3GPP TSG-RAN WG3 #119 R3-230834

27th Feb – 3rd Mar 2023

Athens, Greece

Agenda Item: 20.2

Source: ZTE (moderator)

Title: Summary of Offline Discussion on CB: # 9\_R18SDT

Document for: Approval

# Introduction

**CB: # 9\_R18SDT**

**- Discuss on the open issues listed above, at least the first issue**

**- Capture agreements and open issues**

(ZTE - moderator)

Summary of offline disc [R3-230834](file:///D%3A%5C3GPPmeeting%5C202205%20RAN3%20116e%5CCB%5CInbox%5CR3-230834.zip)

# For the Chairman’s Notes

<TBD>

# Discussion- Second round

**BLCR allocation**

1) 38.300 ZTE

2) 38.401 HW

3) 38.423 E///

4) 38.473 Intel

5) 37.483 Nokia

6) 37.480(if needed) LG

7) 38.413(if needed) CATT

8) 38.420(if needed) Lenovo

9) 38.470(if needed) SS

10) 38.410(if needed) Xiaomi

**Proposal 1: RAN3 agrees to take MO-SDT procedure in R17 as baseline to support MT-SDT.**

**Proposal 2: MT-SDT can be triggered by DL SDT user data and/or DL SDT signalling.**

**Proposal 3: If deciding/enabling to trigger MT-SDT paging, the anchor gNB shall sends MT-SDT indication (The encoding and the name of MT-SDT indicator needs to be further discussed) to the neighbour gNBs within the RNA, via XnAP RAN paging message.**

**Proposal 4: Only in case of receiving MT-SDT indication in the XnAP RAN paging message, the neighbour gNBs within the RNA is allowed to trigger MT-SDT Uu paging.**

**Proposal 5: If deciding/enabling to trigger MT-SDT paging, the anchor gNB may send MT-SDT assistant information (detail is FFS) to the receiving gNBs via XnAP: RAN paging message.**

**Proposal 8: Upon reception of DL SDT user data, the gNB-UP shall send assistant information (e.g., Data size) to gNB-CP via E1AP DL Data Notification message. FFS on MT-SDT indicator.**

**Proposal 9: If deciding to triggering MT-SDT Uu paging, the gNB-CU shall send MT-SDT indicator to gNB-DU via F1AP Paging message. Other assistant information is pending to RAN2.**

**Proposal 6: WA: Upon reception of MT-SDT indicator and (optional) MT-SDT assistant information from the anchor gNB, whether to tigger MT-SDT Uu paging is by the new gNB’s implementation.**

**Proposal 7: WA: Take Opt2, i.e.**

**The anchor node triggers/enables the the MT-SDT triggering, while the receiving node makes the final decision of the triggering based on information sent by anchor gNB:**

**MT-SDT indicator and SDT assistance information (detail is FFS) to be transferred to the new gNB.**

1. **FFS: whether Data volume should also be provided from the CU to the DU in F1AP PAGING message.**
2. **FFS: whether Include TNL address of receiving gNB in Xn Retrieve UE context message, instead of using Xn-U address indication message.**
3. **FFS: whether and how XnAP RTRV UE CTXT REQ message (that carries MT-SDT resume indication)**
4. **FFS: whether MT-SDT support indication in E1 Bearer Context procedure should be defined to enable the gNB-CU-UP to include the DL data size in the E1AP DL DATA NOTIFICATION message.**

**Question 1: If companies do not agree with above proposal and WA, or have other suggestion, please input you view.**

|  |  |  |
| --- | --- | --- |
| **Company** | **P1…P7** | **Comment** |
| Nokia | OK but | See propose dchnages. |
| Huawei | Diagree P9.Disagree 2nd FFS. | See some small changes above.Disagree with P9, as the final decision should be made by the gNB-DU instead of the gNB-CU, the CU should provide the data volume information to the DU, to assist the DU to make final decision and then DU encode the Paging message over Uu.For the second FFS, the receiving gNB is not able to provide TNL address in that message, as at that time, the receiving gNB does not have UE context or parital UE context, it does not know the (SDT) DRBs the UE have, therefore it is not able to provide TNL addresses. |
|  |  |  |

