**3GPP TSG-CT WG1 Meeting #152C1-246695**

**Orlando, US, 18-22 November 2024 *revision of C1-246395***

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **23.122** | **CR** |  | **rev** | **1** | **Current version:** | **17.9.0** |  |
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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:*** | Limitation to the number of the SOR-CMCI criteria supported by the UE | | | | | | | | | |
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| ***Source to WG:*** | NTT DOCOMO, NTT, KDDI, Ericsson | | | | | | | | | |
| ***Source to TSG:*** |  | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | eCPSOR\_CON | | | | |  | ***Date:*** | | | 2024-11-20 |
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| ***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)* | |
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| ***Reason for change:*** | | Contributions from a number of UE vendors, among others, proposing to make SOR-CMCI feature optional from Rel-17 onwards (please refer to TS23.122: CR 1238/Rel-17, CR 1239/Rel-18, CR 1277/Rel-19 and TS24.501: CR 6269/Rel-17, CR 6271/Rel-18, CR 6518/Rel-19).  This CR proposes a compromised solution to mandate the UE to only support SOR-CMCI rules for "MMTEL voice call" and "MMTEL video call" of the "service type criterion" and "match all type criterion", to reduce the complemxity claimed in the mentioned CRs.  In this case, the operator supporting SOR-CMCI continue to have control on the time when the roaming UE in a VPLMN goes to idle mode to perfrom SOR. | | | | | | | | |
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| ***Summary of change:*** | | Added a condition to mandate the UE implememntation to support SOR-CMCI rules, "MMTEL voice call" and "MMTEL video call" of the "service type criterion" and the "match all type criterion", if provided by the network, over other provided rules.  The support of other SOR-CMCI rules are optional for the UE.  The UE ignores the additional SOR-CMCI rules provided by the network if not supported by the UE.  Backward compatibility:  The CR is backwards compatible, as it only adds optional limitation to the number of SOR-CMCI rules in the UE. | | | | | | | | |
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| ***Consequences if not approved:*** | | