**3GPP TSG-RAN WG2 Meeting #105bis R2-19xxxxx**

**Xi’an, China, April 8th – 12th, 2019**

**Agenda item:** 11.1.1

**Source:** Ericsson (Rapporteur)

**Title:** Email discussion [105#47] [NR\_IAB-Core] Bearer Mapping

**Document for:** Discussion

# **Introduction**

This document contains email discussion:

R2-1902645 Email Discussions Qualcomm Inc

discussion

- Huawei think that Adapt entities should be discussed separately.

- Chair proposes to remove the part on entities

* [105#47] [NR\_IAB-Core] Bearer mapping (Ericsson)

 Intended outcome: a report to identify options and possible “easy” agreements.

 **Deadline:** Thursday 2019-03-28

*Discussion:*

The TR defines the term “bearer mapping” as “UE-bearer to RLC-channel mapping” but this is too restrictive since it does not apply to F1-C. Further, F1-C messages of different type might also have different priorities and therefore use different RLC channels. This raises the following questions:

* What are the criteria we want to allow for the mapping of an Adapt PDU to a BH RLC channel? (e.g. QoS, UP vs CP, PDU session, F1 connection, others).
* What information must be available at the access-IAB-node to enable this mapping in upstream direction? (e.g. mapping table with (F1-connection Id, BH LCID)-pairs).
* Which of these criteria require a re-mapping on intermediate IAB-nodes?
* What information must be available at the intermediate-IAB-node to enable this re-mapping? (e.g. none if remapping is not required).
* What information needs to be carried in the adapt header to enable the remapping on the intermediate-IAB-node?

# **2. Discussion**

The purpose of this email discussion is to apprehend different options for bearer mapping in an IAB network and identify common themes on this topic to be presented in RAN2#105bis. To make this discussion more productive, we have rephrased the above questions by bringing up explicitly the underlying issues of mapping in Donor DU, intermediate-IAB-node and Access-IAB-node. In addition, to provide companies the opportunity to express their point of view on how these issues can be tackled for N:1 and 1:1 mapping, as well as the mapping aspect of F1-C and OAM traffic, we have included three sets of questions.

It should be noted that we have not included the case of the DL mapping at the Access-IAB-node and UL mapping at the Donor DU because there is no BH RLC channel at the next hop and we can rely on F1/IP mechanisms.

Companies are invited to share their point of view, specifically about what information is used/needed for the mapping in each case, how the node(s) obtain the information, whether the information is provided via configuration or inband (e.g. Adaptation/IP header), and motivation behind remapping at the intermediate-IAB-node(s).

In the following, two sets of questions one for each type of mapping are provided, covering the bearer mapping issues raised in R2-1902645:

**Question 1: N:1 mapping UP**

**1a: How is the mapping performed for the UL at the Access-IAB-node?**

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Qualcomm |  Based on F1-U GTP TEID  |
|  |  |
|  |  |
|  |  |

Summary:

**1b: How is the mapping performed for the DL at the Donor DU?**

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Qualcomm | Upfront: If RAN2 wants to have a new transport format on the **wireline** network, they need to get RAN3 involved. Same applies if RAN2 wants E2E security protection of F1 to be broken at the Donor DU.QC does **not** want to see a new transport format for IAB support on wireline network, or split up of E2E security layer for F1.We propose:- Derive mapping from IPv6 flow label and DSCP on IP header. - For IPv4, only DSCP is available. If operator wants to support fine-granular QoS, they can deploy IPv6.  |
|  |  |
|  |  |

Summary:

**1c: How is the mapping performed for the UL/DL at the intermediate-IAB-node(s)?**

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Qualcomm | Based on 1:1 mapping between ingress and egress RLC channels. There is no need for a “remapping”. We don’t see why the reasons for the bearer mapping, e.g. such as bearer’s QoS, PDU session, slice, etc., would change on the intermediate IAB-node.  |
|  |  |
|  |  |

Summary:

**1d: Additional comments/aspects related to N:1 mapping?**

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Qualcomm | There should be no difference between N:1 and 1:1 bearer mapping. 1:1 bearer mapping should simply be a special case of N:1 mapping with N=1. |
|  |  |
|  |  |

Summary:

**Question 2: 1:1 mapping UP**

**2a: How is the mapping performed for the UL at the Access-IAB-node?**

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Qualcomm | Same as for N:1 bearer mapping: Based on GTP-U TEID.  |
|  |  |
|  |  |

Summary:

**2b: How is the mapping performed for the DL at the Donor DU?**

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Qualcomm | Same as for N:1 bearer mapping. - Based on DSCP and IPv6 flow label. - If operators wish to perform fine granular 1:1 mapping they can deploy IPv6. |
|  |  |
|  |  |

Summary:

**2c: How is the mapping performed for the UL/DL at the intermediate-IAB-node(s)?**

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Qualcomm | Same as for N:1 bearer mapping: Based on 1:1 mapping between ingress and egress RLC channels. There is no need for a “remapping”.  |
|  |  |
|  |  |

Summary:

**2d: Additional comments/aspects regarding 1:1 mapping?**

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Qualcomm | Should be same as for N:1 mapping with N=1. |
|  |  |
|  |  |

Summary:

**Question 3: Mapping of F1-C and OAM**

**3a: How is the mapping performed for the UL at the Access-IAB-node?**

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Qualcomm | F1-C should be provided with a separate RLC channel.OAM is essentially UP traffic and could be aggregated with mobile UP traffic. De-multiplexing is no issue since OAM traffic and mobile UP traffic use different dst IP addresses in upstream direction. |
|  |  |
|  |  |
|  |  |

Summary:

**3b: How is the mapping performed for the DL at the Donor DU?**

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Qualcomm | F1-C PDUs should be marked with unique DSCP on wireline network, so that F1-C priority can also be achieved for IPv4 deployments.OAM can use same marking as mobile UP traffic. Demultiplexing in downstream direction will be based on L4 (i.e. UDP with F1-U port number for mobile UP traffic vs. TCP connection for OAM traffic) |
|  |  |
|  |  |

Summary:

**3c: How is the mapping performed for the UL/DL at the intermediate-IAB-node(s)?**

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Qualcomm | Same as UP: There should be 1:1 mapping between ingress and egress RLC channels.  |
|  |  |
|  |  |

Summary:

**3d: Additional comments/aspects regarding F1-C/OAM mapping?**

|  |  |
| --- | --- |
| **Company** | **Comments** |
|  | CP and UP should use the same principles. Further, F1-C should be aggregated onto same BH RLC channel. OAM can be aggregated with BE UP traffic. |
|  |  |
|  |  |

Summary:

# **3. Summary**