**3GPP TSG-RAN2#118-e R2-220xxxx**

**Electronic meeting, May 09-20, 2022**

**Source: ZTE Corporation (rapporteur)**

**Title: [AT118-e][501][Sdata] CP Open issues and CR to 38.331 (ZTE) - Report**

**Agenda item:** **6.6.3**

**Document for:** **Discussion and Decision**

# Introduction

This is the report of offline discussion collecting the comments on open issues for SDT control plane as noted below:

* [AT118-e][501][Sdata] CP Open issues and CR to 38.331 (ZTE)

CP open issues and CR capturing agreed corrections

Deadline: To be set by rapporteur aiming to have company inputs and proposals by Friday

**Deadline for company comments: Thursday (12th) 23:59 UTC**

# CP open issues from Monday online discussion

# T319a handling

During the online discussion, the following was agreed:

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| 1 Captured in RRC to clarify that UE can delay the start of the T319a until the lower layers transmit the message including the CCCH payload. FFS how it is captured and whether/how it is limited to CG-SDT2 Baseline, max timer value is 4s. FFS if there is a compromise for 6s (i.e. have the restart mechanism or UE capability) |

For the issue regarding delayed start for T319a, we need to first decide whether to specify this only for CG-SDT or just capture as a general requirement. Whilst the problem is mainly for CG-SDT, we could have a general sentence to say the UE is allowed to delay it for SDT in general. On the other hand, Samsung clarified that they prefer to specify this only for CG case. This also feasible and can be done without introducing any further MAC RRC interaction (i.e. no need to specify how RRC knows CG-SDT is chosen in this case). So, both options seem feasible. So companies are first invited to clarify which one they prefer. So, the possible text could be as shown as below:

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| 5.3.13.2 Initiation…1> if conditions for initiating SDT in accordance with 5.3.13.1b are fulfilled:2> consider the resume procedure is initiated for SDT;2> start timer T319a;Note: The UE shall, [in case of CG-SDT], delay the start of the timer T319a until lower layers transmit the CCCH message. |

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| **Q 2.1.1: For capturing the delayed start of T319a, which option do you prefer?****Option a: specify this only for CG-SDT****Option b: specify this for both CG-SDT and RA-SDT** |
| Company | Preferred option: (a/b) | Comments |
| ZTE | b | We think it can be applied to both cases and there is no need to specify any MAC/RRC interaction just for this even if it is applied to CG-SDT only (i.e., both options can work).  |

Then the next question is whether we can extend the T319a value to 6s and or if we adopt the mechanism of start/restart the timer. Companies are invited to comment on the following options:

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| **Q 2.1.2: For T319a value, which option can you accept/do you prefer?** * Please indicate both preferred and acceptable options so that we can conclude this.

**Option a: Extend it to 6s with UE capability** *Note: There was some discussion on how UE capability works. Rapporteur understanding is that in this case the intention is still that T319a is included in SIB and if the UE supports 6s value then it will use T319a to be 6s when 6s value is signalled. Otherwise (i.e. if the UE doesn’t support 6s value, then it uses 4s when the 6s value is signalled in SIB – since he network knows the UE, it can use the correct value upon receiving the first UL message).* **Option b: Use a smaller value for the timer (e.g. 2s) but restart it after each UL/DL transmission****Option c: Use a large value for T319a but terminate the SDT procedure (i.e. UE moves to IDLE mode) upon expiry of data inactivity timer (which can be short – e.g. 2 sec)****Option d: Do nothing (i.e. nothing other than 4 s value is specified)** |
| Company | **Preferred option** (a/b/c/d) | **Acceptable option** (a/b/c/d) | Comments |
| ZTE | a | c | We think option a is simplest and provides the UE with the flexibility to not support it if it is critical for power consumption and is a good compromise. Option b is too late a change in our view and if we do want to go this way, then we think we should instead reuse the data inactivity timer and go to option c to minimise the changes. This option is also acceptable to us. Finally, we hope some solution can be found for this and have a preference to avoid option d hence.  |
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# SDT for time sensitive NAS procedures

During the online discussion of R2-2205354, it seems that companies are reluctant to capture some detailed NAS/AS interaction for the time critical NAS procedures and prefer to leave it to CT1. There seems reluctance to send yet another LS to CT1 too. Hence, it was suggested to check offline if there is a possibility to agree some note in RRC to allow UEs to not initiate SDT for time critical NAS procedures such as emergency calls.

Firstly, it should be clear that for emergency calls, the network can of course know it from the *resumeCause*. So, obviously, the network can initiate normal resume even if SDT is initiated by the UE. However, in R2-2205354 it is highlighted that there may be some other time critical NAS messages that may fulfil other SDT criteria. So, may be we can check if companies prefer to capture some UE behaviour for these using a note.

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| Option 15.3.13.1b Conditions for initiating SDTA UE in RRC\_INACTIVE initiates the resume procedure for SDT when all of the following conditions are fulfilled:1> the upper layers request resumption of RRC connection and the *resumeCause* is not set to emergency; and1> *SIB1* includes *sdt-ConfigCommon*; and1> *sdt-Config* is configured; and1> all the pending data in UL is mapped to the radio bearers configured for SDT; and1. lower layers indicate that conditions for initiating SDT as specified in TS 38.321 [3] are fulfilled.

Option 25.3.13.1b Conditions for initiating SDTA UE in RRC\_INACTIVE initiates the resume procedure for SDT when all of the following conditions are fulfilled:1> the upper layers request resumption of RRC connection; and1> *SIB1* includes *sdt-ConfigCommon*; and1> *sdt-Config* is configured; and1> all the pending data in UL is mapped to the radio bearers configured for SDT; and1>lower layers indicate that conditions for initiating SDT as specified in TS 38.321 [3] are fulfilled.Note: The UE need not initiate resume procedure for SDT when time critical NAS procedure such as emergency service is ongoing. How the UE knows about the ongoing time critical NAS procedure such as emergency service is up to UE implementation. |

Companies are invited to comment on whether such clarification above is and d you can support such change?

