**3GPP T****SG-RAN WG3 Meeting #110-e R3-211062**

**Online, 25th January – 5th February 2020**

Agenda Item: 9.3.8

Source: Ericsson

Title: Summary of Discussion for Normal Release

Document for: Discussion, Decision

# Introduction

A Summary of Offline Discussions has been assigned to the topic of Normal Release Cause Value.

The discussion has been summarised as follows in the meeting minutes:

**CB: # 91\_MOACV2**

**- what existing cause value(s), if any, can be used for this scenario? (including “unspecified” cause value?)**

**- if none, acknowledge issue**

**- Rel-16 CR could be acceptable?**

(E/// - moderator)

# Summary of offline disc [R3-211063](file:///C:\Users\eangcen\AppData\Local\Temp\Temp1_RAN3_111-e_agenda_with_Tdocs20210126_1005.zip\Inbox\R3-211063.zip)For the Chairman’s Notes

**[To be added]**

# Discussion

At RAN3-110e an initial discussion on the introduction of the “Normal Release” cause value was carried out.

In [1] the reasons for inclusion over X2 and Xn of the “Normal Release” cause value have been explained in more details and co-sourced by a large number of operators.

In [1] an example is presented that shows how it is important to support the “Normal Release” cause value over Xn, but the same case is valid over X2.

The example is that of a SgNB modification over Xn aimed at releasing a PDU Session. This case is particularly representative because a PDU Session Removal could occur due to issues at the network side or at the UE side, in which case the user would experience a service disruption. Or it could happen simply because the service is terminated, in which case there is no issue to be troubleshooted.

When an M-NG-RAN node receives an NGAP: PDU SESSION RELEASE COMMAND message with NAS cause: “Normal release” (for the release of a PDU Sessions), it will in its turn send an XnAP: S-NODE MODIFICATION REQUEST message to the S-NG-RAN node. The same will happen when an M-NG-RAN node receives an NGAP: PDU SESSION RESOURCE MODIFY REQUEST message in order to release one or more QoS Flows with NAS cause: Normal release.

The XnAP: S-NODE MODIFICATION REQUEST message is mandated to contain a cause value and if the reason to signal this message is the release of a PDU Session due to NAS cause: “Normal release”, it is logical to expect that an equivalent cause value would be signalled over the Xn.

However, such cause value does not exist over Xn or X2 while it exists over NG and F1.

Therefore, when event traces are parsed and analysed for troubleshooting, the event of releasing a PDU Session will be marked with the “Normal Release” cause over NG, then with a different Cause Value over Xn and perhaps with an even different cause value over F1. Due to that, it is not possible to understand the exact reason for a PDU session release nor to trace the event over the interfaces.

Besides this visibility problem, there is another problem, namely which cause value should be used to indicate a “Normal Release” for a PDU Session.

Looking at TS38.423, a number of cause values can be identified that may be used for a PDU Session release action:

* No Radio Resources Available in Target Cell,
* Action Desirable for Radio Reasons,
* Reduce Load,
* Resource Optimisation,
* Target not Allowed,
* No Radio Resources Available,
* RRM purpose,
* Radio Connection With UE Lost,
* Bearer Option not Supported,
* Resources not available for the slice(s),
* PDCP Overload,
* Unspecified,

However, all of the cause values above convey a potential issue or a reason for release that is not the reason that trigger the PDU Session removal in reality.

This creates a number of problems when collecting statistics and troubleshooting because a wrong cause value would point to a problem that does not exist, which may be attempted to be solved for no reason.

It could be argued that the “Normal Release” cause value received over F1 or NG may be mapped to the “Unspecified” cause value. With that respect it should be noted that the “Unspecified” cause value could point at causes in any of the following areas:

* Radio Network Layer
* Transport Layer
* NAS
* Protocol
* Miscellaneous

Hence there would be total unclarity about the event that caused the release if the “unspecified” cause value is used.

Secondly, it seems erroneous to define a cause value for a specific purpose on two interfaces like NG and F1, but not define the same over the Xn/X2. Namely, if “unspecified” is the way to go, why wasn’t that followed over NG and F1?

**Given the discussion above, companies are invited to provide their view on how to convey over the Xn and X2 interfaces a cause value that can map to the “Normal Reason” present over NG or over F1 and whether the best alternative is to introduce the “Normal Release” cause value over Xn/X2.**

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| **Company** | **Comments** |
| Ericsson | There is no cause value, to date, over the Xn and X2 that can convey that a PDU Session release is for “normal reasons”. In general there are many other cases of release, which are not caused by any issue or any special event, but that are just the course of normal operation. These cases need to be clearly marked with a “normal release” cause so that they are not highlighted in post processing performance analysis as issues to be resolved and so that the node behaviour at reception of these cause value does not try to solve issues that do not exist.  Therefore, it is necessary to add the “normal release” cause value over X2 and Xn |
| Deutsche Telekom | We support the proposal to introduce a “Normal release” cause value Xn/X2 due to explanations given before in the text and to achieve consistency with other interfaces. |
| ZTE | We are wondering what’s the usage of this cause value to be used in the SN during MR-DC sigalling, if such value is used for data statistics collection, then the MN as the master node should be the collection node to record the normal release of PDU session for MR-DC UE.  Usually, if there is no strong motivation to add a new cause value, “unspecified” can always be used. |
| BT | Agree with Ericsson, currently there is no release cause value for normal reasons on the X2 interface and the cause value may differ between vendors for the same signaling flow. This makes performance analysis of DC operation more challenging when analyzing trace information from X2/Xn interfaces.  The suggestion of using ‘unspecified’ (or other random cause value) for a ‘normal reason’ should be avoided, as an operator would not be able to distinguish between a “unspecified” for a normal release and “unspecified” for unknown failure without deep-dive analysis. |
| Verizon | Same view as Ericsson and BT. The “normal” reason should be added X2/Xn in alignment with other interfaces. “Unspecified” or random value is not acceptable from customer/operator perspective as it leaves complete ambiguity as to the reason of an unknown failure. |

# Conclusion, Recommendations

# References

[1] R3-210624, Cause value on X2, Xn for normal release (Ericsson, Verizon Wireless, Deutsche Telekom, CMCC, BT, AT&T, China Unicom, Telecom Italia, Vodafone)