3GPP TSG-RAN WG1 Meeting #110-e R2-200xxxx

Electronic Meeting, 1st – 12th June 2020

Agenda: 6.21

Source: Ericsson

Title: [AT110-e][613][OdSIB] Checking of OdSIB CRs

Document for: Discussion, Decision

# 1 Introduction

This document is to kick off the following email discussion:

* [AT110-e][613][OdSIB] Checking of OdSIB CRs (Ericsson)

Scope: Update and final checking of CRs to 38.300 (R2-2005898), 38.331 main (R2-2005899), 38.331 capability (R2-2005900), 38.306 (R2-2005901)

Intended outcome: Agreeable CRs

Deadline: Wednesday 2020-06-10 1000 UTC

# 2 Comments on the on-demand SIB CRs (38.331, 38.300, 38.306)

## 2.1 Comment on the 38.331 CR

Companies are invited to provide their comments on the provided 38.331 CR on the draft folder.

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| Company | Comments |
| CATT | 1. Duplicated checkings  As mentioned in [5], we find there are duplicate checkings, i.e. deciding whether to acquire the required SIB(s) via broadcast or to trigger an on demand SI request in RRC\_CONNECTED, in both sub-clause 5.2.2.4.2 and 5.2.2.3.5. Thus, we propose to remove the behaviors that the UE decides whether to acquire required SIB(s) via broadcast or to trigger a request in RRC\_CONNECTED from sub-clause 5.2.2.4.2, and add an entry to perform checking in sub-clause 5.2.2.3.5 directly.  2. Typo in the definition of OnDemandSIB-Request-r16 IE  onDemandSIB-RequestProhibitTimer -> onDemandSIB-RequestProhibitTimer-r16  [Ericsson] We will fix the typo in the RRC CR. Regarding the first comment, can you elaborate a bit more the movitation for deleting those part and which are those parts?  [CATT]   1. Further explanation on duplicated checking   According to current descriptions, if the UE can receive SIB1 via broadcast, the UE enters sub-clause 5.2.2.4.2 to check whether to receive required SIB(s) via broadcast or on-demand request. If the UE can receive required SIB(s) via broadcast, the UE performs benaviors to receive required SI(s) via broadcast directly. If the UE cann‘t receive required SIB(s) via broadcast, the UE enters sub-clause 5.2.2.3.5. However, in sub-clause 5.2.2.3.5, the UE checks whether to receive required SIB(s) via broadcast or on-demand request again. In order to avoid duplicated checking, we propose to remove the behaviors that the UE decides whether to acquire required SIB(s) via broadcast or to trigger a request in RRC\_CONNECTED from sub-clause 5.2.2.4.2, and add an entry to perform checking in sub-clause 5.2.2.3.5 directly, as the UE also needs to enters sub-clause 5.2.2.3.5 directly to check whether to receive required SIB(s) via broadcast or on-demand request. The change is shown below. 5.2.2.4.2 Actions upon reception of the *SIB1* ---------skip irrelevant pats------------  2> if the UE has a stored valid version of a SIB, in accordance with sub-clause 5.2.2.2.1, that the UE requires to operate within the cell in accordance with sub-clause 5.2.2.1:  3> use the stored version of the required SIB;  2> else ~~if the UE has an active BWP configured with common search space configured with the field~~ *~~searchSpaceOtherSystemInformation~~* ~~and the UE has not stored a valid version of a SIB, in accordance with sub-clause 5.2.2.2.1, of one or several required SIB(s), in accordance with sub-clause 5.2.2.1 or if requested by upper layers:~~  ~~3> for the SI message(s) that, according to the~~ *~~si-SchedulingInfo~~*~~, contain at least one required SIB and for which~~ *~~si-BroadcastStatus~~* ~~is set to~~ *~~broadcasting~~*~~:~~  ~~4> acquire the SI message(s) corresponding to the requested SIB(s) as defined in sub-clause 5.2.2.3.5;~~  ~~3> for the SI message(s) that, according to the~~ *~~si-SchedulingInfo~~*~~, contain at least one required SIB and for which~~ *~~si-BroadcastStatus~~* ~~is set to~~ *~~notBroadcasting~~*~~:~~  ~~4> trigger a request to acquire the required SIB(s) as defined in sub-clause 5.2.2.3.5;~~  ~~3> for the SI message(s) that, according to the~~ *~~posSI-SchedulingInfo~~*~~, contain at least one requsted posSIB and for which~~ *~~posSI-BroadcastStatus~~* ~~is set to~~ *~~broadcasting~~*~~:~~  ~~4> acquire the SI message(s) corresponding to the requested posSIB(s) as defined in sub-clause 5.2.2.3.5;~~  ~~3> for the SI message(s) that, according to the~~ *~~posSI-SchedulingInfo~~*~~, contain at least one requsted posSIB and for which~~ *~~posSI-BroadcastStatus~~* ~~is set to~~ *~~notBroadcasting~~*~~:~~  ~~4> trigger a request to acquire the requested posSIB(s) as defined in sub-clause 5.2.2.3.5;~~  ~~NOTE: UE may include on demand request for SIB and/or posSIB(s) in the same message.~~  ~~2> else if the UE has an active BWP not configured with common search space configured with the field~~ *~~searchSpaceOtherSystemInformation~~* ~~and the UE has not stored a valid version of a SIB, in accordance with sub-clause 5.2.2.2.1, of one or several required SIB(s), in accordance with sub-clause 5.2.2.1 or if requested by upper layers:~~  3> ~~trigger a request to~~ acquire the required SIB(s) as defined in sub-clause 5.2.2.3.5;   1. Comments on sub-clause 5.2.2.3.5   As we agreed T350 is also used as prohibit timer for posSIBs. Hence, we think the following descriptions to on demand request check for posSIB(s) can be merged into that for general SIB(s).  