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| **Q 2.2.1: Do companies think that we need to clarify something similar to above? If yes, do you support the change as proposed above.**  |
| Company | Preferred option: Option 1 or Option 2 or Do nothing | Comments |
| ZTE | Do nothing (but we are also okay with options 1 or 2 if majority prefer this) | It seems resumeCause already provides the network with sufficient information to resume connection (even if UE triggers SDT). For instance when resumeCause is set to emergency network can simply move the UE to connected even if UE initiates SDT. So, this is an optimisation for some usecases where the resume cause doesn’t provide enough information in our view. So, “Do nothing” is acceptable to us. However, we are also okay with the majority preference between options 1 or 2 if that is the view from companies.  |

# Open RIL issues

This section is dedicated to collection of comments to open RIL issues.

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| **RIL ID** | **Description** | **Proposed Change** | **Pre-meeting comments** | **AT meeting comments** |
| **WI RRC Rapporteur comments** | **Company comments** | **Company** | **Company comments****(Include your company name and explain if you support the change or not and why.** **Also please explain why it is an essential correction if you think it is)** | **Essential issue? (Y/N)** |
| e.g. | Xxx | Xxx | Xxx | Xxx | Company X:  | Agree/disagree with the proposal because… etc | Y/N |
| A000AndA001 | UE requirement on the MIB/SIB1 reception should be same as that in CONNECTED state. | “in RRC\_INACTIVE” is modified to “”in RRC\_INACTIVE while the T319a is not running.” | My understanding is same as Apple. The issue about SI change notification is when paging is received, but this is about MIB reception. But we can discuss based on the comments received. So, changed to "discuss" and removed the change for now. [AT meeting guidance]: The intention of Apple seems to be that the MIB/SIB1 reception in connected mode and during SDT should be aligned and companies can explain whether they share this view or not and also explain then whether they agree with the change.  | [Samsung]Disagree. While T319a is running, UE still receives SI change indication and will acquire MIB/SIB1 upon reception of SI change indication.[Apple] During the SDT procedure, UE operation on MIB/SIB1 reception should be same as that in CONNECTED state, because the MIB/SIB1 transmission and UE dedicated transmission may ocur simultanously. According to current description, in case of the MIB/SIB1 and unicast transmisson conflict, if UE select the UE dedicate transmission and ignore MIB/SIB1, UE will perform operation in secton 5.2.2.5 (i.e. bar the current cell and perform cell reselection). It's not our expectation. [Huawei] We agree with Samsung in general that the UE should receive updated SI upon SI change indication, as per the agreements. If some additional clarification is needed, it can be discussed, but we should not go against this agreement (hence we disagree with the current change).[Intel] Agree also with Samsung. | ZTE | We think some clarification is needed and we are okay with the suggestion from Apple to align the behaviour with connected state.  | Yes it is an essential issue |
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| A001 | UE requirement on the MIB/SIB1 reception should be same as that in CONNECTED state. | “in RRC\_INACTIVE” is modified to “”in RRC\_INACTIVE while the T319a is not running.” | same as above. [AT meeting guidance]: No need to comment explicitly on this. The same conclusion as A000 can apply here too. | [Samsung]Disagree. While T319a is running, UE still receives SI change indication and will acquire MIB/SIB1 upon reception of SI change indication.[Apple] Same feedback as A000.  According to current description, in case of the MIB/SIB1 and unicast transmisson conflict, if UE select the UE dedicate transmission and ignore MIB/SIB1, UE will perform operation in secton 5.2.2.5 (i.e. bar the current cell and perform cell reselection). It's not our expectation. [Huawei] Agree with Samsung, see above.[Intel] Agree with Samsung |  |  |
| I506AndA002 | It would be helpful to also capture which RRC messages can be exchanged during SDT. This avoids confusion and having to add explicit statement to any RRC msg that is not allowed. | We suggest adding the following clarification at the end:\*\* Suggested update of the TP – START \*\*“In response to a resume procedure initiated for SDT, the network may resume the suspended RRC connection and send UE to RRC\_CONNECTED, or reject the request to resume and send UE to RRC\_INACTIVE (with a wait timer), or directly re-suspend the RRC connection and send UE to RRC\_INACTIVE, or directly release the RRC connection and send UE to RRC\_IDLE, or instruct the UE to initiate NAS level recovery (in this case the network sends an RRC setup message). Therefore, the following RRC messages can be exchanged during SDT: RRCResumeRequest, RRCRelease, RRCReject, RRCResume, ULInformationTransfer, DLInformationTransfer and RRCSetup.”\*\* Suggested update of the TP – END \*\* | Need and wording needs disucssion, Is it better to clarify which messages are not allowed for instance (e.g. RRCReconfiguration?)[AT meeting guidance]: So, the options are: 1. Do nothing
2. Clarify in RRC which messages are allowed
3. Clarify in RRC which messages are **not** allowed (see A002)
4. Clarify something in stage-2

