**3GPP TSG-CT WG1 Meeting #137-eC1-224885**

**E-Meeting, 18th – 26th August 2022**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **23.122** | **CR** | **0962** | **rev** | **-** | **Current version:** | **17.7.1** |  |
|  | | | | | | | | |
| *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)*.* | | | | | | | | |
|  | | | | | | | | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network |  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | Clarification on UE behavior due to handover | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei, HiSilicon | | | | | | | | | |
| ***Source to TSG:*** | C1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | eCPSOR\_CON | | | | |  | ***Date:*** | | | 2022-08-10 |
|  |  | | | |  | |  | | |  |
| ***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 can be 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-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | When the Tsor-cm timer associated with "SOR security check not successful" is running, the UE may receive the steering of roaming information on which the security check is successful, and the UE behaviour is as below:  *If the security check on the received steering of roaming information is successful, the UE shall stop the Tsor-cm timer associated with "SOR security check not successful", if running, and act on the received steering of roaming information. The current PLMN or SNPN is not considered as lowest priority.*  During the time between starting the Tsor-cm timer and receiving steering of roaming information with successful security check, the registered PLMN may be changed because of handover. For this case, the quoted UE behaviour also applies, but no information can be found from current spec.  To make the spec clear, better to clear state it. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Add a note to state the quoted UE behavior also applies to the mentioned case. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | No information can be found about mentioned case from current spec. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | C.4.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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) or the services as follows:

- If the UE encounters SOR security check not successful on the received steering of roaming information, and a matching criterion "SOR security check not successful" is included in the SOR-CMCI stored in the non-volatile memory of the ME, then the UE shall:

- if the timer value is not zero, start an associated Tsor-cm timer with the value included in the SOR-CMCI;

- stop all other running Tsor-cm timers, if any; and

- not start any new Tsor-cm timer while Tsor-cm timer associated with "SOR security check not successful" criterion is running;

- 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, and if any, the UE shall, if the timer value is not zero, start an associated Tsor-cm timer with the value included in the SOR-CMCI;

b) S-NSSAI SST of the PDU session:

the UE shall check whether it has a PDU session with a S-NSSAI SST matching the S-NSSAI SST included in SOR-CMCI, and if any, the UE shall, if the timer value is not zero, start an associated Tsor-cm timer with the value included in the SOR-CMCI;

b1) S-NSSAI SST and SD of the PDU session:

the UE shall check whether it has a PDU session with a S-NSSAI SST and SD matching the S-NSSAI SST and SD included in SOR-CMCI, and if any, the UE shall, if the timer value is not zero, start an associated Tsor-cm timer with the value included in the SOR-CMCI;

c) IMS registration related signalling:

the UE shall check whether IMS registration related signalling is ongoing, and if it is ongoing, the UE shall, if the timer value is not zero, start an associated Tsor-cm timer with the value included in the SOR-CMCI;

d) MMTEL voice call:

the UE shall check whether MMTEL voice call is ongoing, and if it is ongoing, the UE shall, if the timer value is not zero, start an associated Tsor-cm timer with the value included in the SOR-CMCI;

e) MMTEL video call:

the UE shall check whether MMTEL video call is ongoing, and if it is ongoing, the UE shall, if the timer value is not zero, start an associated Tsor-cm timer with the value included in the SOR-CMCI;

f) SMS over NAS or SMSoIP:

the UE shall check whether SMS over NAS or SMSoIP services is ongoing, and if it is ongoing, the UE shall, if the timer value is not zero, start an associated Tsor-cm timer with the value included in the SOR-CMCI; or

g) match all:

the UE shall check whether there are any PDU sessions or services for which there is no matching criterion in a) to f) above. If such PDU session or service exists, then for each of these PDU sessions or services, the UE shall, if the timer value is not zero, start an associated Tsor-cm timer with the value included in the SOR-CMCI.

If the SOR-CMCI is available, and:

- the SOR-CMCI used is in the USIM, contains no SOR-CMCI rule;

- there are one or more SOR-CMCI rules but there is no criterion matched with any ongoing PDU session or service; or

- there are one or more SOR-CMCI rules and there is one or more criteria matched with an ongoing PDU session or service, but the highest Tsor-cm timer value associated with the matched criteria is equal to zero;

then there is no Tsor-cm timer started for any PDU session or service.

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

- If a matching criterion is found and the applicable Tsor-cm timer indicated the value "infinity" then the UE shall start the Tsor-cm timer associated to the newly established PDU session or service with the value set to infinity; or

- For all other cases, if a matching criterion is found and the timer value is not zero then the UE shall start the Tsor-cm timer associated to the newly established PDU session or service with the value included in the SOR-CMCI, with the exception that if the value of the Tsor-cm timer included in the SOR-CMCI exceeds the highest value among the current values of all running Tsor-cm timers, then the value of the Tsor-cm timer for the newly established PDU session 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 or service as described above, the timer is set irrespective of whether other ongoing PDU sessions 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 clause.

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.4.3, the UE shall check if there is a matching criterion found for any ongoing PDU session or service in the new SOR-CMCI:

- if a matching criterion is found and the value of Tsor-cm timer in the new SOR-CMCI indicates the value "infinity", then:

a) if the Tsor-cm timer associated to the PDU session or service is not running, then the UE shall start the Tsor-cm timer associated to the PDU session or service with the value set to infinity; or

b) if the Tsor-cm timer associated to the PDU session or service is already running, then the UE shall set the value of the Tsor-cm timer associated to the PDU session or service to infinity without stopping and restarting the timer;

- 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 or service, then the Tsor-cm timer value for the associated PDU session 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 or services are kept unchanged.

The Tsor-cm timer shall be stopped when the associated PDU session is released or the associated service is stopped.

If the security check on the received steering of roaming information is successful, the UE shall stop the Tsor-cm timer associated with "SOR security check not successful", if running, and act on the received steering of roaming information. The current PLMN or SNPN is not considered as lowest priority.

NOTE 4: This also applies to the case when the current PLMN or SNPN is different from the PLMN or SNPN in which the Tsor-cm timer associated with "SOR security check not successful" was started.

If the UE, while one or more Tsor-cm timers are running:

a) enters idle mode not due to lower layer failure (see 3GPP TS 24.501 [64]);

b) is not able to successfully recover the N1 NAS signalling connection (see 3GPP TS 24.501 [64]); or

c) enters 5GMM-CONNECTED mode with RRC inactive indication (see 3GPP TS 24.501 [64]);

then the UE shall stop the timer(s). In these cases, if:

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

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

then the UE shall attempt to obtain service on a higher priority PLMN or SNPN as specified in clause 4.4.3.3 by acting as if timer T that controls periodic attempts has expired or as specified in clause 4.9.3.

NOTE 5: When the UE enters idle mode due to lower layer failure while one or more Tsor-cm timers are running, then the UE does not stop Tsor-cm timer(s) as recovery of NAS signalling connection is possible (see 3GPP TS 24.501 [64]).

When the UE determines that no Tsor-cm timer is started for any PDU session or service, the last running Tsor-cm timer is stopped due to release of the associated PDU sessions or stop of the associated services, or the last running Tsor-cm timer expires, if:

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

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

then 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 and services, if any, and once the UE enters idle mode it shall attempt to obtain service on a higher priority PLMN or SNPN as specified in clause 4.4.3.3 by acting as if timer T that controls periodic attempts has expired or as specified in clause 4.9.3.

NOTE 7: The list of available and allowable PLMNs or SNPNs in the area is implementation specific.

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

If the UE selects a cell of any access technology other than NG-RAN, the ongoing SOR procedure is terminated and the UE shall stop applying SOR-CMCI and stop all running Tsor-cm timers without triggering any further actions.

NOTE 7: If the UE is served by any access technology other than NG-RAN, the HPLMN can initiate a steering of roaming procedure as specified in clause 4.4.6.

\*\*\*\*\* End of changes \*\*\*\*\*