2> for the SI message(s) that, according to the *posSI-SchedulingInfo* in the stored SIB1, contain at least one requested posSIB and for which *posSI-BroadcastStatus* is set to *broadcasting*:  3> acquire the SI message(s) as defined in sub-clause 5.2.2.3.2;  2> for the SI message(s) that, according to the *posSI-SchedulingInfo* in the stored SIB1, contain at least one requested posSIB and for which *posSI-BroadcastStatus* is set to *notBroadcasting*:  3> if *onDemandSIB-Request* is configured and timer T350 is not running:  4> initiate transmission of the *DedicatedSIBRequest* message in accordance with 5.2.2.3.6;  4> acquire the requested SI message(s) corresponding to the requested posSIB(s) as defined in sub-clause 5.2.2.3.2.   1. Field description of *dedicatedSystemInformationDelivery*   The field description of *dedicatedSystemInformationDelivery* is unclear as the field is also used to tranfer SIB6, SIB7, SIB8 in RRC\_CONNECTED.  ***dedicatedSystemInformationDelivery***  This field is used to transfer *SIB6*, *SIB7*, *SIB8* to the UE with an active BWP with no common serach space configured~~. For UEs~~ in RRC\_CONNECTED~~,~~. T~~t~~his field is also used to transfer the SIBs requested on-demand in RRC\_CONNECTED.  4)Capture agreements  We agreed based on R2-2006012:  Agreements:  Agree with GNSS ID/SBAS ID in on-demand SI request (per SIB) to assistance data in RRC\_CONNECTED mode and merge it into running CR 38.331 for ASN.1 check.  Postpone the separate positioning system information area ID to Rel-17 and reuse the existing area ID.  Hence, the TP in R2-2006012 needs to be merged into running CR 38.331.  And for the agreement of reusing the existing area ID for posSIB validity, we need to capture something in both RRC and LPP.  In TS 38.331: 5.2.2.4.2 Actions upon reception of the *SIB1* Upon receiving the *SIB1* the UE shall:  1> store the acquired *SIB1*;  1> forward the received *posSIB-MappingInfo* to upper layers, if included;  1> forward the received s*ystemInformationAreaID* to upper layers, if included;  1> if the cell is not an NPN-only cell and the *cellAccessRelatedInfo* contains an entry with the *PLMN-Identity* of the selected PLMN:  2> in the remainder of the procedures use *plmn-IdentityList*, *trackingAreaCode*, and *cellIdentity* for the cell as received in the corresponding *PLMN-IdentityInfo* containing the selected PLMN;  the UE forwards the received *systemInformationAreaID* in SIB1 to upper layer.  In TS 37355, a general description for posSIB validity is introduced in sub-clause 7.1 as follows.  Any NR posSIB can be configured to be cell specific or area specific, based on *posSIB-MappingInfo* provided by lower layer. The cell specific posSIB is applicable only within a cell that provides the posSIB while the area specific SIB is applicable within an area referred to as SI area, which consists of one or several cells and is identified by s*ystemInformationAreaID* provided by lower layer*.* The UE checks the area validity of stored posSIB based on s*ystemInformationAreaID* and *areaScope* specified in TS 38.331 [35], *valueTag* and *expirationTime* (if available) defined in the IE *AssistanceDataSIBelement*. |
| Lenovo | 1. 5.3.5.3 Reception of an RRCReconfiguration by the UE: We think that the agreement below has not been properly reflected.   „The UE should stop the timer T350 after the successful completion of the handover command, not immediately after receiving the handover command.“  Therefore, we suggest to add „after PCell change“ as shown below in red:  2> if the *reconfigurationWithSync* was included in *spCellConfig* of an MCG:  3> if T390 is running:  4> stop timer T390 for all access categories;  4> perform the actions as specified in 5.3.14.4.  3> if T350 is running:  4> stop timer T350 after PCell change;   1. DedicatedSIBRequest-r16-Ies: suffix “-r16” is missing for constant maxOnDemandSIB.   requestedSIB-List-r16 SEQUENCE (SIZE (1..maxOnDemandSIB)) OF SIB-ReqInfo-r16   1. PosSI-SchedulingInfo: There are some issues in the ASN.1.  * Suffix ”-r16” is missing for the new fields and IE in PosSI-SchedulingInfo-r16. * We think the yellow highlighted part is redundant and can be removed. * In the blue highlighted part the ”-SI” should be removed from IE name, i.e it should say PosSchedulingInfo-r16.   PosSI-SchedulingInfo-r16 ::= SEQUENCE {  posSchedulingInfoList SEQUENCE (SIZE (1..maxSI-Message)) OF PosSchedulingInfo,  posSI-RequestConfig SI-RequestConfig OPTIONAL, -- Cond MSG-1  posSI-RequestConfigSUL SI-RequestConfig OPTIONAL, -- Cond SUL-MSG-1  ...  }  Pos-SchedulingInfoList-r16 ::= SEQUENCE (SIZE (1..maxSI-Message)) OF PosSI-SchedulingInfo-r16  PosSI-SchedulingInfo-r16 ::= SEQUENCE {   1. 6.4: suffix ”-r16” should be added for the new constants maxOnDemandSIB, maxOnDemandPosSIB. 2. 7.1.1: For T350 in the description for ”Stop” the resume case needs to be removed. On the other hand the missing case ”upon change of PCell” should be added.   Upon acquiring the requested SIB(s) or posSIB(s), upon initiating the connection re-establishment/resume procedures, and upon receiving *onDemandSIB-Request* set to release. |
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## 2.2 Comments on the 38.300 CR