Companies can express preference to one of these.  | [Samsung]: It would be good to clarify which RRC messages are allowed during SDT.[Apple]: Agree to clarify which RRC message are allowed/not allowed during the SDT. [Intel] Further justification details and TP available in R2-2205822. We suggest creating a list of RRC message that are allowed during SDT as if we want to capture what it is not allowed, it will be much longer and will require updates in future releases when new messages are defined. | ZTE | We think it is not really an essential issue. We have a slight preference to clarify it in stage-2 (option d). However, we don’t have a strong view and can go with majority on this.  | No – not an essential correction |
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| A002 | it should be clarified that the RRCReconfiguration message cannot be delivered via the SDT procedure. | clarify that the RRCReconfiguration message cannot be delivered via the SDT procedure. | Alternative to I506. Discuss togetherRapp: Discussed together with I506. So, please include your comments above. | [Samsung]: Agree to discuss together with I506[Apple]: OK to discuss discuss it together with I506. [Intel] See related discussion in I506 |  |  |
| W002 | To avoid CG-SDT resource being cleared by MAC reset, the order of MAC reset behavior were changed to a position before the applying of CG-SDT configuration. However, changing the order of “MAC reset and release the default MAC Cell Group configuration” behavior would impact the legacy behavior and Rel-16 features other than SDT. | Change MAC reset behavior back to where it is, and apply the CG-SDT related configuration after MAC reset:1> if the RRCRelease includes suspendConfig:2> reset MAC and release the default MAC Cell Group configuration, if any;2> apply the received suspendConfig except the received nextHopChainingCount and sdt-MAC-PHY-CG-Config, if any;2> if the sdt-Config is configured:3> for each of the DRB in the sdt-DRB-List:4> consider the DRB to be configured for SDT;3> if sdt-SRB2-Indication is configured:4> consider the SRB2 to be configured for SDT;3> for each of the RLC bearer that is part of the UE configuration:4> re-establish the RLC entity as specified in TS 38.322 [4];3> for SRB2, if it is resumed and for SRB1:4> trigger the PDCP entity to perform SDU discard as specified in TS 38.323 [5];3> if configured grant resources for SDT are configured:4> configure the MAC entity with the configured grant resources for SDT and instruct MAC to start the cg-SDT-TimeAlignmentTimer;2> remove all the entries within VarConditionalReconfig, if any;2> for each measId, if the associated reportConfig has a reportType set to condTriggerConfig:3> for the associated reportConfigId:4> remove the entry with the matching reportConfigId from the reportConfigList within the VarMeasConfig;3> if the associated measObjectId is only associated to a reportConfig with reportType set to condTriggerConfig:4> remove the entry with the matching measObjectId from the measObjectList within the VarMeasConfig;3> remove the entry with the matching measId from the measIdList within the VarMeasConfig;2> reset MAC and release the default MAC Cell Group configuration, if any;2> apply the sdt-MAC-PHY-CG-Config, if any; | It is not clear what is the issue with resetting the MAC first and then applying the received configuration? Which legacy feature is impacted by this. In general, we should first reset MAC and apply the received configuraiton anyway. With the proposed change, it seems we have to apply the configuration twice (once we apply and then we release and reapply, which is a bit odd). [Rapp2] marked as discuss. [AT meeting guidance]: If you agree to change this, please explain what is broken with the current implementation and which legacy feature is impacted by this (if any).  | [Samsung]: Agree with rapporteur.[NEC] Changing the order of existing behaviors will impact all Rel-17 UE. For example a Redcap UE not supporting SDT would also need to perform MAC reset first. This should be avoided if there is other way to limit the change within SDT. And we don't understand why repporteur think the propossed change implies twice configuration application. The configuration except CG-SDT configuation is applied before MAC reset (the same as legacy), and the new introduced CG-SDT configuration is applied after MAC reset. So there is only one time of application of configuration. MAC reset and release the default MAC Cell Group configuration[Apple]: Since no error is introduced by changing the order in general, we are fine with current description.[Huawei] We tend to agree with NEC that there is impact on legacy UEs as the order of actions is changed and it would be better to avoid this.[Intel] We share same view as NEC and HUW that prefer avoid changing order of legacy actions within the procedure | ZTE | We don’t understand what is broken if we change the order since this is a Rel-17 spec anyway (i.e. pre release 17 specs are not changed). If nothing is broken we should not change this. The disadvantage of the proposal from NEC is that we need to apply the CG configuration twice and this is not nice.  | No – not an essential correction |
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| I507 | It seems unclear to say “part of the UE configuration” when this should refer to the configuration in used i.e. those that are resumed/active | We suggest referring to the RBs that are active which would cover any RB established when UE is RRC\_CONNECTED, as well as, the resumed RBs configured for SDT.\*\* Suggested update of the TP – START \*\*3> for each of the RLC bearer that is not suspended that is part of the UE configuration\*\* Suggested update of the TP – STOP \*\* | The orgiinal intention is to clear all bearers. If this is not the case the data in non-SDT bearers can result in SDT being not initiated. [AT meeting guidance]: Please explain why it is a problem to clear pending content (which anyway will be discarded) for all bearers – not just SDT.  | [Samsung]: Disagree. Intention is to clear all bearers[Apple]: If the intention is for all the configured RLC entities, we can just say "for each of the configured RLC beares" . If the intention is only for the SDT RBs, we can update this sentence as "for each of the RLC bearer configured for SDT". [LG] Our understanding is that RLC re-establishment at RRC release is only for SDT RLC bearer. For non-SDT RLC bearer, whether to re-establish RLC entity or not is provided by RRC reconfiguration message depending on reestablishRLC indication. Thus, we prefer what Apple said, i.e. "for each of the RLC bearer configured for SDT". [Intel] Further justification details and TP available in R2-2205823. This text needs to apply when UE is in RRC\_CONNECTED and in RRC\_INACTICE with SDT. For SDT, "part of UE configuration" is ambiguous as UE has RBs resumed and in used, as well as, others suspended and stored in UE AS Context (i.e. non-SDT RBs); however for SDT, only resumed RBs should perform re-establishment of the RLC entities. We suggest the use of “each RLC bearer associated with a RB that is not suspended” | ZTE | We think it is correct to clear all the bearers since the data anyway will not be transmitted.  | No – not an essential correction |
