffic: [R3-201415](file:///C:\temporary\RAN3\RAN3%20Feb%2020\Agenda\Inbox\R3-201415.zip) **Agreed unseen**

**[Rapporteur]: Establishes UL mapping on access IAB-node for CP and non-F1 traffic.**

**Clean ups:**

TP for IAB F1AP BL CR: [R3-201415](file:///C:\temporary\RAN3\RAN3%20Feb%2020\Agenda\Inbox\R3-201415.zip) **Agreed unseen**

**[Rapporteur]: The max number of BH RLC channels is 16384. The max number of routing entries is 1024.**

**Traffic\_at\_Donor\_and\_Intermediate\_nodes:**

* **Donor-CU configures Donor-DU with the BAP address during the F1 Setup procedure between the Donor-DU and Donor-CU. FFS on whether include multiple BAP address.**
* **Consider the following solutions for IP packet mapping in EN-DC:** 
  + **to support MN-terminated SCG/split bearer in EN-DC or MR-DC, the direct routing is supported in IAB network.**
  + **for direct routing, the IAB donor CU should provide the DSCP and/or flow label to MeNB for each E-RAB.**
* **Max no. of DSCP values to be mapped to one BH RLC CH is 64**
* TP for NR-IAB BL CR for 36.423 on IP packet mapping for EN-DC case: [R3-200567](file:///C:\temporary\RAN2\RAN2%20Feb%2020\CB%20email%20discussions\AT109e%20%5b013%5d%20IAB%20general%20(QC)\docs\R3-200567.zip) **Agreed**
* TP for NR-IAB BL CR for 38.473 on replacement of routing entries: [R3-201393](file:///C:\temporary\RAN2\RAN2%20Feb%2020\CB%20email%20discussions\AT109e%20%5b013%5d%20IAB%20general%20(QC)\docs\R3-200567.zip) **Agreed**

**[Rapporteur]: First bullet handles configuration of donor DU with BAP address for UL traffic.**

**IP address management:**

* **The signalling design of the IP address allocation follows the way as: IAB donor CU sends request to the IAB donor DU, and then IAB donor DU responses the IP address related information, in which the BAP-IP coupling is not considered.**
* **New class 1 non-UE associated F1AP procedure is defined for IP address allocation between IAB donor CU and IAB donor DU.**
* **For the F1AP signalling design, the maximum number of IPv4 addresses allocated by IAB donor DU in one F1AP message is 16 and the length of allocated IPv6 prefix is fixed to 64**
* **For IPv4 allocation, the IAB donor CU requests multiple IPv4 addresses by providing the number of the requested IPv4 address, and IAB donor DU provides a list of IPv4 addresses**
* **For IPv6 prefix allocation, IAB donor-CU sends IPv6 address request, and the IAB donor DU provides one IPv6 prefix, under the assumption of one IPv6 prefix per Donor DU.**
* **The IP version information is explicitly included when IAB Donor-CU request the IP address from IAB-Donor DU.**
* **The gNB-DU identification is not included during IP allocation procedure**
* **IP address add/removal list is introduced in RRC signaling**
* **The configuration of security layer, discovery of CU-CP and SeGWs, and other IP-based services can be done via the existing solutions (e.g., OAM configuration).**
* **WA: address update list is introduced in RRC signalling, in which each item includes the new IP address and the corresponding old IP address**

**Email discussion has been started on LS to RAN2 with deadline of March 6.**

**[Rapporteur]: Note implications on RRC signaling in 8th and 10th bullet. This will be captured in R3 email discussion.**

**PHY-layer parameter configuration via F1AP**

* TP for IAB BL CR to 38473: [R3-201355](Inbox\R3-201355.zip) **Agreed**

**ENDC operation**

* **Introduce a new UE-associated X2AP message to deliver F1-C traffic.**
* **WA the X2 interface needs to be enhanced to transfer the IP packets of the F1-C interface, which includes the F1AP, as well as other SCTP CHUNKs between the MeNB and IAB-Donor.**
* TP for IAB BL CR to 36423: [R3-201425](file:///C:\temporary\RAN3\RAN3%20Feb%2020\Agenda\Inbox\R3-201425.zip) **Agreed unseen**

**[Rapporteur]: This addresses RAN2’s LS on transport of F1-C over LTE/X2.**

**Routing and AOB**

* **Inter-donor DU re-routing is not support, the UL BAP address is donor DU specific.**
* **CU includes the mapping between the IPv4 address(es)/IPv6 prefix assigned to the IAB node, and the related donor-DU’s BAP address, in the RRC message when assign the IP address to the IAB node.**
* LS to RAN2 LS on inter donor DU re-routing and source IP configuration: [R3-201418](Inbox\R3-201418.zip) **Agreed unseen**

**[Rapporteur]: Main section of this LS to RAN2.**

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| --- |
| **Inter-donor DU re-routing is not supported, the UL BAP address is donor-DU-specific.**  **CU includes the mapping between the IPv4 address(es)/IPv6 prefix assigned to the IAB node, and the related donor-DU’s BAP address, in the RRC message when assign the IP address to the IAB node.**  **ACTION:** RAN3 kindly ask RAN2 to take above RAN3 agreements into account and design the RRC signaling to support the source IP configuration. |

**This means: Include the donor-DU’s BAP address together with IPv4 addresses/IPv6 address prefix in RRC message to IAB-node.**

**BH RLF recovery**

* TP on BH RLF recovery procedure for NR\_IAB BL CR to TS 38.401: [R3-201363](Inbox\R3-201363.zip) **Agreed**

**IAB-node migration under same donor**

* TP on cleanup to topology adaptation procedure for NR\_IAB BL CR to TS 38.401: [R3-201419](Inbox\R3-201419.zip) **Agreed unseen**

# 2 Open Issues

1. Configuration of “bearer mapping” at intermediate IAB nodes: stage-3 needs to be done.
2. Topology discovery: Existing options don’t work in case:
   1. IAB-node uses IPsec tunnel mode
   2. IAB-node uses OAM-assigned IP address
3. Not clear which RRC message to be used for IP address request by IAB-node using ENDC.
4. Not clear for which IP address the CU configures DL mapping on donor DU when assigning multiple IP addresses to IAB-node (i.e. CU doesn’t know which IP address IAB-node will pick).
5. F1C over LTE/X2:
   1. Setup during integration procedure
   2. Allocation of IP addresses
   3. Use of IPsec

# 3 References

[1] Chairman Report, 3GPP TSG RAN WG3, Meeting #107e, E-meeting, February 24 - 28, 2020