Companies are invited to provide their comments on the provided 38.300 CR on the draft folder

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| Company | Comments |
| ZTE | For the first change, we suggest the following minor update:  - **Other SI** encompasses all SIBs not broadcast in the Minimum SI. Those SIBs can either be periodically broadcast on DL-SCH, broadcast on-demand on DL-SCH (i.e. upon request from UEs in RRC\_IDLE, RRC\_INACTIVE or RRC\_CONNECTED), or sent in a dedicated manner on DL-SCH to UEs in RRC\_CONNECTED (i.e., if configured by the network, upon request from UEs in RRC\_CONNECTED or when the UE has an active BWP with no common search space configured). Other SI consists of: |
| Lenovo | Category should be „F“. |
| CATT | In the following sentence in section 7.3.2, RRC\_CONNECTED needs to be added.  The Other SI may be broadcast at a configurable periodicity and for a certain duration. The Other SI may also be broadcast when it is requested by UE in RRC\_IDLE/RRC\_INACTIVE/ RRC\_CONNECTED. |
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## 2.3 Comments on the capability CRs (38.331, 38.306)

Companies are invited to provide their comments on the provided 38.331 and 38.306 CRs on the draft folder

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| Company | Comments |
| Lenovo | 38.306 CR:   * Cover page: In “Other specs affected” a reference to TS 38.306 CR should be replaced by TS 38.331 CR. * Field description of onDemandSIB-Connected-r16: We suggest to update the description as highlighted in red below.   Indicates whether the UE supports the on-demand request procedure of SIB(s) or posSIB(s) in RRC\_CONNECTED as specified in TS 38.331 [9]. |
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## 2.4 Restructuring of requestedSIB-List-r16 (R2-2005174)

The current ASN.1 structure of requestSIB-List-r16 it does not look to be future-proof in the sense that, in case we add additional SIBs in later releases, we may need to create a new field to handle these additional field. The motivation is that maxOnDemandSIB is just equal to 3 because these are, at the moment, the number of SIBs that are allowed to be requested on-demand.

Further, in case the list of SIBs will be extended in later releases a new field need to be created to accommodate the new SIBs since the size of requestedSIB-List is currently fixed to 3. Therefore, the current change is proposed.

-- ASN1START

-- TAG-DEDICATEDSIBREQUEST-START

DedicatedSIBRequest-r16 ::= SEQUENCE {

criticalExtensions CHOICE {

dedicatedSIBRequest-r16 DedicatedSIBRequest-r16-IEs,

criticalExtensionsFuture SEQUENCE {}

}

}

DedicatedSIBRequest-r16-IEs ::= SEQUENCE {

onDemandSIB-RequestList-r16 SEQUENCE {

requestedSIB-List-r16 SEQUENCE {

sib12 ENUMERATED {true} OPTIONAL,

sib13 ENUMERATED {true} OPTIONAL,

sib14 ENUMERATED {true} OPTIONAL,

...

} OPTIONAL } OPTIONAL,

lateNonCriticalExtension OCTET STRING OPTIONAL,

nonCriticalExtension SEQUENCE {} OPTIONAL

}

-- TAG-DEDICATEDSIBREQUEST-STOP

-- ASN1STOP

Companies are invited to provide their comments on the submitted draft CR in R2-2005174

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| Company | Comments |
| MediaTek | Considering only the Rel-16 structure, the proposed approach seems actually more efficient (one bit per *requestable* SIB instead of three bits per *requested* SIB + length indicator). However, we will lose this efficiency gain when we use the extension marker and incur the resulting extra overhead. So we understand that this proposal prioritises spec clarity over long-term efficiency.  An alternative would be to raise maxOnDemandSIB to 8, so future use of the spare values can be accommodated, and accept that when we run out of spares we will need to use the NCE mechanism to add a new field (e.g. *additionalRequestedSIB-List-rXY*)—messier but more efficient in the long term.  When the posSIBs are considered as well, we have a much larger number of requestable SIBs, and the efficiency tradeoff: one bit per requestable SIB (35 bits) vs. (six bits per requested SIB + length indicator). The UE has to request five posSIBs at once for the proposed mechanism to win on efficiency, and the situation will get worse with the extension overhead in future releases.  On balance, we think the current structure, with a larger value of maxOnDemandSIB to allow use of the spares, looks better. |
| vivo | We agree with this proposal in R2-2005174,because it has better adaptation in further release. |
| CATT | Agree with MediaTek, prefer to use a larger value of maxOnDemandSIB (e.g. 8 or 16) for future extension. |
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# 3 Conclusion

Based on the discussions in Section 2, the following proposals are formulated:

# ANNEX Outcome Phase 1

# A.1 Summary of remaining issues

This document is to summarize the contributions submitted to AI 6.21. Please not that contributions that were already captured in the RRC CR submitted in R2-2005172. Further, no proposal regarding the positioning WI will be treated in this email discussion.