**TP to TS38.423 (SS)**

If P3, P5 are agreed

#### 9.1.1.7 RAN PAGING

#### 9.2.3.xxx MT-SDT Support Request(refer to MO-SDT IE)

This IE indicates that the UE requested for SDT and may include additional assistance information.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE Type and Reference | Semantics Description |
| MT-SDT Indicator | M |  | ENUMERATED (true,…) |  |
| MT-SDT assistant information (FFS) | O |  | FFS |  |

**TP to TS38.473 (LG)**

If P9 is agreed

#### 9.2.6.1 PAGING

#### 9.3.1.xxx MT-SDT Information (refer to MO-SDT IE)

This IE is used to indicate an SDT transaction and to provide the assistant information from the UE.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IE/Group Name | Presence | Range | IE Type and Reference | Semantics Description |
| MT-SDT Indicator | M |  | ENUMERATED (true,…) |  |
| MT-SDT Assistant Information (FFS) | O |  | FFS |   |

**TP to TS37.483 (CT)**

If P8 is agreed

#### 9.2.2.13 DL DATA NOTIFICATION

**TP to TS38.300 (CATT)**

**TP to TS38.401 (Xiaomi)**

# Discussion-First round

## Background

The following is copied from Chair note.

|  |
| --- |
| 1. Xn RAN paging enhancements:

MT-SDT indication, assistance informationWhich node decides MT-SDT?Opt1: Only the anchor node decides MT-SDT:MT-SDT indicator is included in Xn RAN paging message sent by the anchor gNB. The encoding and the name of MT-SDT indicator needs to be further discussed.Opt2: The anchor node triggers the MT-SDT, while the receiving node makes the final decision based on information sent by anchor gNB:MT-SDT indicator and SDT assistance information (e.g., data size) to be transferred to the receiving gNB.1. MT-SDT with/without UE context relocation

MT-SDT indication1. F1 and E1 impact

Data arrival notification over E1F1 Paging enhancements |

The following is RAN2’s agreement.

**RAN2 #120 meeting**

**Agreements**

1. For RAN paging, MT-SDT indication (at least one bit) is explicitly included per UE via a paging message. FFS if more information for MT-SDT are needed FFS what the indication will be called. FFS signalling details
2. Rel-18 MT-SDT after the MT-SDT paging trigger is detected, RA-SDT and CG SDT solutions/procedures specified in Rel-17 is re-used as a baseline. The detailed triggers will be discussed on case by case. FFS on resources used for access
3. UE can use non-SDT random access resources for accessing the network for an MT-SDT transfer. The UE can also use the configured grant resources and/or MO-RA resources.
4. The network should be able to differentiate why the UL access was triggered, i.e. implicit or explicit indication by the UE.
5. MT-SDT is data that belongs to bearers that are configured for SDT. FFS whether the configuration is MO-SDT or MT-SDT specific. The network can only trigger MT-SDT if the data belongs to those bearers.
6. It is possible for the network to configure only MT-SDT without MO-SDT RA resources and/or CG-SDT. Subsequent UL/DL data belonging to SDT bearers while in INACTIVE is allowed like MO-SDT procedure. FFS stage 3 details
7. New Resume cause in RRC resume will be introduced, one code point MT-SDT indication

**RAN2 #121 meeting**

**Agreement:**

1. Include a one-bit indication in paging to trigger MT-SDT. We will ensure that the CCCH message can be transmitted over CG.
2. Indication is per UE. FFS on signalling.
3. In case condition for paging triggered MT-SDT is not fulfilled the UE initiates RRC Resume procedure. Resume cause FFS
4. Upon receiving MT-SDT trigger, the UE shall initiate SDT procedure if the following checks are satisfied (all these same as Rel-17)

