3GPP TSG-RAN WG3 Meeting #110e draft-R3-206957

**Online Meeting, 2nd – 12th November 2020**

**Agenda Item: 9.3.7.1**

**Source: Ericsson, ZTE, NEC, CATT, Nokia, Nokia Shanghai Bell, Huawei, Samsung**

**Title: NGAP correction on Global eNB ID in Target ID IE**

**Document for: Discussion and Approval**

# 1 Background

Among the interested companies, we have discussed during offline that in NGAP the Global eNB ID in Target ID refers to the Global ng-eNB ID IE Type, which is specified as “globally identify an ng-eNB (see TS 38.300). “

This paper summarize the discussion so far and aiming to make a conclusion on the matter.

# 2 Discussion

In TS 38.300, it is defined that “ng-eNB” as “node providing E-UTRA user plane and control plane protocol terminations towards the UE, and connected via the NG interface to the 5GC”.

Two issues are discussed offline:

1. Does it bring confusion that the Global eNB ID refers to the Global ng-eNB ID?

**Views:**

1. The reference causes confusion and we better to fix it, so that the Global eNB ID does not refer to Global ng-eNB ID. If we decide to correct it, there are a couple of solutions.
2. Global eNB ID reuses the encoding for Global ng-eNB ID described in 9.3.1.8. This is allowed and not mistake.
3. The Global eNB ID IE is defined in NGAP in Rel 16, which includes home eNB ID. Do we need to align the Global eNB ID in the Target ID?

**Views:**

1. we don't have specific discussion on inter-system HO to HeNB, we also don't consider how to route to HeNB via a HeNB GW. Maybe no need.
2. Yes, we need to align. There are at least 3 solutions:

-          Option A: Add a new choice for “Home eNB ID” in the Global ng-eNB ID IE  => This does not seem preferable, since Home eNB is not supported per-se in 5GS.

-          Option B: Add a new choice for “Global eNB ID” in the Target ID IE, that points to Global eNB ID defined in 9.3.1.165 => This does not seem preferable, since it overlaps with an existing choice.

-          Option C: Add a new choice for “Global Home eNB ID” in the Target ID IE, that points to a newly defined IE in 9.3.1.x. Option C seems to be the best option, illustrated below.

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| 9.3.1.25        Target IDThis IE identifies the target for the handover.

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| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** |
| CHOICE *Target ID* | M |  |   |   |
| *>NG-RAN* |   |  |   |   |
| >>Global RAN Node ID | M |  | 9.3.1.5 |   |
| >>Selected TAI | M |  | TAI9.3.3.11 |   |
| *>E-UTRAN* |   |  |   |   |
| >>Global eNB ID | M |  | Global ng-eNB ID9.3.1.8 |   |
| >>Selected EPS TAI | M |  | EPS TAI9.3.3.17 |   |
| *>Target RNC-ID* |   |  |   |   |
| >>LAI | M |  | 9.3.3.30 |   |
| >>RNC-ID | M |  | 9.3.1.123 | This IE is ignored if the *Extended RNC-ID* IE is included in the *Target ID* IE. |
| >>Extended RNC-ID | O |  | 9.3.1.124 | The *Extended RNC-ID* IE is used if the RNC identity has a value larger than 4095. |
| *>Target Home eNB ID* |   |  |   |   |
| >>Global Home eNB ID | M |  | 9.3.1.x |   |
| >>Selected EPS TAI | M |  | EPS TAI9.3.3.17 |   |

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It is proposed that RAN3 to discuss this issue and make a conclusion. If CR is needed, it can be produced during the meeting.

**Proposal 1: RAN3 to discuss the issue related to the Global eNB ID in Target ID IE and make a conclusion.**

# 3 Summary of the offline discussion

**CB: # 86\_GlobaleNBIDinTgtIDIE**

**-** **should inter-system HO to E-UTRAN be allowed when tgt node is a HeNB? Check w.r.t. routing (TAI used for HeNBs)**

**- continue checking IE encoding**

**- should we introduce an IE which is not used?**

**- go for** **a simple description in semantics?**

(E///)

rev in [R3-206957](file:///D%3A%5CUsers%5Ceranisi%5CAppData%5CLocal%5CTemp%5CTemp1_RAN3_110-e_agenda_with_Tdocs20201103_1703%20%281%29.zip%5CInbox%5CR3-206957.zip)

**Question 1: should inter-system HO to E-UTRAN be allowed when the target node is a HeNB? If yes, how to solve routing when TAI is used for HeNBs?**

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| --- | --- | --- |
| **Company** | **Yes/No** | **Comment** |
| Nokia | Yes | Looking back at the history of this issue, it seems clear to us that the current encoding was introduced by mistake during the discussion about 2-byte versus 3-byte TAC, i.e. companies either didn’t notice that the IE type was Global ng-eNB ID, or did not realize that Global ng-eNB ID had different encoding than Global eNB ID. There is no reason to preclude inter-system HO to HeNB.We support a Rel-15 CR that introduces Option C (backwards compatible).We do not believe there is any routing issue. The selected EPS TAI is part of the encoding (like any other HO target in E-UTRAN).  |
| Lenovo, Motorola Mobility | No | There are three types of HeNBs: open access HeNB, hybrid access HeNB and closed access HeNB. We do not think inter-RAT mobility for hybrid and closed access HeNB can be supported. For open access HeNB, we need further checking the scenario, use cases and solutons.  |
| ZTE | Prefer no | As what Lenovo said above on the types of HeNBs, if we introduce the HeNB ID for inter-system HO, it will bring unnecessary HO failure due to incomplete design, e.g., UE will always be rejected when it handovers to closed HeNB.Furthermore, the corresponding requirement and stage2 description should be reflected in SA2 as well.Considering that there is no mature business deployment of HeNB, it seems no issue to leave the encode as it is. Else we need to find the complete solution for inter-system HO towards all kinds of HeNB. |
| CATT | Prefer no | Even it is allowed to HO to open mode HeNB, it is not a complete feature since HO to close mode and hybrid mode could not be supported. Maybe we could consider to support all HeNB related cases if valid scenarios are confirmed. |
| Huawei | No | The inter-system HO from 5GC to EPC HeNB was not discussed in our RAN3, and nor discussed in SA2. Handover to hybrid access HeNB and closed access HeNB would be much complicated from standard perspective.  |
| NEC | Yes | We think it should be possible to handover to a target that has HeNB ID.  |
| Samsung | Prefer no | Share the view of ZTE and CATT. |
| Ericsson | Prefer no | Also not see the need. |

**Observation 1: Six companies indicated either “prefer No” or “’No” to HeNB while 2 companies indicated “Yes” to HeNB.**

**We have a backward compatible solution (e.g Sol 3), however there is no agreement to introduce HeNB as the possible Target when handover from NR to LTE.**

**We need to discuss the use case and if to support all the HeNB case or only some, and what would be the consequence to support it. We may also need to check if there is such requirement.**

**Proposal 2: It is proposed to state that “there is no consensus on if to introduce HeNB as the possible handover target.”**

**Question 2: should we introduce an IE which is not used? (i.e. the HeNB in the target ID)**

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| **Company** | **Yes/No** | **Comment** |
| Nokia | X | This question does not make sense. Option C (Global HeNB ID + Selected EPS TAI) would be used for inter-system HO to HeNB. |
| Lenovo, Motorola Mobility | No |  |
| ZTE |  | Pending to the conclusion of Q1. |
| CATT | No |  |
| Huawei | No |  |
| NEC |  | Once we introduce it will be used. |
| Samsung |  | Pending to the conclusion of Q1. |

**Proposal 3: The question can be removed from the discussion scope.**

**Question 3: do you consider Global eNB ID refers to Global ng\_eNB ID an issue and need to be fixed?**

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| --- | --- | --- |
| **Company** | **Yes/No** | **Comment** |
| Nokia | No | The existing choice that includes Global eNB ID can be left as-is, and introduce an additional choice to support the “delta” between Global eNB ID and Global ng-eNB ID (i.e. Option C) |
| Lenovo, Motorola Mobility | Yes |  |
| ZTE | Yes | Just add some clarification on the semantic description of Global eNB ID seems enough. |
| CATT | Yes |  |
| Huawei | No | Nothing is broken in our specification. So no change is needed otherwise this will introduce a new IE (option 3) that 5GS would never be used at least for R16 and R17.  |
| NEC | No | The Option C is the best way that is ASN.1 backward compatible, no need to modify the existing IE. |
| Samsung | No | It is allowed for an encoding to look different from its name. |
| Ericsson |  | Semantic description of Global eNB ID could help, if P2 is not included. |

**Question 4: if Yes to Question 3, provide your view how to fix, i.e. a simple description in semantics or other way?**

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| --- | --- |
| **Company** | **Comment** |
| Lenovo, Motorola Mobility | No need any change. |
| ZTE | No change or add some clarification on the semantic description of Global eNB ID. |
| CATT | Simple description in semantics  |
| Ericsson | Semantic description of Global eNB ID could help. |
|  |  |

**Moderator words:**

Lenovo, Motorola Mobility indicated “yes” to “consider the need to change the Global eNB ID” but also indicate “No need any change”.

Also ZTE indicate “no change” in how to fix.

**Proposal 4: The topic relate to** **Global eNB ID encoding depends on the outcome of P2. In any case, if P2 is not in place, the proposed change is at the “semantic level”. Nothing is broken. It is proposed to state that “there is no consensus”.**

# For the Chairman’s Notes

**There is no consensus on whether a HeNB should be a possible hand over target from 5GS to EPS..**

**No change is needed to the current encoding of Global eNB ID within the Target ID IE.**