## A.1.2 Handling of prohibit timer and its values

The following proposals have an impact on the handling of the prohibit timer and with what values this can be configured:

* Starting of timer T350 and checking of timer T350 are performed in section 5.2.2.3.5 instead of 5.2.2.4.2. Adopt the TP in annexure 1.[1]
* Stopping of T350 is removed from section 5.3.13.2[1]
* Upon reception of reconfiguration message which includes reconfigurationWithSync in spCellConfig of MCG, UE stops T350, if running. Adopt the TP in annexure 2.[1]
* Specify a single prohibit timer that is applied for any SIB(s) which can be requested on-demand in RRC\_CONNECTED.[2]
* Specify prohibit timer T350 with 4-bits and value range {s0, s0dot5, s1, s2, s3, s4, s5, s6, s7, s8, s9, s10, s20, s30, spare2, spare1} in seconds.[2]
* Move the procedure of checking prohibit timer T350 from sub-clause 5.2.2.4.2 to 5.2.2.3.5 in TS 38.331.[5]

One of the issues proposed by companies is whether to move the checking on if the timer T350 is running from section 5.2.2.4.2 (action related to acquisition of SIB1) to section 5.2.2.3.5 (triggering of on-demand request in CONNECTED). Main motivation of this proposal is because the UE does not trigger the on-demand procedure only upon reception of SIB1 but also in other cases (e.g., request from upper layers). According to current specification, the UE will skip section 5.2.2.4.2 and will trigger section 5.2.2.3.5 without checking if the timer T350 is running.

**Question 1: Do companies agree to move the checking of the timer T350 from section 5.2.2.4.2 to section 5.2.2.3.5 of TS 38.331?**

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| Company | Comments |
| ZTE | Agree |
| Samsung | Agree |
| LG | Agree |
| NEC | Agree |
| Lenovo | Yes, we agree. |
| MediaTek | Agree |
| CATT | Agree |
| Huawei, HiSilicon | Agree |
| Sharp | Agree |
| Nokia | Agree |
| APT | Agree |
| Ericsson | Agree |
| Intel | Agree |

**Rapporteur input**: Company expressed a clear majority for the proposal to move the checking of the timer T350 from section 5.2.2.4.2 to section 5.2.2.3.5 of TS 38.331. Therefore, we suggest the following:

1. The checking of the timer T350 is moved from section 5.2.2.4.2 to section 5.2.2.3.5 of TS 38.331.

The second issue on the prohibit timer regards with which values this can be configured. One proposal is to assign 4-bits and value range {s0, s0dot5, s1, s2, s3, s4, s5, s6, s7, s8, s9, s10, s20, s30, spare2, spare1} for T350.

**Question 2: Do companies agree to assign 4-bits and value range {s0, s0dot5, s1, s2, s3, s4, s5, s6, s7, s8, s9, s10, s20, s30, spare2, spare1} for T350? In not, please state in the comment section your proposal.**

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| Company | Comments |
| ZTE | We prefer to have the original 3-bit value range below by removing the spare bits. We do not see the need to have finer granularity.  onDemandSIB-RequestProhibitTimer ENUMERATED {s0, s0dot5, s1, s2, s5, s10, s20, s30} |
| Samsung | Same view as ZTE |
| LG | Agree with ZTE |
| NEC | Same as ZTE. Prefer to keep the original one, as we do not see need for additional finar granularity e.g. s3-4, s6-9. |
| MediaTek | OK with ZTE’s proposal |
| CATT | Slightly prefer to keep the origianl 3-bit value range. |
| Huawei, HiSilicon | We think the proposed range of values are too long for the prohibit timer. |
| Sharp | Agree with ZTE. |
| Nokia | We don’t see the need for finer granularity for the timer values. A 3-bit timer is fine. |
| APT | Agree with ZTE |
| Ericsson | Fine with the proposal from ZTE |
| Intel | Agree with ZTE that we do not see a need for finer granularity |

**Rapporteur input**: Company expressed a clear majority for the proposal to use only 3 bits value range for the timer T350. Therefore, we suggest the following:

1. The value range of timer T350 is 3 bits.

The third issue regarding the prohibit timer is when this should be stopped by the UE. According to this, we have two proposals that are independent to each other. One proposal is, indeed, to stop T350 when the UE triggers the RRC resume procedure and the motivation for doing it is that during RRC\_IDLE or RRC\_INACTIVE the timer T350 is never running. This is in a way true because the timer T350 is also stopped in section 5.3.8.3 when the RRC release procedure is triggered.