- FFS 3a: Check for DVT (if UL data becomes available in UL)

- 3b: Check for SDT RSRP threshold

- 3c: Check for TA validation before selecting CG (if applicable)

- 3d: Check for SSB level RSRP threshold for CG resource (if applicable)

5. When UE resumes for MT-SDT, UE resumes all RBs configured for SDT

6. RBs configured for SDT are common for MO-SDT and MT-SDT

7. If there is valid CG-SDT resources, the UE should use CG-SDT to transmit the response. FFS on whether we need to optimize for case when CG periodicity is too long

8. To confirm that when SDT is initiated due to MT-SDT, UE can exchange subsequent DL/UL SDT data on the resumed RBs. This clarifies the RB behaviour of related RAN2#120 agreement.

## Which node decides MT-SDT?

Before the selection on the first issue listed in the Chair note, we shall first consider some related issues.

RAN2 has agreed that *Rel-18 MT-SDT after the MT-SDT paging trigger is detected, RA-SDT and CG SDT solutions/procedures specified in Rel-17 is re-used as a baseline. The detailed triggers will be discussed on case by case. FFS on resources used for access*.

**Proposal 1: RAN3 agrees to take MO-SDT procedure in R17 as baseline to support MT-SDT.**

In Rel-17 MO-SDT, both UL user data and UL NAS signalling (i.e., SRB2) are supported for MO-SDT. For the same reason, MT-SDT includes DL user data transmission and DL NAS signalling transmission.

**Proposal 2: MT-SDT includes both DL user data transmission and DL NAS signalling transmission.**

According to the WID, it is to use RAN paging procedure to trigger MT-SDT in the RAN area. In this RAN area, only the anchor gNB (i.e, last serving gNB) stores the UE context, e.g., MT-SDT bearer information (SDT bearer Identity).

**Proposal 3: Only the anchor gNB has acknowledged of MT-SDT bearer information, other than receiving gNBs (i.e., other gNBs within the RAN area).**

Up receipt of DL data/DL NAS signalling from UPF/AMF, since only anchor gNB is aware of the MT-SDT bearer information, the anchor gNB can decide whether the receiving DL data/DL NAS signalling transmission is allowed /expected to use MT-SDT.

**Proposal 4: If deciding to trigger MT-SDT paging, the anchor gNB shall sends MT-SDT indication (The encoding and the name of MT-SDT indicator needs to be further discussed) to the receiving gNBs via XnAP: RAN paging message.**

