**3GPP TSG-RAN WG3 Meeting #125 *R3-24xxxx***

**Maastricht, The Netherlands, 19-23 August 2024**

Agenda Item: 9.1

Source: Ericsson (moderator)

Title: Summary of Offline Discussion for CB: # 5\_NewCauseValue

Document for: Discussion

# Introduction

**CB: # 5\_NewCauseValue**

**- Check the use case and if new cause value is needed?** (moderator – E///)

Summary of offline disc

# For the Chair’s Notes

# Discussion

## Use case

The use case discussed is that of a UE performing inter-system inter-RAT HO from eNB to target gNB.

TS 38.300 mentions the following scenarios:

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| *NOTE: It is up to the E-UTRA network, if possible, to avoid handover attempts of a RedCap UE to a target NR cell not supporting RedCap. It is up to the RedCap UE implementation, if possible, to recover from handover attempts to a target NR cell not supporting RedCap.* |
| *NOTE: It is up to the E-UTRA network, if possible, to avoid handover attempts of an (e)RedCap UE to a target NR cell not supporting (e)RedCap. It is up to the (e)RedCap UE implementation, if possible, to recover from handover attempts to a target NR cell not supporting (e)RedCap.* |
| *NOTE: It is up to the E-UTRA network, if possible, to avoid handover attempts of a 2Rx XR UE to a target NR cell not allowing 2Rx XR UEs as specified in TS 36.300. It is up to UE implementation, if possible, to recover from handover attempts to a target NR cell not allowing 2Rx XR UEs.* |

The spec clearly hints that there are use cases where a source eNB knows that UE is of NR type (RedCap, eRedCap, 2Rx XR) and should hence, based on this knowledge, further avoid (up to NW solution) the handover of such UE to a target gNB not supporting the capability to serve this UE.

**Q1: Please share your view whether this scenario is valid:**

|  |  |  |
| --- | --- | --- |
| **Company** | **Y/N** | **Comment** |
| Ericsson | Yes | Yes, there is a gap between st2 and st3. The knowledge is lacking |
| Nokia | Yes and No | There is no standards support for an eNB to determine the 5G radio redcap capability of the UE (therefore the “if possible” hinting at implementation means). |
| CATT | Yes | One of the implementation is to allow eNB decode NR radio capability. Base on this, the source eNB may know that target node does not the same capability as UE via new or old cause value, and “learn” from it for following handover. But the implementation may also support configuring the neighbor gNB capability to eNB e.g., via OAM. In this case, cause value may be not needed. |
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**Summary**

## Cause values

Based on the online and offline discussions, below a summary of the cause values that have been mentioned proposed to address this use case

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| --- | --- | --- |
| **Cause value** | **Pros** | **Cons** |
| Radio resources not available | No impacts to S1AP | This is not about RRM (where radio resources may be only temporarily limited) but about permanent non availability. |
| Insufficient UE capabilities | No impact to S1AP  | **This cause is half correct**: A RedCap UE has indeed “insufficient UE capabilities” to operate in a gNB which can only handle regular UEs. However, if gNB does not support RedCap (does not transmit the support in SIB), how can we interpret that UE has insufficient capabilities? Also, this is not about insufficient UE caps, this is about insufficient cell caps. |
| Insufficient RAN capabilities | Source eNB clearly knows that HO is not possible towards that target. | Impact on S1AP |
| Handover Target not allowed | No impact to S1AP  | “not allowed” is not appropriate, the case being discussed is that the HO is permanently “not possible”. |

**Summary**

**Potential proposals:**

**Q2: based on discussion two options are proposed:**

 **Opt 1: agree S1AP CRs R3-244403 and R3-244404 by E/// et al.**

**Opt 2: agree online that cv “Handover Target not allowed” also means “HO is not possible”**

|  |  |  |
| --- | --- | --- |
| **Company** | **Opt1 or 2** | **Comment** |
| Ericsson | 1 | Opt 1 is preferred due to its clarity |
| Nokia | 2  | Option 1 does not help and can even be harmful as was explained during the online discussion. Existing cause values already exist to prevent the source eNB to attempt again the handover to this target cell for this UE such as “handover target not allowed” but usage of cause values should not be exclusive. |
| CATT |  | We do not expect to do much in specification if RAN2 decides to base on eNB implementation. We cannot assuming OAM can do or cannot do i.e., OAM configures the neighbour gNB capability to Enb. It is difficult to define a solution in order to **help eNB’s implementation**. |
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# TBD