**Question 3: Do companies agree to remove the stopping of timer T350 from section 5.3.13.2?**

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| Company | Comments |
| ZTE | Agree.  T350 can be started when UE is in connected. There are two possible cases that UE enter from connected to idle/inactive:  (1)Enter inactive or idle upon receiving RRCRelease message, T350 is stopped upon receiving RRCRelease.  (2)RRC connection release requested by UE upper layers, UE will enter idle state and T350 continues to run until initiation of RRC connection establishment.  So, T350 will never run when UE is in inactive and thus there is no need to stop T350 upon receiving RRCResume. |
| Samsung | Agree |
| LG | Agree. In RRC INACTIVE and RRC IDLE state, T350 is never running |
| NEC | Agree |
| Lenovo | Yes, we agree |
| MediaTek | Agree (we also understand that T350 will never be running in idle/inactive) |
| CATT | Agree |
| Huawei, HiSilicon | Agree |
| Sharp | Agree |
| Nokia | Agree |
| APT | Agree |
| Ericsson | Agree |
| Intel | Agree |

**Rapporteur input**: Company expressed a clear majority for the proposal to delete the stopping of timer T350 from section 5.3.13.2 of TS 38.331. Therefore, we suggest the following:

1. Delete the stopping of timer T350 from section 5.3.13.2 of TS 38.331.

A further issue is, instead, the handling of the timer T350 with receiving a reconfiguration with sync associated with the MCG. The motivation for this is because in case of handover, the UE should send the on-demand request eventually to the target node and thus the timer T350 configured by the source will not be valid anymore. However, one drawback of doing this is that the UE, in case of handover failure, when falling back to the source node will have to start again autonomously timer T350 and this may cause some wrong UE/NW behaviour (since the UE may receive an on-demand request by the UE that is not expecting).

**Question 4: Do companies agree that the UE should stop timer T350 upon the reception of reconfiguration message which includes *reconfigurationWithSync* in *spCellConfig* of MCG?**

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| Company | Comments |
| ZTE | The intention of this proposal is to reflect the agreement we made last meeting “After at PCell change the prohibit timer is reset (the common understanding is that the UE reacquires SI in the new PCell including SIBs needed in connected, i.e. including SIBs delivered with this mechanism)” but we do not think UE should stop T350 upon the reception of reconfiguration with sync.  In case of successful handover, UE should stop the T350 configured by the source cell, send SI request and start T350, if configured by the target cell and some required SIBs are not broadcasting.  In case of handover failure, we may have the following UE behaviors:   1. UE will re-establish the RRC connection and T350 is stopped upon initiating re-establishment procedure. 2. UE go back to the source cell for some cases when DAPS is supported. => The T350 configured by the source cell should keep running.   With the above analysis, I think the stop condition of T350 can be listed as follows:   * Upon acquiring the requested SIB(s). * Upon initiating the connection re-establishment procedures. * Upon receiving onDemandSIB-Request set to release. * Upon successful handover. (The only concern is how to capture this condition as we have never used the wording “successful handover” before.) |
| Samsung | Yes. Not stopping the timer will delay transmission of SI request upon handover completion. In case of handover failure, RRC connection will be re-established. Note that currently, T350 is stopped when RRC connection re-estabslishment is triggered and UE will start the timer again when it sends SI request in newly selected cell. So we do not see any issue in stopping the timer when UE starts executing the handover command.  If UE should does not stop T350 upon the reception of reconfiguration with sync but stop it upon completion of handover (as commented by ZTE above), there will be an issue when *dedicatedSIB1-Delivery* andreconfiguration with sync is included in reconfiguration message. Whether to request SI or not is checked as part of *dedicatedSIB1-Delivery* processing which is performed before completion of handover. SI request in target will not be triggered as T 350 is still running. |
| LG | When DAPS HO fails, UE reverts back to the source cell. In this case, T350 should not stop. T350 should be stopped only after successful reconfiguration with sync (i.e. after successful RACH just before/after stopping T304, in 5.3.5.3) not upon initiation of the reconfiguration with sync.  1> if *reconfigurationWithSync* was included in *spCellConfig* of an MCG or SCG, and when MAC of an NR cell group successfully completes a Random Access procedure triggered above;  2> stop timer T304 for that cell group;  2> stop timer T350; |
| NEC | Firstly, our understanding on the previous agreement for HO is that the UE stops T350 upon receiving the reconfigurationWithSync (but never restart) and the T350 may be configured by target with non-zero value. Then, the UE may start the T350 again upon sending the request in the target cell. With this, we agree with the propsal. |
| Lenovo | No. Referring to the two agreements made below our understanding is that the UE shall stop timer T350 after (successful) PCell change.   * RAN2#109-e: RAN2 to confirm that upon receiving RRC reconfiguration message which includes reconfigurationWithSync in spCellConfig of an MCG and dedicatedSIB1-Delivery, SI request may be initiated after MAC of MCG completes the random access procedure towards the target SpCell. * RAN2#109bis-e: After at PCell change the prohibit timer is reset (the common understanding is that the UE reacquires SI in the new PCell including SIBs needed in connected, i.e. including SIBs delivered with this mechanism) |
| MediaTek | Agree with Lenovo and others that this should happen at *successful* PCell change, rather than upon receiving the reconfiguration. |
| CATT | As mentioned by ZTE, UE goes back to the source cell for some cases when DAPS is supported. Hence, we support the UE should stop T350 upon successful handover. In section 5.3.5.3, the UE stops timer T390 for all access categories upon successful reconfiguration with sync. Stopping T350 upon successful handover can be added in the same place as follows.  5.3.5.3 Reception of an *RRCReconfiguration* by the UE  …  1> if *reconfigurationWithSync* was included in *spCellConfig* of an MCG or SCG, and when MAC of an NR cell group successfully completes a Random Access procedure triggered above;  2> stop timer T304 for that cell group;  2> stop timer T310 for source if running;  2> apply the parts of the CSI reporting configuration, the scheduling request configuration and the sounding RS configuration that do not require the UE to know the SFN of the respective target SpCell, if any;  2> apply the parts of the measurement and the radio resource configuration that require the UE to know the SFN of the respective target SpCell (e.g. measurement gaps, periodic CQI reporting, scheduling request configuration, sounding RS configuration), if any, upon acquiring the SFN of that target SpCell;  2> if the *reconfigurationWithSync* was included in *spCellConfig* of an MCG:  3> if T390 is running:  4> stop timer T390 for all access categories;  4> perform the actions as specified in 5.3.14.4.  3> stop timer T350, if running;  3> if *RRCReconfiguration* does not include *dedicatedSIB1-Delivery* and  3> if the active downlink BWP, which is indicated by the *firstActiveDownlinkBWP-Id* for the target SpCell of the MCG, has a common search space configured by *searchSpaceSIB1*:  4> acquire the *SIB1*, which is scheduled as specified in TS 38.213 [13], of the target SpCell of the MCG;  4> upon acquiring *SIB1*, perform the actions specified in clause 5.2.2.4.2; |
| Huawei, HiSilicon | The timer should be stoped and restarted after resending the SI request in the target cell if SI request is configured in the traget cell |
| Sharp | Yes. Not stopping T350 may delay SI request in the target and we do not see any issue in stopping the timer upon the reception of reconfiguration message which includes reconfigurationWithSync in spCellConfig of MCG. |
| Nokia | No. If the intended behaviour is to remember the timer state from a source cell perspective but to not have the timer running after successful HO to target cell (which delays the sending of SI request in target cell), stopping the timer at successful HO to target cell and not before that, makes sense. |
| APT | No. Based on the previsous agreement, the UE should stop timer T350 after successful PCell change. The UE does not need to stop timer T350 upon receiving the reconfiguration message which includes reconfigurationWithSync in spCellConfig of MCG. |
| Ericsson | As summarized at the beginning of the question, stopping the timer T350 when getting the reconfiguration with sync it creates problem in case the UE needs to fallback to the source configuration. We agree with other companies that it makes sense to stop the timer only once the handover is completed. If if too difficult to clarify this in the procedural text, we can add a note in the specification to capture this behavior. |
| Intel | No, the timer should be stopped only after successful completion of the HO command. |