**Question 1: Do companies agree to P1, P2, P3, and P4?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No****P1,P2,P3,P4** | **Comment** |
| ZTE | Yes | For both opt1 and opt2, anchor node shall send MT-SDT indication to receiving node via XnAP: RAN paging message |
| Huawei | Yes | For P2, subsequent UL data or NAS signalling should be also allowed during MT-SDT session. |
| China Telecom | Yes for P1/P2/P3P4: depends  | P1: RAN2 already agreed to take Rel-17 MO-SDT as baseline. P2: In Rel-17 MO-SDT, UL NAS signalling was agreed to be supported. In our view, DL NAS signalling is also the trigger condition for MT-SDT. To this end, both DL data and signalling should be also supported. P3: exactly. Only anchor node has the information of UE Context before UE context retireived procedure intiated. P4: The details and defintion of MT-SDT indication should be discussed later. In our view, the DL data size and/or 1bit NAS signalling indication is enough. No need to introduce an additional explicitly indicator for MT-SDT…. |
| Xiaomi | P1: YesP2: yes, with rewordingP3: agree but don’t see the needP4: Yes with rewording | For P2, we think MT-SDT can be triggered by DL small data and signalling, but after MT-SDT is triggered, UL data and UL signalling can also be sent via SDT, but the wording of P2 seems preclude the case, so we suggest to reword it as follows: **MT-SDT can be triggered by DL user data and DL signalling**.For P3, we think its kind of observation. Not sure do we need this? For P4, both anchor and neighbour gNB that sends the Paging over Uu be responsible to decide whether trigger MT-SDT paging. Of course, the anchor gNB make the decision first based on the UE’s MT-SDT configuration, and neighbour gNB can make further discussion based on assistance informaiton of DL data or signalling, one may aruge that MT-SDT indication can be implicity indicated by the assistance information, we suggest add a sentence at the end like “**whther the MT-SDT indication is implicit or explicit is FFS**”In addition, we don’t think the receving gNB is a proper wording for this proposal, as receiving gNB means the gNB that receives the UE’s response, but this proposal is not the case. We prefer to use “other gNBs” instead of “receving gNB” |
| CATT | Yes | No matter which option to go, anchor gNB could provide MT-SDT indicator to the receiving gNB via Xn Paging message. Whether need the other assistant info, to be further discussed further if the option 2 is decided. |
| Nokia | P1, P2, P4 OKP3 NOK | P3 is unclear to us. |
| Google | P1, P2, P4 OK with some rewording | OK with rewording for P2 from Xiaomi.For the rewording for P4, the receiving gNB in TS38.300 refers to the gNB that UE accesses in RRC\_Inactive mobility and here the receiving gNBs may not be the one ultimately accessed by the UE after Xn RAN Paging. Therefore, a “neighbour gNB” or “other gNB” within the RNA seems to be better.P3 is unclear to us. |
| Intel | Yes for all.  |  |
| Ericsson | Yes | Agree with CATT and Xiaomi. On the wording, we can follow stage 3 name “new gNB” |
| LGE | Yes | OK with rewording from Xiaomi for P2 |
| Lenovo | Yes for all |  |
| Qualcomm | P1,P2, P4: YesP3?? | P3: Does this proposal mean, only Anchor gNB has “knowledge” of SDT bearer type configuration? If yes, then it has to be better reflected in proposal. |
| Samsung | Yes  | With some rewording.  |

Summary:

13 companies input their view. Majority companies agree with the following proposals (except P4 which is new but P4 is common understanding).

**Moderator’s suggestion:**

**Proposal 1: RAN3 agrees to take MO-SDT procedure in R17 as baseline to support MT-SDT.**

**Proposal 2: MT-SDT can be triggered by DL user data and DL signalling.**

**Proposal 3: If deciding to trigger MT-SDT paging, the anchor gNB shall sends MT-SDT indication (The encoding and the name of MT-SDT indicator needs to be further discussed) to the neighbour gNBs within the RNA, via XnAP RAN paging message.**

**Proposal 4: Only in case of receiving MT-SDT indication in the XnAP RAN paging message, the neighbour gNBs within the RNA is allowed to trigger MT-SDT Uu paging.**

For NR MO-SDT, sdt-DataVolumeThreshold IE is per cell specific parameter which is broadcast via SIB1, and the UE decides whether to initiate MO-SDT only if amount of UL data is above such threshold. The similar principle assumes to be applied to MT-SDT. For MT-SDT, the MT-SDT data volume threshold is configured by each of cell of other gNBs. It is useful for the anchor gNB to transmit the DL data size based its receiving DL data as well as the MT-SDT indication to other gNBs. Up reception of the MT-SDT indication, then the other gNBs within the RAN paging area can judges whether MT-SDT is allowed based on the comparison between DL data size and MT-SDT volume threshold.

**Proposal 5: If deciding to trigger MT-SDT paging, the anchor gNB may send MT-SDT assistant information (e.g., Date size for SDT DRB, detail is FFS) to the receiving gNBs via XnAP: RAN paging message.**

Similar to MO-SDT, for MT-SDT, different cell/gNB within the same RNA area may have different sdt-DataVolumeThreshold, so that different receiving gNB is allowed to trigger either MT-SDT paging or normal paging based on its different sdt-DataVolumeThreshold.

