**3GPP TSG RAN2 #115-e R2-21xxxxx**

**Online, 16 – 27 August 2021**

**Agenda Item:**  **8.13.3.1 Immediate MDT enhancements**

**Source: Huawei, HiSilicon**

**Title:** **Summary on agenda item 8.13.3.1 Immediate MDT enhancements**

**Document for: Discussion and Decision**

### 1 Introduction

This contribution is to summarize proposals from RAN2 contributions under AI 8.13.3.1 ([1]~[7]), and the email title is as below:

* [Pre115-e][810][SON/MDT] Summary of 8.13.3.1 Immediate MDT enhancements (Huawei)

### 2 Discussion

#### 2.1 Proposals related to RAN3 LS [8]

[1], Vivo

1. RAN2 to confirm the understanding that the *reportAmount* is a mandatory field in RRC, so the restriction on the number of reports also applies to the reporting of *ul-DelayValueConfig-r16* (namely D1).
2. RAN2 to reply that there is no drawbacks incurs even though Report Amount is absent for M6.

**[Rapp]** Suggest to discuss both proposals because the RAN3 LS [8] has actions for RAN2.

#### 2.2 Proposals related to RAN3 LS [9]

[1], Vivo

1. To solve the erroneous implementation, *LoggedMeasurementConfiguration-r16-IEs* is extended to include *interFreqTargetList-r16* again out side of *areaConfiguration-r16*.
2. From the UE perspective, NR Frequency Band is not necessarily required.

**[Rapp]** Suggest to move it to logged MDT session.

#### 2.3 M5 measurements

[2], CATT

**Proposal 3: For split bearer, the M5 measurement results of MN and SN can be calculated in the DU respectively.**

**Proposal 4: For the accuracy of the result, a data marker (duplication indicator) can be sent with M5 measurement results to the OAM.**

**[Rapp]** More related to RAN3?

[3], Ericsson

Proposal 4 For the throughput measurements (M5) in split bearer configurations, the throughput is computed at individual DUs and sent to TCE.

Proposal 5 For throughput measurements (M5) in split bearer configurations, CU-UP indicates to the OAM the status of packet duplication during the measurement period.

**[Rapp]** More related to RAN3?

[4], Qualcomm

**Proposal 1: Considering both M5 and M7 measurements, we argue MN and SN report the following measurements to TCE at the end of the measurement period for M5 and M7 measurements:**

* **Burst Size of data transmitted over SN (taking multiple transmission slots)**
* **The point in time when the transmission is started for the first data in the data burst over SN**
* **The point in time when the data until the second last piece of data burst TX over SN has been successfully received at the UE**
* **The RLC SDU sequence number of packets lost over the Uu interface**
* **The RLC SDU sequence number of the packet discard at the RLC or MAC for traffic management for which part is transmitted over the air.**

**[Rapp]** In RAN2#113b-e, based on the Imm MDT summary R2-2104441, a similar proposal was discussed and the RAN action is “**Proposal 1: Considering both M5 and M7 measurements, we argue to introduce an X2/Xn message to obtain the following measurement at the end of the measurement period:**”, and that propsals did not have enough supports.

The above proposal 1 (in [4]) has a different RAN action.

#### 2.4 M6 measurements (including D1 measurements)

[2], CATT

**Proposal 1: For split bearer, D1 values (UL PDCP Packet Average Delay) over MN and SN are different.**

**Proposal 2: For split bearer, UE reports M6 UL D1 results to the MN or SN which configures the D1 measurement.**

[3], Ericsson

Proposal 1 In MN terminated split bearer and SN terminated split scenarios, both the MN CU-CP and the SN CU-CP can configure the D1 measurement to the UE.

Proposal 2 In MN terminated split bearer and/or SN terminated split scenarios, if the UE receives the D1 measurement configuration from the MN CU-CP then the UE reports D1 measurement values associated to packets sent over MCG to MN CU-CP.

Proposal 3 In MN terminated split bearer and/or SN terminated split scenarios, if the UE receives the D1 measurement configuration from the SN CU-CP then the UE reports D1 measurement values associated to packets sent over SCG to SN CU-CP.

[7], Huawei, HiSilicon

**Proposal 1: For split bearer, only one node can configure D1 measurements.**

**Proposal 2: For D1 measurements for split bearer (i.e. MN terminated split bearer, SN terminated split bearer),**

**RAN2 to adopt option 2 for more accurate measurement results.**

**[Rapp]** In RAN2#113b-e, based on the Imm MDT summary R2-2104441, it seemed to be no consensuses on any solutions, so a proposal was suggested (but not treaded due to lack of time). From Rapporteur’s point of view, it may be good to discuss the proposal (with some modifications).