**Rapporteur input**: Company expressed a clear majority for the proposal to stop the timer T350 only after successful completion of the handover command (and not when receiving the reconfiguration with sync). Therefore, we suggest the following:

1. Upon handover, clarify that the UE should stop the timer T350 only after the successful completion of the handover command.

## A.1.3 Capability for the on-demand SIB in CONNECTED

The following proposals have been submitted regarding the need of UE capability for on-demand SIB in RRC\_CONNECTED:

* It’s mandatory to support on-demand SI in RRC\_CONNECTED by UEs capable of features, where the corresponding SIB(s) is on-demand SI in RRC\_CONNECTED, i.e. no UE capability for on-demand SI in RRC\_CONNECTED is introduced.[3]
* Proposal 1: define a non-mandatory capacity for on-demand SI in RRC\_CONNECTED in TS 38.306. [14]
* Proposal 2: UE needs to report its capability of on-demand SI in RRC\_CONNECTED to networks. [14]

So far, the understanding about this feature was that no UE capabilities were needed to be signalled by the UE regarding the on-demand SIB feature in CONNECTED. One reason is that, even if the network decides to signal the *onDemandSIB-RequestConfig*, since the triggering of this feature is UE-based, if the UE does not support it will just skip this configuration and will never trigger the procedure. On the other side, even the UE supports this feature and the network set the prohibit timer, the UE by implementation may decide to never trigger the on-demand message. Therefore, our assumption is that no capabilities are needed. However, in case this feature is not mandatory for the UE, having a one-bit capability will avoid the network to configure something that the UE cannot support.