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| I503 | For SDT, it is not clear which branch the UE should use e.g. RRCRelease may not always be received as response of RRCResumerRequest for SDT, and even so RRCRelease may have SDT related configuration which need to be updated in the UE AS Context. This is also related to the discussion on how and what part of the UE INACTIVE context is restored. | We will bring a TDoc on May meeting to discuss which branch should be used for SDT e.g. when multiple SDT data is exchanged, RRCRelease may not be considered a response to RRCResumeRequest e.g. DL SDT data as well as DLInformaitonTransfer might sent during an SDT session. Based on the conclusion, current text might need to be changed. | RRCRelease can always be considered as a response to the original resume request regardless of any subsequent data and or other messages. [AT meeting guidance]: There are two questions to discuss: Q1: Do you agree that we need to explicitly add T319a check in the if clause as proposed in R2-2205818?Q2: Do you agree that the ROHC state and new configuration needs to be updated?  |  [Apple]: We can add a NOTE (i.e.) to clarify this bullets is for legacy Resume and for SDT, e.g. "2> if the RRCRelease message with suspendConfig was received in response to an RRCResumeRequest or an RRCResumeRequest1 (i.e. for he RRC Connection resumption or for SDT procedure):"[Intel] Further justification details and TP available in R2-2205818. Upon reception of RRCRelease message with SDT configuration, it seems preferable updating the IF branches that relies on UE having an stored UE context (i.e. which uses the term “replace” instead of “store”). If so, this IF branch needs to also apply when SDT session is ongoing (i.e. T319a is running) and indicate that for SDT, UE replaces in the stored UE Inactive AS context with the updated ROHC state and new configurations received in current RRCRelease message.  | ZTE | The clarification is nice to have and we are okay with the changes proposed.  | No – not an essential correction |
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| I508 | Current diagrams show resume procedure without the support of SDT e.g. SDT data is not shown multiplexed with RRCResumeRequest or it is not shown how RRCResume or RRCRelease may be sent after exchanging DL/UL SDT traffic. | We will bring a TDoc on May meeting to discuss with suggested update in current figures or adding clarification notes that show how RRC connection resume can be used for SDT. The key points to show in the figure or shortly explain are for example, UL SDT data can be multiplexed in 1st UL SDT, subsequent DL/UL SDT data can be exchanged before network responds to terminate the SDT session with RRCRelease, or RRCResume. | Don't think we need to update the figures. There are other cases where data is multiplexed with other RRC messages (RRCResume is used for RNAU, during handover data can be multiplexed with RRCReconfigurationComplete etc). [Rapp2]: Apple, added some more text regarding the use of RRCResume and release per above comments, may be this is enough now then? [Rapp4] can discuss. [AT meeting guidance]: It seems that this is not essential change. But companies are invited to comment on whether they prefer to add new figures as proposed.  |  [Apple]: support Intel's suggestion since it' can make SDT procedure clear in the spec. If no change in figure, we can add some wording/description to say the data exchange occurs during the resume procedure. [Intel] Further justification details and TP available in R2-2205821. We suggest add that the scenarios of Figure 5.3.13.1-1/2/3/4 in TS 38.331 are also applicable to SDT showing the difference that UL SDT data is multiplexed with RRCResumeRequest/RRCResumeRequest1 and subsequent DL/UL SDT data may be exchanged before network response with an RRC message to terminate the resume for SDT. In addition, 2 new figures are also added to: - (new) Figure 5.3.13.1-6: RRC connection resume for SDT, network reject or fallback to RRC connection establishment - (new) Figure 5.3.13.1-7: RRC connection resume for SDT, with subsequent optional exchange of SDT data followed by network release or suspend or resume | ZTE | We don’t agree that the figures should be updated. We don’t have pictures showing all use cases that RRCResume procedure is used for.  | No – not an essential correction |
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| A005 | NAS layers may trigger resume request during the SDT procedure. We should exclude this case. | modified this condition as follows:"1> the upper layers request resumption of RRC connection and T319a is not running; and" | It is not clear why NAS requests second resume whilst previous procedure is ongoing (same as legacy anyway, so no need to change for SDT). [Rapp2] @Apple: If change is needed then it is not SDT specific (we can discuss if clarification is needed in general for Resume - e.g. when T319 is running - should be from Rel-15 onwards). [AT meeting guidance]: Proposal from Intel seems fairly straightforward. However, one concern is that if we clarify this only for SDT, then the non-SDT case may remain ambiguous (i.e. it would appear that when T319 is running UE is allowed to reinitiate resume, but we agreed this is not possible and only captured this in chairman’s notes). So, companies can explain if and why we should clarify this only for SDT.  |  [Apple]: It seems NAS spec has no description to fobbiden this case happen. Then according to current spec, does it mean UE will trigger another procdure (RRCresume/SDT) during the SDT procedure?[CATT] Different from legacy resume procedure, the UE is allowed to send RRC message, i.e. UAI, during SDT before receiving RRC response message from NW. We also support to clarify this a bit more.[Intel] We are ok with Apple's intention to capture that T319a should not be running understanding in order to initiate SDT procedure, however we suggest adding it as an indepdent condition, e.g. as follow*"A UE in RRC\_INACTIVE initiates the resume procedure for SDT when all of the following conditions are fulfilled:1> the upper layers request resumption of RRC connection; and****1> T319a is not running; and*** *1> SIB1 includes sdt-ConfigCommon; and1> sdt-Config is configured; and1> all the pending data in UL is mapped to the radio bearers configured for SDT; and1> lower layers indicate that conditions for initiating SDT as specified in TS 38.321 [3] are fulfilled.*¨ | ZTE | As explained by rapporteur the behaviour can also happen when T319 is running. So, if we clarify this for SDT, we think we should do the same also for legacy resume. Otherwise, the spec is misleading. We are happy to clarify for both cases or for none of them with the understanding that second resume is not initiated whilst there is an ongoing resume.  | No – not an essential correction |
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| O201, O204 | Since it is not definitely clear whether data can arrive at AS before radio bearers resumed, it is up to UE implementation to make decision on the radio bearers to which the incoming data is mapped. A note maybe needed to make this clear. | Add note ‘It is up to UE implementation how the UE determines whether the pending data in UL is mapped to radio bearers configured for SDT.’ | Discuss (okay to add note if there is consensus). [AT meeting guidance]: Seems not essential, but can be added if there is consensus. Do companies support such note to be added?  |  [Intel] OK with adding a clarification note | ZTE: | No strong view | No – not an essential correction |
