**3GPP TSG-CT WG1 Meeting #130-eC1-213123**

**Electronic meeting, 20-28 May 2021 (was C1-212258)**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
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|  | **23.122** | **CR** | **0701** | **rev** | **1** | **Current version:** | **17.2.0** |  |
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| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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| ***Proposed change affects:*** | UICC apps |  | ME | **x** | Radio Access Network |  | Core Network |  |

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| ***Title:***  | Tsor-cm timer handling in case of IDLE and IRAT transitions |
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| ***Source to WG:*** | Apple |
| ***Source to TSG:*** | C1 |
|  |  |
| ***Work item code:*** | eCPSOR\_CON |  | ***Date:*** | 2021-05-20 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***Release:*** | Rel-17 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)...Rel-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
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| ***Reason for change:*** | The existing text for handling of Tsor-cm timer requires to stop the timer if the UE moves to 5GMM-IDLE mode or 5GMM-CONNECTED with RRC inactive. As IDLE is entered not just because the network releases the connection, but also if e.g. a RRC-Reestablishment fails or a Re-diection to LTE is trigered, ongoing services like e.g. a IMS voice Call would be aborted even there is a high probability that the call could be continued.Further the current defintions do not cover the case that the connection is handed over to to LTE and subsequently even to legacy RATs. If the last running Tsor-cm timer stops or expires while the UE is any state other than 5GMM-CONNECTED mode (i.e. it is in CONNECTED mode in any other RAT or in IDLE mode), the UE shall release the current signalling connection locally if ongoing and then attempt to obtain service on a higher priority PLMN as specified in subclause 4.4.3.3 by acting as if timer T that controls periodic attempts has expired. |
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| ***Summary of change:*** | In order to ensure that ongoing services are not interrupted it is proposed to not stop the Tsor-cm timers upon a transition to IDLE due to lower layer failure or any IRAT transition. When the last running Tsor-cm timer stops or expires in any state different than 5GMM-CONNECTED mode (i.e. it is in CONNECTED mode in any other RAT or in IDLE mode), the UE shall release the current signalling connection locally if ongoing and then attempt to obtain service on a higher priority PLMN as specified in subclause 4.4.3.3 by acting as if timer T that controls periodic attempts has expired |
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| ***Consequences if not approved:*** | UE will wrongly evaluate that an active service is terminated and will end up possibly triggering a PLMN selection and resulting in the service dropping. The entire purpose of Tsor-cm timer in these cases will be lost. |
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| ***Clauses affected:*** | C.4.2 |
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|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

\*\*\*\*\* First change \*\*\*\*\*

## C.4.2 Applying SOR-CMCI in the UE

During SOR procedure and while applying SOR-CMCI, the UE shall determine the time to release the PDU session(s), PDP contexts, PDN connections as follows:

- If the UE has a configured "user controlled list of services exempted from release due to SOR" and a matching criterion is found for a service included in the "user controlled list of services exempted from release due to SOR", the UE shall set the Tsor-cm timer associated to the service to infinity;

- If one or more SOR-CMCI rules are included in SOR-CMCI, where for each criterion:

a) DNN of the PDU session:

 the UE shall check whether it has a PDU session with a DNN matching to the DNN included in SOR-CMCI or a PDP contexts or PDN connections with a APN matching to the APN included in SOR-CMCI, and if any, the UE shall set the associated timer Tsor-cm to the value included in the SOR-CMCI;

b) S-NSSAI of the PDU session:

 the UE shall check whether it has a PDU session with a S-NSSAI matching the S-NSSAI included in SOR-CMCI, and if any, the UE shall set the associated timer Tsor-cm to the value included in the SOR-CMCI;

c) IMS registration related signalling:

 the UE shall check whether IMS registration related signalling is ongoing as specified in 3GPP TS 24.501 [64], and if it is ongoing, the UE shall set the associated timer Tsor-cm to the value included in the SOR-CMCI;

d) MMTEL voice call:

 the UE shall check whether MMTEL voice call is ongoing as specified in 3GPP TS 24.501 [64], and if it is ongoing, the UE shall set the associated timer Tsor-cm to the value included in the SOR-CMCI;

e) MMTEL video call:

 the UE shall check whether MMTEL video call is ongoing as specified in 3GPP TS 24.501 [64], and if it is ongoing, the UE shall set the associated timer Tsor-cm to the value included in the SOR-CMCI;

f) MO SMS over NAS or MO SMSoIP:

 the UE shall check whether MO SMS over NAS or MO SMSoIP services is ongoing as specified in TS 24.501 [64], and if it is ongoing, the UE shall set the associated timer Tsor-cm to the value included in the SOR-CMCI; or

g) match all:

 the UE shall set the associated timer Tsor-cm to the value included in the SOR-CMCI;

- otherwise, the UE shall consider the timer value for Tsor-cm equal to zero.

The UE shall start all applicable Tsor-cm timers.