**Question 5: Do companies agree that no RRC capabilities are needed for the on-demand SIB feature in CONNECTED? If the answer is not, please state your proposal in the comment section.**

|  |  |
| --- | --- |
| Company | Comments |
| ZTE | We agreed with the explanation above that reporting UE’s capability is not quite necessary since the on demand SI request in connected is a UE-based feature while having a capability bit is somehow helpful for NW to avoid useless configuration. |
| Samsung | If network supports the feature (i.e. it signals *onDemandSIB-RequestConfig*) and UE does not, UE capability seems needed. If UE does not support the feature (according to UE capability), network provide the SIBs in dedicated RRC signaling if SIBs required in connected are not broadcasted |
| LG | Same view as Samsung |
| NEC | We prefer to define one bit (per UE) capability unless this is mandatory for the UE. This can avoid the undesirable case the Rapporteur identified. |
| Lenovo | No. To be future-proof (more SIBs may be added in the on-demand SIB request list in the future) we think a UE capability may be beneficial in order to avoid the case where network enables a feature that a UE doesn’t support. |
| MediaTek | Disagree  We think a one-bit capability is useful. This is not primarily to prevent the network from configuring something unused, but so that the network knows which connected UEs will not be able to request the SIBs—the network can then presumptively send the needed SIBs (e.g. the V2X SIBs for V2X-capable UEs) to the UEs that do not support the on-demand feature, while letting the UEs that do support it request the SIBs on-demand when needed. |
| CATT | Share the same view with Samsung. We prefer to define a non-mandatory capacity for on-demand SI in RRC\_CONNECTED in TS 38.306. |
| Huawei, HiSilicon | Disagree  If the UE does not report the capability, the network should signal *onDemandSIB-RequestConfig* to all the UE connected to the network. This might be a large overhead for both the UE and the network if there are a lot of UEs in the network, e.g., 1000 UEs in the network and then, 1000 such configurations should be included in the RRC reconfig for each UE. While if a capability is reported, the network does not need to send these to the un-capable UEs. |
| Sharp | We also do not think reporting UE’s capability is quite necessary but okay to go with majority. |
| Nokia | Having a capability bit seems beneficial so that NW does not have to make any assumptions (unless we agree it is a mandatory feature for UE with no capability bit). The option where it is mandatory for UE conditionally upon support of features involving SIBs that are allowed for OSI in connected is too complex and is not preferred. |
| APT | On-demand SIB feature in Connected shall not be an mandatory feature. Therefore, one bit capability is required. |
| Ericsson | Ok to have a one bit capability. |
| Intel | We do not see a need for capability but we are also OK if majority see it useful. It could be useful to avoid network configuring the UE. However, the need for these SIBs are based in UE application requirements, and there is no guaranteed way for network to be aware of the requirements, it is difficult for network to provide the SIBs to all connected UEs that need it. |

**Rapporteur input**: Company expressed a clear majority for the proposal to define a non-mandatory capability bit in order to inform the network whether the UE support the feature or not. Therefore, we suggest the following:

1. A non-mandatory capacity for on-demand SI in RRC\_CONNECTED is defined in TS 38.306.

## A.1.4 SIBs to be requested on-demand while in CONNECTED

The following proposals have been formulated regarding new SIBs to be requested on-demand while in CONNECTED:

* SIB10 can’t be requested on-demand by UEs in RRC\_CONNECTED.[3]
* Allow the UE in RRC\_CONNECTED to request SIB9, irrespective of the relation to IIoT.[4]
* Introduce a reference SFN as an optional field in SIB9, which is only included when the SIB is delivered via unicast.[4]
* SIB10 can be requested on-demand by UEs in RRC\_CONNECTED.[8]

Regarding the request of SIB10, as Vivo pointed out in [3], it looks like that this SIB may not essential to be received by the UE while in RRC\_CONNECTED because the UE The UE may use local release of RRC connection to perform manual search if it is not possible to perform the search while RRC connected.

**Question 6: Do companies agree that SIB10 should not be requested on-demand by UEs in CONNECTED?**

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| --- | --- |
| Company | Comments |
| ZTE | Yes. Even though it is possible for UE in connected to perform manual selection, we do not think it is necessary to support on demand for SIB10 since UE can use local release of RRC connection to perform manual selection. |
| LG | Agree.  We acknowledge that in case network does not broadcast SIB10, it might take a long time for UE to collect HRNN name from multiple cells across frequencies because UE has to request SIB10 in each cell of those. However, we do not think this is a serious problem to optimize because problem a) manual NPN slection is not a frequent event, and b) such a long interruption caused by repetitive SIB request could be somehow shortened by broadcasing SIB10 in those cells. |
| NEC | Yes. we agree with the ZTE and do not see a need of such optimization for rare (or less frequent) case. |
| Lenovo | No. We suggest to let discuss and decide this topic in the PRN WI session. We have submitted a contribution for discussing this topic there. |
| MediaTek | Disagree  We agree with the argument in [8], that a UE that supports manual selection may want to request SIB10. It seems excessive to require the UE to use local release for this purpose—it’s much less disruptive if the network can just provide SIB10.  In general we do not understand the drive to avoid making SIBs available for request in connected. What’s the undesirable impact of supporting additional SIBs for this purpose? Is it just about the size of the enumerated type? |
| CATT | Agree |
| Huawei, HiSilicon | We think SIB10 SI request should be supported  It is beneficial to enable UE to perform manual selection in RRC\_CONNECTED state. For example, in the RAN sharing case, when the UE is connected to the public network cell of a shared-RAN, if the user later wants to perform manual selection to a PNI-NPN cell of the same shared-RAN, the UE needs to release the AN (Access Network) connection (RRC and DRBs) and CN connection to perform manual search. It stops the UP data transmission and causes latency, while the UE requests to the same shared-RAN when the UE falls back to RRC-IDLE state for the on-demand SIB10. On the contrary, if RRC\_CONNECTED on-demand request of SIB10 is supported, the UP data transmission and the on-demand request of SIB10 via dedicated RRC can be performed simultaneously. It reduces the duration of RRC-IDLE state for the UE to switch from the public network to the PNI-NPN. For SNPN, when the UE in SNPN access mode automatically connects to an SNPN cell, the user can verify whether the connected SNPN is what the user wants by reading HRNN, and the UE can display the HRNN to the user after requesting on-demand SIB10 in RRC\_CONNECTED. |
| Nokia | Agree. No need for on demand request in connected for SIB10, as it is rarely used by a UE (only needed for manual CAG ID selection). |
| APT | No. We share the same view as Lenovo that this issue should be discussion in PRN WI session. We agree the argument in [8]. Furthermore, CT1 requests the network-controlled manual CAG selection being supported by RAN, which is being discussed in PRN WI seesion and SIB10 is also under discussion. We should not conclude that SIB10 should not be requested on-demand by UEs in CONNECTED in this session. |
| Ericsson | To us, it does not look critical to have SIB10 on-demand. However, we are ok to go with majority view. We also agree that maybe PRN WI should decide on this. |
| Intel | Yes – we do not see a need to request SIB10 in connected mode. UE can (and in most cases will need to) to local release for manual selection. In any case, it would likely to need to read the SIB of another cell for manual selection thatn the cell it is currently already connected to. |