**Proposal 1: For D1 measurements for split bearer (i.e. MN terminated split bearer, SN terminated split bearer), try to find a compromise solution, and if there are no consensuses on any solutions, RAN2 is to decide on one understanding from the following two:**

* **Understanding 1: D1 measurements are not used for this scenario, i.e. the network will not configure D1 measurements for the UE for this scenario**
* **Understanding 2: D1 measurements are allowed for this scenario and how it works can be clarified**

#### 2.5 M7 measurements

[2], CATT

*DL Packet Uu Loss Rate in the DL per DRB per UE*

**Proposal 5: For split bearer, the MN DU and the SN DU send the results of M7 measurement to OAM respectively.**

**Proposal 6: For the accuracy of the result, a data marker (duplication indicator) can be sent with M7 measurement results to the OAM.**

*UL PDCP SDU Packet Loss Rate*

**Proposal 7: For the accuracy of the result, measurement of M7 packet loss rate of UL PDCP SDU with data marker (duplication indicator) can be sent to the OAM by CU.**

*DL/UL F1-U Packet Loss Rate*

**Proposal 8: Measurement of M7 packet loss rate of DL/UL F1-U is performed by CU and it will not be impacted by DC scenario, no matter for split bearer or for MN/SN terminated SCG/MCG bearer.**

**[Rapp]** More related to RAN3?

[3], Ericsson

Proposal 6 Packet Loss rate measurements (M7) are performed at DUs and sent to TCE.

Proposal 7 For the packet loss rate measurements in split bearer configurations, CU-UP indicates to the OAM the status of packet duplication during the measurement period.

**[Rapp]** More related to RAN3?

#### 2.6 Immediate MDT and IDC

[7], Huawei, HiSilicon

**Proposal 3: For immediate MDT, the reporting of MDT measurements are not affected by IDC, i.e. follow LTE design.**

**[Rapp]** It was proposed in previous meetings, but it was not treated.

### 3 Conclusion

Based on the analysis in section 2, the summary is as below:

**Related to RAN3 LS [8]: (from [1], Vivo)**

1. RAN2 to confirm the understanding that the *reportAmount* is a mandatory field in RRC, so the restriction on the number of reports also applies to the reporting of *ul-DelayValueConfig-r16* (namely D1).
2. RAN2 to reply that there is no drawbacks incurs even though Report Amount is absent for M6.

**For M6 measurements: (related to [2], CATT, [3], Ericsson and [7], Huawei, HiSilicon)**

**Proposal 1: For D1 measurements for split bearer (i.e. MN terminated split bearer, SN terminated split bearer), try to find a compromise solution, and if there are no consensuses on any solutions, RAN2 is to decide on one understanding from the following two:**

* **Understanding 1: D1 measurements are not used for this scenario, i.e. the network will not configure D1 measurements for the UE for this scenario**
* **Understanding 2: D1 measurements are allowed for this scenario and how it works can be clarified**

**For M5 and M7 measurements: (the following prposals seem more related to RAN3)**

[2], CATT

**Proposal 3: For split bearer, the M5 measurement results of MN and SN can be calculated in the DU respectively.**

**Proposal 4: For the accuracy of the result, a data marker (duplication indicator) can be sent with M5 measurement results to the OAM.**

[3], Ericsson

Proposal 4 For the throughput measurements (M5) in split bearer configurations, the throughput is computed at individual DUs and sent to TCE.

Proposal 5 For throughput measurements (M5) in split bearer configurations, CU-UP indicates to the OAM the status of packet duplication during the measurement period.

[2], CATT

*DL Packet Uu Loss Rate in the DL per DRB per UE*

**Proposal 5: For split bearer, the MN DU and the SN DU send the results of M7 measurement to OAM respectively.**

**Proposal 6: For the accuracy of the result, a data marker (duplication indicator) can be sent with M7 measurement results to the OAM.**

*UL PDCP SDU Packet Loss Rate*

**Proposal 7: For the accuracy of the result, measurement of M7 packet loss rate of UL PDCP SDU with data marker (duplication indicator) can be sent to the OAM by CU.**

*DL/UL F1-U Packet Loss Rate*

**Proposal 8: Measurement of M7 packet loss rate of DL/UL F1-U is performed by CU and it will not be impacted by DC scenario, no matter for split bearer or for MN/SN terminated SCG/MCG bearer.**

[3], Ericsson

Proposal 6 Packet Loss rate measurements (M7) are performed at DUs and sent to TCE.

Proposal 7 For the packet loss rate measurements in split bearer configurations, CU-UP indicates to the OAM the status of packet duplication during the measurement period.

**Others: ([7], Huawei, HiSilicon)**

**Proposal 3: For immediate MDT, the reporting of MDT measurements are not affected by IDC, i.e. follow LTE design.**

### 4 Tdocs under 8.13.3.1 Immediate MDT enhancements

[1] R2-2107719 On RAN3 LS on MDT issues vivo discussion

[2] R2-2107826 Further Considerations on Immediate MDT Enhancements CATT discussion

[3] R2-2108302 On Immediate MDT Enhancements Ericsson discussion

[4] R2-2108349 On accurate M5 and M7 measurements QUALCOMM INCORPORATED discussion

[5] R2-2108356 Consideration on immediate MDT aspects ZTE Corporation, Sanechips discussion

[6] R2-2108564 Report of [Post114-e][851][SONMDT] Procedures and Modeling of successful HO report (Huawei) Huawei discussion (this contribution should be under 8.13.2.1, so it is not summarized here)

[7] R2-2108565 Discussion on immediate MDT enhancements Huawei, HiSilicon discussion

[8] R3-212961 LS on Report Amount for M4, M5, M6, M7 measurements

[9] R3-212824, LS on Area scope configuration and Frequency band info in MDT configuration