**Proposal 6: Upon reception of MT-SDT indicator and (optional) MT-SDT assistant information, the receiving gNB decides to trigger either normal Uu paging or MT-SDT Uu paging.**

**Question 2: Do companies agree to P5 and P6?**

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| --- | --- | --- |
| **Company** | **Yes/No****P5,P6** | **Comment** |
| ZTE | Yes for both | The P5 and P6 are needed for opt 2, but they are not needed for opt1.For MT-SDT SRB, the MT-SDT assistant information is not needed, and only MT-SDT indicator is enough. |
| Huawei | ‘Yes BUT’ for P5 ‘Yes’ for P6 | For P5, we think the data size of SDT SRB should be also considered in assistance information. |
| China Telecom | Yes for both | For MT-SDT SRB, an indicator for SRB2 NAS signalling is enough.  |
| Xiaomi | Yes | Generally OK, same comment on the wording of “receving gNB” |
| CATT | No, to further discuss and decide which option to go the next meeting. | The proposals are totally for the Option 2. For the sdt-DataVolumeThreshold for MT-SDT, we do not see the real use case to use different threshold for MT-SDT in different cells, it should be consistent between the cells and gNBs when the SDT is deployed. Thus, the decision of the last serving gNB should be respected.Currently, except the MT-SDT indicator in Xn Paging, whether to provide more assistant info from the last serving gNB to the receiving gNB and allows the receiving gNB do the final decision could be further discussed the next meeting. |
| Nokia | Yes | Let us rename “receiving gNB” as “new gNB”. |
| Google | Yes | Generally OK, same comment on the re-wording of “receiving gNB” to “neighbour gNB” or “other gNB.” |
| Intel | Completely and respecitively No.  | Rel-17 threshold was for UL data and MO-SDT. And DL data transmission in Rel-18 MT-SDT happens after the paged UE resumes. Why gNBs needs to be bothered of DL data size when paging the UE? We really cannot understand, and such info is not essential and even could jeopardize the last serving gNB’s decision on legacy paging or MT-SDT paging. It seems many companies are proposing similarly to MT-EDT, but from our understanding, SDT is completely different to EDT (which was devised only for single data transfer together with RRC message – that’s why DL data size mattered – and only for the restricted UEs). Repsecitvely invite companies to read R3-230701. |
| Ericsson | Yes | The data size is preferred to an MT-SDT indication, because the new gNB that can serve the UE with SDT might not have resources for MT-SDT, it can fallback to “legacy” paging and resume to connected (if not overload)... Also, a MT-SDT data size IE would not need a separate indication |
| LGE | No | Agree with CATT |
| Lenovo | Yes | The data size would apply to all DRBs and SRB. |
| Qualcomm | Yes | After some further thinking, assuming different MT-SDT data thresholds may be configured, we are OK for Anchor gNB to provide MT-SDT and DL data volume indication to other neighbor gNBs and serving gNB may decide whether to perform normal paging or MT-SDT paging based on configured thresholds.  |
| Samsung | Yes | Between two options below, we prefer option 2. With the option 2, these two proposals should definitely be kept.  |

Summary:

13 companies input their view. Majority companies (10:3) agree with the P5 and P6.

Morderator has offline discussed with some companies, then provides the compromised suggestion.

**Proposal 5: If deciding to trigger MT-SDT paging, the anchor gNB may send MT-SDT assistant information (detail is FFS) to the receiving gNBs via XnAP: RAN paging message.**

**Proposal 6: WA: Upon reception of MT-SDT indicator and (optional) MT-SDT assistant information, whether to tigger MT-SDT Uu paing is by the other gNB’s implementation.**

There are two options on the table.

* Opt1: Only the anchor node decides MT-SDT:

MT-SDT indicator is included in Xn RAN paging message sent by the anchor gNB. The encoding and the name of MT-SDT indicator needs to be further discussed.