**Rapporteur input:** According to the inputs provided by companies, 7 companies (out of 11) believe that there is no need to request the SIB10 on-demand. However, we also acknowledge that this discussion should be taken in the PRN WI rather than here. Therefore, our proposal is to not support SIB10 for the time being and companies may bring this issue in the PRN WI is they wish. According to this, we suggest:

1. UE shall not request SIB10 on-demand while in RRC\_CONNECTED.

A second proposal is, instead, to allow the UE to request SIB9 on-demand while in CONNECTED (irrespectively of the relation with IIoT). Even if this it may be, of course, possible, our understanding is that the request of the UTC time reference has been already widely discussed in the IIoT session. According to this, after a long and painful discussion, it was agreed that there was no benefit to request the UTC time on-demand and that is also one of the reasons why the on-demand SIB framework was not adopted at the end. Further, allowing this now, it poses two problematic that is quite difficult to solve at the last meeting of this release. On problem is that will create double handling of SIB9 for IIoT and the general framework and network and UE restriction need to be specified to avoid any collision in the handling of this SIB. This is something to be avoided at this late stage of the release. The second problem is that the request on-demand of UTC time of SIB9 may have implication in RAN3 for the CU-DU split and therefore, we should consult RAN3 is this is okay. If this is the case, it would be impossible to sort out this problem during this meeting. Therefore, our suggestion would be to not support the SIB9 on-demand, while in CONNECTED, in Rel-16.

**Question 7: Do companies agree that SIB9 (regardless of the relation with IIoT) should not be requested on-demand by UEs in CONNECTED?**

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| --- | --- |
| Company | Comments |
| ZTE | Agree, no need to support.   1. It has been agreed in IIOT session that the reference time info is requested via UEAssistanceInformation message and received via DLInformationTransfer message. There is no need to support two separate procedures for the same functionality. 2. For SIB9 without reference information, it is not the essential or required SIB thus not necessary to support on demand for SIB9. |
| Samsung | Agree |
| LG | Agree. Given the fact that UEAssistanceInformation mesage can be used to request reference time info, we do not need to support on-demand SIB request for the same purpose. |
| NEC | Agree. similar view as ZTE. We are not yet convinced of its need.. |
| MediaTek | Disagree  As noted in the question, this is independent of the IIoT discussion; the UE may need SIB9 for other purposes such as GNSS initialisation (this is already identified in the IE description in the RRC spec). We don’t see what the „double handling“ concern is (the same UE should never see separate instances of SIB9). |
| CATT | Agree |
| Huawei, HiSilicon | Disagree  Agree with MTK’s comment that this is not just related to IIoT. Other applications may use this for timing purpose. |
| Nokia | We were one of the proponents that did not want any artificial restrictions imposed as to which SIBs can and cannot be requested via OSI in connected but after a long discussion in several meeting and discussion threads, my understanding is SIB9 was ruled out in IIOT session. We should honor that decision now. It is too complex to allow on-demand SI in connected for SIB9 for some information in SIB9 while not for some other information in SIB9. |
| APT | Agree. The referecne time information can be requested via UEAssistanceInformtaion. We don’t need two mechanisms for the same purpose. |
| Ericsson | Agree that it will be to messy and complex to have SIB9 requested on-demand at this stage. This was exensively discussed in the IIoT WI and we should stick to their decision. |
| Intel | Agree. |

**Rapporteur input:** According to the inputs provided by the companies, 9 out of 11 believe that SIB9 should not be requested on-demand. Therefore, we suggest:

1. RAN2 to confirm that UE shall not request SIB9 on-demand while in RRC\_CONNECTED.

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