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| I513 | It is unclear whether SRB1 uses the default or stored configuration for SDT. In the initiation of resume procedure (section 5.3.13.2), default SRB1 configuration is applied based on legacy resume procedure. In the section 5.3.13.3 that describes the actions related to transmission of RRCResumeRequest message, it is currently captured that stored configuration is used for all RBs configured for SDT. Our understanding is that SRB1 should also use stored configuration although this is unclear as SRB1 is not explicitly configured by the network for SDT (as pointed in a related RIL [Z361]) although it is always resumed/used during SDT | Clarify that SRB1 uses the stored configuration in UE Inactive AS context | [AT meeting guidance]: Both options can work, but companies can clarify whether stored configuration should be used for this case. Question: Do you support the view that stored configuration shall be used for SRB1?  | [Intel] Further justification details and TP available in R2-2205825. We ask RAN2 to confirm that SRB1 should use UE’s stored configuration (which is aligned with RAN2 previous agreement) and corresponding configuration handling needs to be clarified in TS 38.331. TP explicitly indicates that SRB1 is considered as configured for SDT, and updates the procedure associated to SRB1 on the re-establishment of the PDCP entity and its resume in order to use UE’s configuration stored in UE Inactive AS context. This RIL might be related to [O200] | ZTE: | Current option can work, but we can update it to use stored configuration if majority prefer to go this way.  | No – not an essential correction |
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| H549 | Currently, the restored configuration from the UE inactive context only includes the RLC and PDCP configuration corresponding to the radio bearers configured for SDT. However, it should be noted that the logicalChannelGroup, logicalChannelSR-DelayTimerApplied, and logicalChannelSR-Mask within the logical channel configurations are also needed for the UE. The following agreement has been made regarding logicalChannelSR-Mask2. It is up to the network how to configure the logicalChannelSR-Mask value for LCHs of DRBs configured for SDT. logicalChannelSR-DelayTimerApplied is also needed for indicating whether SR delay is applied to the logical channelAlso, logical channel group configuration is needed for BSRThere are two approaches to handle the issue (a) The configuration is delivered per RLC configured with SDT within the RRCRelease message. (b) The configuration is restored from the UE inactive context. We think that there is no need for additional configuration in the RRCRelease message and the UE only needs to restore the configuration from the UE inactive context. |   | In general the stored configuration should be used. If this is unclear, then we can clarify[AT meeting guidance]: Please comment on whether there is some ambiguity for the stored configuration being restored and also clarify what changes are needed if any. | [Apple]: propose to clarify it. [Intel] This RIL could be related to [A007] where we explained that it is important to discuss whether any clarification is needed on the handling of non-SDT configuration during an SDT session and when moving from an SDT session to CONNECTED | ZTE | ZTE: We think some clarification as proposed could be okay. No strong view.  | No – not an essential correction |
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| H550, A019 | RAN2 already agreed that cg-SDT-TimeAlignmentTimer is stopped when UE enters RRC\_connected and CG resources for SDT should be released, it was not captured in the spec.Agreements:• As baseline, the CG-SDT-TAT is stopped when a) UE enters RRC connected, and b) UE receives RRC Release at the end of SDT procedure and RRC Release does not include/configure CG resources. FFS if there is any impact to this agreement as a result of delta signalling |   | Some changes may be needed in MAC spec too?[Rapp2]: it was typo in the implemenation for TAT, will be corrected in the next version. [Rapp3]: Marked as to disc based on LG comment (original change is left in the CR though will be updated according to final conclusion). My concern with LG proposal is that it adds overhead unecessarily in DL and may also have some RAN3 impacts (since the DU needs to know to include this when RRCRelease is sent). [AT meeting guidance]: Seems the main open issue is to select one of the following: Option 1: UE implicitly starts TAT upon moving to connected Option 2: network always includes TAC MAC CE when UE moves from CG SDT to RRC connected. Please explain which is your preference and why.  | [Samsung]: Text change is not correct. Why is TimeAlignmentTimer stopped? This should not be stopped.[Rapp2]: sorry it was typo. TAT is to be started! Corrected in new version! [LG] TAT should not be stopped. For CG-SDT-TAT, no change is needed for MAC.[ASUS] Agree with Samsung and LG.[Apple] Agree with HW's proposal. CG-SDT-TAT is only used during the CG-SDT procedure, so when entering CONNECTED state UE should stop this timer. For legacy TAT, it's not used during the CG-SDT, so it should be started when entering CONNECTED setate. [Huawei] The proposal was different from what the rapporteur implemented, i.e. TAT should be started, not stopped (i.e. we agree with the comments from companies above).[LG] We don't think instruction from RRC to MAC to start legacy TAT is needed. It's enough to send TAC MAC CE together with RRC release message. Then, the UE will start legacy TAT. No change is needed.[Intel] It is not clear why legacy TAT should be stopped. Regarding CG-SDT related config./resources, delta configuration is only agreed across SDT sessions and not when entering into CONNECTED. During this procedure (i.e. Reception of the RRCResume by the UE), suspendConfig (which includes all SDT config (which includes CG-SDT)) is released (except RNA config) and we are also ok to capture explicitly that CG-SDT-TAT is stopped | ZTE:  | We prefer option 1. Option 2 will result in unnecessary overhead (TAC MAC CE needs to be added even when not necessary) and it will also have some implications on network (i.e. how does DU know that TAC MAC CE should be appended with RRC message containing RRCResume?). Seems it is complicated and may have RAN3 impacts. So, we want to go with the simple approach of option 1.  | Yes – Essential correction |
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| A019 | When UE switches from CG-SDT to CONNECTED state, UE should start the legacy TATimer, because the legacy TATimer is not running during the CG-SDT procedure. | RRC informs MAC to start the legacy TATimer upon receiving the RRCResume procedure while the T319a is running. | Agree! See also H550. [Rapp3]: agree with the intention, but marked as disc (see H550 above)[AT meeting guidance]: No need to comment explicitly. Comment above.  |   |  |  |
| W005 | After reception of RRCReject during SDT, UE goes back to normal INACTIVE state, and may initiate a second SDT procedure later. To avoid the buffered/old data in SRB2 being counted into SDT data volume calculation, they should be discarded upon reception of RRCReject, just like the behavior of RRC Release. Note that PDCP suspend can only discard PDCP PDU, but not PDCP SDU. | Add the following step:2> for SRB2, trigger the PDCP entity to perform SDU discard as specified in TS 38.323 [5]; | I don't think it is correct to delete the PDCP SDUs in this case. We only agreed to delete the PDCP SDUs in case of SRBs when these will not be transmitted anyway. However, in case of RRCReject,the PDCP SDUs may need to be retransmitted. So, it is okay to keep them.[Rapp2]: based on the comments received, it seems companies want to agree to discard SDUs in this case. We can try this approach. Changed this as discuss. [AT meeting guidance]: Seems both options (discard SDUs and keep them) can work in this case. But companies can clarify if they prefer one or the other.  | [NEC] Response to rapporteur's comment: The buffered/old SRB2 data (both SDUs and PDUs) would be discarded during PDCP reestablishment of the second RRC Resume procedure anyway, so it is not possbile to retransmit them by PDCP ( if any retransmission is needed, it should be handled by upper layer). So the buffer in PDCP of SRB2 should be cleared such that they won't be counted into SDT data volume calcuation.[LG] We agree with the problem that NEC addressed. When RRC Resume procedure is initiated, all the PDCP entities of the SDT RBs are re-established. During PDCP re-establishment, PDCP SDUs are discarded for SRBs. Then, it is correct observation that PDCP of SRB2 would be counted into SDT data volume even though they will be discarded at initiation of SDT procedure.[CATT] We agree with NEC and LG.[Intel] This might not be a critical issue understanding that NAS/AS interaction is not fully specified for this scenario. | ZTE | ZTEWe are not sure what is wrong in this case if we keep the SDUs since these may anyway need to be retransmitted.  | No - Not an essential correction |
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| C092 | In last RAN2#117e-meeting, it was agreed:If UE detects an SDT failure of ongoing SDT session for the transfer of NAS message, RRC informs NAS about the failure for NAS message transfer. Discuss further if any specification change is needed or not. [CB] LS to CT1? The network may send RRCRlease message to the UE to end the current SDT procedure even if there are NAS messages that successful delivery of these message was not confirmed by lower layers. For example: The network sends RRCRelease message for DL non-SDT data arrival without anchor relocation. As some ULInformationTransfer messages are successful delivery to the network but some are not confirmed by lower layers either, AS needs to inform NAS about the failure for NAS message transfer for the case. But in this case, upon reception of RRCRelease message, PDCP re-estamlishment or release/addition is not performed. Hence, we propose to add a new case to inform upper layers about the possible failure. | Change to:if PDCP re-establishment or release/addition (e.g due to key refresh upon PCell or PSCell change, or RRC connection re-establishment, or failure of resume procedure initiated for SDT) occurs on an SRB on which ULInformationTransfer messages were submitted for transmission but successful delivery of these messages was not confirmed by lower layers; orif RRCRelease message was received that is response to a resume procedure initiated for SDT while ULInformationTransfer messages were submitted for transmission but successful delivery of these messages was not confirmed by lower layers:2> inform upper layers about the possible failure to deliver the information contained in the concerned ULInformationTransfer messages, unless the messages only include dedicatedInfoF1c. | Reject. In any case PDCP reestablishment will be performed (when the UE resumes again). Is the intention that the information to upper layers should be provided upon release but not upon resume (?). [Rapp3]: marked as discuss[AT meeting guidance]: Do companies think that a new trigger to indicate to upper layers about potential loss of NAS PDU is needed for this case? Please explain why.  | [CATT]According to current agreement, the UE performs PDCP re-establishment for RB configured for SDT and for SRB1 if the resume procedure is initiated for SDT. And if the resume procedure is not initiated for SDT, the UE doesn't perform PDCP re-establiment for SRB2 autonomously. Hence, in order to ensure the information to upper layers, we prefer to provide the info upon release, not upon resume. Maybe we can clarify if SRB2 is suspended, RRC provides the info to upper layers too.[Intel] OK with Rapporteur | ZTE | Since PDCP reestablishment is performed when UE resumes, it seems this is just an optimisation (the internal interface between AS/NAS can generate this at any point and we need not introduce a new trigger for this case in our view). But we are okay to go with majority view on this.  | No – not an essential correction |
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| O204 | Similar comments as O201. A note is needed to clarify how to determine there is non-SDT data/signalling. | Add note ‘It is up to UE implementation how the UE determines whether data and/or signalling mapped to radio bearers not configured for SDT becomes available.’ | Can be added if there is consensus. See O201 above.  |   |  |  |
| O205 | If there is emergency service, it is beneficial to include the resumeCause by setting to emergency. With this information, NW can make proper/fast actions. If resume request is not provided from upper layer, it can be up to UE implementation on how RRC layer is aware of an onging emergency service, as specified in 5.3.13.2. | 1> if transmission of the UEAssistanceInformation message is initiated to indicate availability of data mapped to radio bearers not configured for SDT according to 5.7.4.2:2> include and set the resumeCause according to the information received from the upper layers, if provided.2> if an emergency service is ongoing, include and set the resumeCause to emergency.NOTE: How the RRC layer in the UE is aware of an ongoing emergency service is up to UE implementation. | Discuss. Not essential. [AT meeting guidance]: Seems not essential, and we have discussed this in the past perhaps? but companies can comment if they prefer to add a note for this.  |  [Intel] OK with Rapporteur | ZTE | This was already discussed in the past and we don’t think this is needed. It can be left to upper layers to provide this information in this case.  | No – not an essential correction |