* Opt2: The anchor node triggers the MT-SDT, while the receiving node makes the final decision based on information sent by anchor gNB:

MT-SDT indicator and SDT assistance information (e.g., data size) to be transferred to the receiving gNB.

**Moderator’s view:** Opt1 is that the receiving node **must** follow anchor node’s decision. It means that all receiving node shall trigger the same MT-SDT/normal Uu paging based on the anchor node’s decision.For the opt1, the MT-SDT assistant information is not needed.

**Proposal 7.1: In case of opt 1 (i.e. only the anchor node decides MT-SDT), if deciding to trigger MT-SDT paging, the anchor gNB shall sends MT-SDT indication and do not send MT-SDT assistant indication to the receiving gNBs via XnAP: RAN paging message.**

**Moderator’s view:** Opt2 is that the receiving node can make the final decision. It means different receiving node can make different decision.

**Proposal 7.2: In case of opt 2 (i.e. The anchor node triggers the MT-SDT, while the receiving node makes the final decision based on information sent by anchor gNB), if deciding to trigger MT-SDT paging, the anchor gNB shall sends MT-SDT indication and (optional)MT-SDT assistant indication to the receiving gNBs via XnAP: RAN paging message.**

**Question 3: Do companies prefer opt1 or opt2 and corresponding P7.1/P7.2?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Opt1 or Opt2****P7.1, P7.2** | **Comment** |
| ZTE | Opt 2 and P7.2 | We prefer Opt2, But, for opt1, P7.1 is fine. |
| Huawei | Opt 2 and P7.2 | It should be the reciving gNB to decide the data volume threshold to be used to transmit SDT data over radio for both MO-SDT and MT-SDT. Note that we do not need to specify the data volume threshold for MT-SDT, but it is it the receiving gNB’s implementation and should not be determined by the anchor. |
| China telecom  | Option 2P7.2  | The DL volume threshold for MT-SDT is per-cell configuration. The anchor and receiving node may have different configutation for MT-SDT. In view of this, Option 1 is not applicable.  |
| Xiaomi | Option 2P7.2 | Anchor gNB and the gNB receiving RAN paing should be responsible to decide the trigger of MT-SDT paging over Uu. |
| CATT | Opt 1 and P7.1 | We prefer Opt 1, the opt 2, P7.2, could be further discussed the next meeting. |
| Nokia | Option 2 |  |
| Google | Option 2 |  |
| Intel | Option 1 | Option 2 is a wrong design + unnecessary optimization…. |
| Ericsson | Opt 2 and P7.2 | Agree with Huawei and Xiaomi. |
| LGE | Opt1 | We also prefer Opt 1. |
| Lenovo | Option 2 |  |
| Qualcomm | Option 2 (P 7.2) | It gives some flexible configuration of MT-SDT threhsolds in different gNBs and each GNB can make their own decision.  |
| Samsung | Option 2, so P7.2 |  |

Summary:

13 companies input their view. Majority companies (10:3) agree with the option 2.

Morderator has offline discussed with some companies, then provides the compromised suggestion.

**Proposal 7: WA: Take Opt2, i.e.**

**The anchor node triggers the MT-SDT, while the receiving node makes the final decision based on information sent by anchor gNB:**

**MT-SDT indicator and SDT assistance information (detail is FFS) to be transferred to the receiving gNB.**

## Other open issues

Whenever MT-SDT is received by CU UP, the CU UP needs to inform the CU CP over E1AP that data arrived. The E1AP data notification is used. The E1AP DL data notification indicates the QFIs of arriving packets.

**Proposal 8: Up reception of MT-SDT DRB user data, the gNB-UP shall send MT-SDT assistant information (e.g., Date size) to gNB-CP via E1AP DL Data Notification message. FFS on MT-SDT indicator.**

RAN2 has agreed that *For RAN paging, MT-SDT indication (at least one bit) is explicitly included per UE via a paging message. FFS if more information for MT-SDT are needed FFS what the indication will be called. FFS signalling details*.

Based on above, the gNB-CU provides MT-SDT paging information to enable the gNB-DU to trigger MT-SDT Uu paging.

**Proposal 9: If triggering MT-SDT Uu paging, the gNB-CU shall send MT-SDT indicator to gNB-DU via F1AP Paging message. Other assistant information is pending to RAN2.**

**Question 4: Do companies agree to P8 and P9?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No****P8, P9** | **Comment** |
| ZTE | Yes for all |  |
| Huawei | Yes for both | For P8, we think the data volume should be provided in per UE granularity instead of per SDT DRB.For P9, we think the data volume should also be provided from the CU to the DU, as the data volume threshold should be DU’s implementation. |
| China Telecom | Yes for bothP9: the details of MT-SDT indicator is FFS | P8: MT-SDT indicator is no needed. The data size for MT-SDT is enough.P9: we agree to introduce an new indicator for F1AP paging. Now there are two alternvatives:Alt1: a new indicator: enum(MT-SDT,…)Alt2: a new paging cause, ie.e, MT-SDT, Anyway, we are fine with both alternvatives. |
| Xiaomi | P8, yes with rewordingP9: yes  | For P8, from CU-CP point of view, it has no idea of whther this user data is MT-SDT, it just provides information, the CU-CP can decide whether to trigger MT-SDT, we suggest the following rewording**Proposal 8: Upon reception of DL user data, the gNB-UP shall send assistant information (e.g., Data size) to gNB-CP via E1AP DL Data Notification message. FFS on MT-SDT indicator.**For P9, we think data valume threshold can also be known by CU-CP, it can be configured by OAM. |
| CATT | Yes, but | For E1, if we provide the MT-SDT assistant info (e.g. data size) from CU-UP to CU-CP, the MT-SDT indicator is not necessary. For the MT-SDT assistant info, we should further consider the granularity of the information, e.g. per DRB level, or per QoS flow level.For the F1 Paging, if option 2 is decided, we should also consider CU or DU to decide the final Uu Paging. |
| Nokia | OK for both |  |
| Google | OK for both with rewording | OK for the re-wording of Xiaomi |
| Intel | P8: Not OKP9: OK for the MT-SDT indicator for now.  | P8: But we are open for assistance information (except DL data size) on E1 notification procedure. |
| Ericsson | Yes for both | P8: Agree with Xiaomi’s revisionP9: Agree with Huawei’s view on DU’s decision  |
| LGE | Yes | OK with rewording from Xiaomi for P8 |
| Lenovo | Yes |  |
| Qualcomm | Yes for P8,P9 |  |
| Samsung | Yes for both |  |

Summary:

13 companies input their view. Majority companies agree with the proposals.

Morderator provides the compromised suggestion.

**Proposal 8: Upon reception of DL user data, the gNB-UP shall send assistant information (e.g., Data size) to gNB-CP via E1AP DL Data Notification message. FFS on MT-SDT indicator.**

**Proposal 9: If triggering MT-SDT Uu paging, the gNB-CU shall send MT-SDT indicator to gNB-DU via F1AP Paging message. Other assistant information is pending to RAN2.**

**FFS: Data volume should also be provided from the CU to the DU**

**Question 5: If companies think other essential isuses are needed, please input here.**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Comment** |
| China Telecom | Yes | On the relationship between MT-SDT and MO-SDT, RAN2 had made the following agreement:1. Rel-18 MT-SDT after the MT-SDT paging trigger is detected, RA-SDT and CG SDT solutions/procedures specified in Rel-17 is re-used as a baseline. The detailed triggers will be discussed on case by case. FFS on resources used for access

The above agreement shows that MT-SDT needs to support all features specified in Release 17 MO-SDT. From the perspective of RAN, all MT-SDT capable gNBs should support both Release 17 MO-SDT and Release 18 MT-SDT. In the view of the fact that the MT-SDT capable gNB-CU-CP can inform two modes as below for gNB-CU-UP:* + **Mode 1:** Release 17 MO-SDT only
	+ **Mode 2:** Release 18 MT-SDT

The configuration granularity of the above modes is per UE level. Moreover, in case of Mode 2 is configured to CU-UP, the CU-UP needs to inform the CU-CP about the downlink data arrival for MT-SDT via DL DATA Notification message. It is concluded that the behaviour of MT-SDT and MO-SDT is different in CU-UP. In view of this, it is necessary to introduce a new explicit indicator in ***BEARER CONTEXT SETUP REQUEST*** and ***BEARER CONTEXT MODIFICATION REQUEST*** to indicate whether MT-SDT is enabled.So we would like to invite other companies to provide your views on whether to introduce a new explicit indicator in E1AP to indicate whether MT-SDT is enabled. |
| Xiaomi | Yes  | We proposed that include TNL address of receiving gNB in Retrieve UE context message, instead of using Xn-U address indication message. We think this Xn-U address indication is designed for handover at the begining, there may be multiple PDU sessions and QoS flows for a UE during handover, but if it’s for MT-SDT, we think most cases are one-shot thing, to make the DL small data delivery more quciky, it’s benefitcal to provide one common TNL address for MT-SDT delivery. |
| CATT | Yes | Also for TNL Address allocation, for MO-SDT, in case UE context relocation is decided, the receiving node may or may not provide the TNL address for DL data forwarding. But for MT-SDT case, it shall provide the TNL Address to the last serving gNB, when the resume cause of UE is MT-SDT. There’s no stage 3 impact, maybe some words in stage 2 is needed.  |
| Intel | Yes | We can also discuss after the paged UE is resumed and the impact on XnAP RTRV UE CTXT REQ message (that carries MT-SDT resume indication), because RAN2 already agreed new RRC resume cause for MT-SDT.  |
| Ericsson | Yes | We share the view with CT that some MT-SDT indication is needed in E1 Bearer context proceduresAlso, we echo Intel that RAN2 has already agreed to add a new RRC resume cause for MT-SDT. This should be added in XnAP |
| LGE | Yes | We agree with CT and Ericsson. MT-SDT support indication in E1 Bearer Context procedure should be defined to enable the gNB-CU-UP to include the DL data size in the E1AP DL DATA NOTIFICATION message.We also agree with Intel and Ericsson. Since RAN2 already agreed to introduce the new RRC resume cause for MT-SDT, new RRC resume cause should be delivered to anchor gNB in RETRIEVE UE CONTEXT REQUEST message. |
| Lenovo | Yes | We may need to discuss DL non-SDT arrival after triggering RAN paging message. |
| Qualcomm | Yes | Agree to discuss on E1 AP changes needed as mentioned by CT.Xn-AP Context Retrieve enhancements need to be discussed, which is highlighted by Intel.We also wanted to discuss about interaction between MT-SDT and non-SDT data arrival handling. Probably we can discuss these details in next meeting as well. |

Summary:

Some companies provide the following issues.

**Proposal 8: Upon reception of DL user data, the gNB-UP shall send assistant information (e.g., Data size) to gNB-CP via E1AP DL Data Notification message. FFS on MT-SDT indicator.**

**Proposal 9: If triggering MT-SDT Uu paging, the gNB-CU shall send MT-SDT indicator to gNB-DU via F1AP Paging message. Other assistant information is pending to RAN2.**

**FFS: Include TNL address of receiving gNB in Retrieve UE context message, instead of using Xn-U address indication message.**

**FFS: XnAP RTRV UE CTXT REQ message (that carries MT-SDT resume indication)**

**FFS: MT-SDT support indication in E1 Bearer Context procedure should be defined to enable the gNB-CU-UP to include the DL data size in the E1AP DL DATA NOTIFICATION message.**

# Conclusion, Recommendations

# References

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