While one or more Tsor-cm timers are running, the UE shall check the newly established PDU session, PDP contexts or PDN connections or service for a matching criterion in the SOR-CMCI:

- If the UE has a configured "user controlled list of services exempted from release due to SOR" and a matching criterion is found for a service included in the "user controlled list of services exempted from release due to SOR", the UE shall set the Tsor-cm timer associated to the service to infinity;

- If a matching criterion is found and the applicable Tsor-cm timer indicated the value "infinity" then the UE shall set the Tsor-cm timer associated to the PDU session, PDP contexts or PDN connections to infinity; or

- For all other cases, if a matching criterion is found then the UE shall set the Tsor-cm timer associated to the newly established PDU session PDP contexts or PDN connections, or service, with the exception that if the value of the Tsor-cm timer exceeds the highest value among the current values of all running Tsor-cm timers, then the value of the Tsor-cm timer for the new PDU session PDP contexts or PDN connections or service shall be set to the highest value among the current values of all running Tsor-cm timers.

NOTE 1: For newly established PDU session, PDP contexts or PDN connections or service as described above, the timer is set irrespective of whether other ongoing PDU sessions, PDP contexts or PDN connections or services that match the same criteria exist and for which corresponding Tsor-cm timers are running.

NOTE 2: NAS 5GMM layer will receive an explicit indication from the upper layers that a service is started or stopped. When a service is started, it is handled as a new service in the procedures described in this subclause.

NOTE 3: While one or more Tsor-cm timers are running, the UE can trigger any 5GSM procedure or start new services.

While one or more Tsor-cm timers are running, upon receiving a new SOR-CMCI as described in annex C.3, the UE shall check if there is a matching criterion found for any ongoing PDU session, PDP contexts or PDN connections or service in the new SOR-CMCI:

- if the UE has a configured "user controlled list of services exempted from release due to SOR" and a matching criterion is found for a service included in the "user controlled list of services exempted from release due to SOR", the UE shall set the Tsor-cm timer associated to the service to infinity;

- if a matching criterion is found and the value of Tsor-cm timer in the new SOR-CMCI indicates the value "infinity", then the Tsor-cm timer value for the associated PDU session PDP contexts or PDN connections or service shall be set to infinity;

- if a matching criterion is found and the value of Tsor-cm timer in the new SOR-CMCI is other than infinity and is smaller than the current value of the running Tsor-cm timer for the associated PDU session, PDP contexts or PDN connections or service, then the Tsor-cm timer value for the associated PDU session, PDP contexts or PDN connections or service shall be replaced with the value in the new SOR-CMCI without stopping and restarting the timer; or

- for all other cases, the running Tsor-cm timers for the associated PDU sessions, PDP contexts or PDN connections or services are kept unchanged.

The timer Tsor-cm stops when the associated PDU session, PDP contexts or PDN connections is released or the associated service is stopped.

If the UE while in connected mode on any 3GPP access technology enters idle mode not due to lower layer failure (see 3GPP TS 24.501 [64]) or the UE enters 5GMM-CONNECTED mode with RRC inactive indication (see 3GPP TS 24.501 [64]), while one or more Tsor-cm timers are running, then the UE shall stop all Tsor-cm timer(s) When the last running Tsor-cm timer stops or expires in any UE state , if:

i) the UE has a list of available and allowable PLMNs in the area and based on this list or any other implementation specific means, the UE determines that there is a higher priority PLMN than the selected VPLMN; or

ii) the UE does not have a list of available and allowable PLMNs in the area and is unable to determine whether there is a higher priority PLMN than the selected VPLMN using any other implementation specific means;

then

a) if the UE is in 5GMM-CONNECTED mode, the UE shall perform the deregistration procedure (see clause 4.2.2.3 of 3GPP TS 23.502 [63]) that releases all the established PDU sessions, PDP contexts or PDN connections;

b) if the UE has a NAS Signalling connection or a RR connection ongoing in any Access Technology other than NG-RAN, the UE shall release the current connection locally;

and when the UE enters idle mode it shall attempt to obtain service on a higher priority PLMN as specified in subclause 4.4.3.3 by acting as if timer T that controls periodic attempts has expired.

NOTE 4: The list of available and allowable PLMNs in the area is implementation specific.

The UE which has an emergency PDU session, emergency PDP contexts or emergency PDN connections, receives a request from the upper layers to establish an emergency PDU session, emergency PDP contexts or emergency PDN connections or perform emergency services fallback, registers for emergency services, or is configured for high priority access in the selected PLMN is not required to enter idle mode the last running Tsor-cm timer stops or expires. The UE shall attempt to perform the PLMN selection after the emergency PDU session, emergency PDP contexts or emergency PDN connections or the high priority service is released, if any Tsor-cm timer was running and the last running Tsor-cm timer stopped or expired when the emergency PDU session, emergency PDP contexts or emergency PDN connections or the high priority service was established and after the UE enters idle mode or 5GMM-CONNECTED mode with RRC inactive indication (see 3GPP TS 24.501 [64]).

\*\*\*\*\* End of change \*\*\*\*