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| I512 | The configuration provided by SRS-PosRRC-InactiveConfig-r17 might require some update to work with CU/DU split where the information from the DU needs to be in a container  and to allow delta signaling between SDT sessions (similarly as it was done for SDT configuration e.g. sdt-MAC-PHY-CG-Config-r17). Note that the delta part is inter-related to previous comment I010. | We will provide a TDoc to discuss the suggested update to SRS-PosRRC-InactiveConfig-r17 | Discuss in positionining session. [Rapp4] the positioning guys should review the CR it whereever it gets agreed. [AT meeting guidance]: Place holder for now. May be this should be moved to positioning session. We should clarify this first. It seems positioning experts should implement this change in any case??  | [Intel] We understand that this topic should be better discuss on SDT session as positioning session agreed to follow the same approach as agreed for SDT on the signaling handling (e.g. on the delta behaviour). Further justification details and TP available in R2-2205824. We propose: - Proposal1. RAN2 assumes that DU can set the configuration associated to SRS-PosRRC-InactiveConfig-r17 and should be provided in a container as part of the corresponding ASN.1. - Proposal 2. If Proposal 1 is agreed, to inform RAN3 via an LS (with details in TDoc) - Proposal 3. Update ASN.1 to define srs-PosRRC-InactiveConfig-r17 with a SetupRelease type. | ZTE | We agree with the changes but these should be discusssed in positioning session.  |  |
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| H551 | Since the behaviour upon absence is described in the field description, it should be NEED S | change need R to need S | There should be a way to release this. So, Need R can be kept. We can clarify in field description what happens when it is not configured (rather than to say not included). [Rapp2]: In the ASN.1 review this was discussed and it was agreed that we can have some description about what UE does when it is not configured for need R cases. I guess for need S we need description upon abscense of the field as far as I understood. But, happy to mark this as discuss if there is some confusion**ASN.1 adhoc agreements**P2: Use Need R (instead of Need S) for fields whose absence simply means a configuration is released.P3: Use Need R (instead of Need S) for fields for which there are some conditions when network does or does not include the field.[AT meeting guidance]:Per above, it seems need R is correct for this. Can be confirmed quickly. Do you agree to keep need R? | [Huawei] I am not sure I understand the difference between field being absent and the field being not configured (there is a difference when we speak of the field which is SetupRelease type, as for H554, but in this case the difference is unclear). I still think this should be Need S and it still can be released (and then the behaviour is that "PDCP entity for the radio bearers configured for SDT reset the ROHC header compression protocol during PDCP re-establishment during SDT procedure, as specified in TS 38.323 ", as described in the filed description.[Intel] Agree with Rapporteur. The use of "need S" was also discussed during ASN.1 review and Intel's comment was that it is ok to keep current desciption of the "not configure" and "Need R"  | ZTE | We don’t think the change is needed as explained by the rapporteur, the current use of the need code is aligned with the agreements made at the ASN.1 adhoc.  | Y – Essential issue |
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| H555 | It is more appropriate to capture this as a condition. |   | Rapp2: agree that the wording is not perfect. Adopted something similar to what isproposed by LG here. [Rapp4] No strong view, but I tend to agree that changing this to condition seems to create some issues. Also slightly prefer to not do this. Marked as discuss (kept the change for now)[AT meeting guidance]: Both options can work but converting to condition seems to create some ambiguity. Perhaps we should go back to the original text?? Please comment.  | [LG] In the explanation of CG-SDT, "for the first time" is not clear. Maybe we can say "while the sdt-MAC-PHY-CG-Config is not configured".[Huawei] Also, sdt-MAC-PHY-CG-Config should be in italics. [Intel] We prefer keeping current text in the field description as it seems more clear than the proposed new condition e.g. term "first time..." is not clear. The text "network always configure" is also extensively used on other fileds within 38.331  | ZTE | We actually think that the original text is fine for this and we don’t need to convert this into conditional code.  | No – not an essential correction |
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| I511 | During RAN2#117e discussion, companies seemed divided between the following options 1.a) and 1.b):Option 1)  T319a is not re-started during a given SDT session Option 1.a) T319a is defined with large max. range (e.g. 6 or 10 sec) Option 1.b) T319a is defined with short max. range (e.g. 1 or 2 or even 3 sec) Option 2) T319a is re-started with every reception and (re)transmission within a given SDT session where T319a is defined with a short max. range (e.g. 1 or 2sec) Companies that preferred option 1.a) wanted to give enough time for UE to get DL responses into account, while those that preferred option 1.b) had the concern on the potential negative impact to UE’s power consumption (as C-DRX is not supported) and UE’s performance (as measurements/HO is not supported). So maybe Option 2) might be the middle ground not to restrict the length of the SDT session while not keeping the UE monitoring PDCCH for very long time unnecessarily. We understand that there is no time to re-discuss all of this now via short email discussion. We wonder whether we could reuse same range as legacy T319 (up to 2sec) with additional spare values and next meeting, we continue the discussion on whether larger values are allowed/defined, or 2) the operation of the timer is revisited e.g. as explained in above option 2). | We bring a TDoc in May meeting to discuss whether to remove 4sec value (and set it as another spare value) and enable a different handling for T319a (i.e. option 2) might be preferable vs having larger timer values allowed (as explained in option 1.a). | [At meeting guidance] No need to comment on this as we have separate discussion above for this one (see section 2.1).  | [Intel] Further justification details and TP available in R2-2205819. The proposal is to define maximum range of T319a up to 3 seconds.  |  |  |
| Q305, I505 | sdt-CG-SearchSpace-r17 in RAN1 small data higher layer parameter list is missing | add sdt-CG-SearchSpace-r17 | In the current implementation, separate search space is configured (included in pdcch-Config-r17 in BWP-Downlink-Dedicated-SDT ). It is unclear if we need a separate name for this IE since any search space configured in RRCRelease can be used as dedicated CG search space. May be the issue is that RAN1 uses this name in their specs should we ask them to update their specs instead?[AT meeting guidance]: It is unclear why we need a separate name for the search space. It can just be referred to as the dedicated search space included for CG-SDT. Companies can comment on the need for separate name and how we should harmonize RAN1 specs with what we have.  | [Intel] See related discussion in RIL [I505] with the supportive TDoc R2-2205820. Two options are dicussed and finally concluded that RAN2 should send a LS to RAN1 asking to update the references of sdt-CG-SearchSpace-r17 in TS 38.213 to use instead SearchSpace that is defined as part of PDCCH-Config-r17 (which is sent as part of UE’s CG-SDT configuration within the BWP-Downlink-Dedicated-SDT). No change required in current ASN.1. | ZTE | Indeed there is a misalignment here between RAN1 and RAN2 specs. However, we think RRC implementation is fine and we should just inform RAN1 that the new search space is included in RRCRelease and there is no need to have a new name for this search space. So, RAN1 specs can refer directly to the search space configured using the RRCRelease message instead.  | Y – Essential issue |
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| I505 | RAN1 defined the sdt-CG-SearchSpace-r17 to be included in BWP-Downlink-Dedicated-SDT as part of pdcch-Config for CG-SDT (as captured in updated\_R1-2112976 Consolidated higher layers parameter list for Rel-17 NR\_SDT\_v2.xlsx – related row copied also below). However SDT running CR seemed not to include this.NR\_SmallData\_INACTIVE-CoreCG-SDTincluded in pdcch-Config-r17 in BWP-Downlink-Dedicated-SDT sdt-CG-SearchSpace-r17NewUE specific Search Space for CG-SDT.SearchSpacePer UEUE specificAgreementRAN1 confirms the working assumption in RAN2 that UE-specific search space is configured for UEs performing CG-SDT. This does not exclude the configuration of CSS for UEs performing CG-SDT. | Suggest to update the following\*\* Suggested update of the TP – START \*\*PDCCH-Config ::= SEQUENCE { controlResourceSetToAddModList SEQUENCE(SIZE (1..3)) OF ControlResourceSet OPTIONAL, -- Need N controlResourceSetToReleaseList SEQUENCE(SIZE (1..3)) OF ControlResourceSetId OPTIONAL, -- Need N searchSpacesToAddModList SEQUENCE(SIZE (1..10)) OF SearchSpace OPTIONAL, -- Need N searchSpacesToReleaseList SEQUENCE(SIZE (1..10)) OF SearchSpaceId OPTIONAL, -- Need N downlinkPreemption SetupRelease { DownlinkPreemption } OPTIONAL, -- Need M tpc-PUSCH SetupRelease { PUSCH-TPC-CommandConfig } OPTIONAL, -- Need M tpc-PUCCH SetupRelease { PUCCH-TPC-CommandConfig } OPTIONAL, -- Need M tpc-SRS SetupRelease { SRS-TPC-CommandConfig} OPTIONAL, -- Need M ..., [[ controlResourceSetToAddModListSizeExt-v1610 SEQUENCE (SIZE (1..2)) OF ControlResourceSet OPTIONAL, -- Need N controlResourceSetToReleaseListSizeExt-r16 SEQUENCE (SIZE (1..5)) OF ControlResourceSetId-r16 OPTIONAL, -- Need N searchSpacesToAddModListExt-r16 SEQUENCE(SIZE (1..10)) OF SearchSpaceExt-r16 OPTIONAL, -- Need N uplinkCancellation-r16 SetupRelease { UplinkCancellation-r16 } OPTIONAL, -- Need M monitoringCapabilityConfig-r16 ENUMERATED { r15monitoringcapability,r16monitoringcapability } OPTIONAL, -- Need M searchSpaceSwitchConfig-r16 SearchSpaceSwitchConfig-r16 OPTIONAL -- Need R ]], [[ sfnScheme-r17 ENUMERATED {sfnSchemeA,sfnSchemeB} OPTIONAL, -- Need R searchSpacesToAddModListExt-v1700 SEQUENCE(SIZE (1..10)) OF SearchSpaceExt-v1700 OPTIONAL, -- Need N monitoringCapabilityConfig-r17 ENUMERATED { r15monitoringcapability, r16monitoringcapability, r17monitoringcapability } OPTIONAL, -- Need M searchSpaceSwitchTimer-r17 INTEGER (1..800) OPTIONAL, -- Need R pdcch-SkippingDurationList-r17 SEQUENCE(SIZE (1..3)) OF PDCCH-SkippingDuration-r17 OPTIONAL -- Need R sdt-CG-SearchSpace-r17 SearchSpaceSwitchConfig-r16 OPTIONAL -- Need R ]]}\*\* Suggested update of the TP – STOP \*\* | In the current implementation, separate search space is configured (included in pdcch-Config-r17 in BWP-Downlink-Dedicated-SDT ). It is unclear if we need a separate name for this IE since any search space configured in RRCRelease can be used as dedicated CG search space. May be the issue is that RAN1 uses this name in their specs should we ask them to update their specs instead?[Rapp4] yes, same view as Intel. But either way is okay in the end... Let discuss this quicklyPlease include your comments above (Q305) | [Intel] Further justification details and TP available in R2-2205820. Two options are dicussed and finally concluded that RAN2 should send a LS to RAN1 asking to update the references of sdt-CG-SearchSpace-r17 in TS 38.213 to use instead SearchSpace that is defined as part of PDCCH-Config-r17 (which is sent as part of UE’s CG-SDT configuration within the BWP-Downlink-Dedicated-SDT). No change required in current ASN.1. This RIL seems related to Q305 |  |  |
| Z354 | The search space could either be an existing search space or a new search space. So, propose to make it chise of search space ID and search space | Convert the IE to a choice structure to configure either an existing search space with search space ID or to configure a new search space. | [Rapp2]: The separate search space with choice structure is still optional. So, if this is not configured then the UE can use ra-searchSpace. Is this not the intention then? Marked as Discuss anyway. And the change is removed for now. [AT meeting guidance]: If a separate search space is not configured for SDT then ra-searchSpace can be monitored. However, it is not clear that the separate search space should be an existing one (i.e. can it not be a separate search space for SDT?). Companies can comment on whether we should allow separate search space (which is not an existing search space) in this case.  | [ASUS] In 38.213 section 19.2, "A UE can be provided by sdt-SearchSpace a CSS set to monitor ... otherwise, if the UE is not provided sdt-SearchSpace, the UE monitors PDCCH according to a Type1-PDCCH CSS set as described in clause 10.1." Since the behaviour of absence of the new search space is to resue ra-SearchSpace, there seems no need to introduce the choice structure. [Huawei] Agree with the comment from ASUST on this[Intel] Agree with ASUS's comment | ZTE | We think it is allowed to configure separate search space which is not an existing one and if no separate search space is configured then ra search space should be used.  | Essential issue |
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| H562 | Currently no SDT related configuration is being transferred in the inter node RRC message. Without transferring this, the receiving gNB will not be able to continue with the RA-SDT procedure after relocation as it will not know which DRBs are configured with SDT, whether or not the SRB2 is configured for SDT or how the ROHC is to be performed after relocation. Simplest approach for addressing this issue is that the SDT specific configuration defined in SDT-Config-r17 IE (SDT specific configuration that is provided to the UE in RRCRelease message) needs to be transferred form the last serving gNB to the receiving gNB when RA-based SDT with UE context relocation procedure is performed |   | Not clear if this is the correct message. Need to make sure that SDT-Config-r17 Is included as a separate container in RAN3 signalling. [Rapp 4] yes, conatiner approach vs RAN3 Xn signalling has to be decided first, seems RAN3 signalling is simpler, they are discussing it. But still marked as "discuss" for now, but we can postpone this. [AT meeting guidance] RAN3 are discussing this. So, propose to wait for their outcome. No need to comment on this for now hence.  |  [Intel] We believe RAN3 also has TDocs discussing this topic for the coming meeting. RAN2 can wait for RAN3 input (if any). |  |  |  |
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# Conclusion and proposals

TBD

# References

[R2-2205551](file:///C%3A%5Cevutukuri%5Cwork%5C5G%5CRAN2%5Cdocs%5CR2-2205551.zip) RRC RIL issue summary for SDT ZTE Corporation (rapporteur) report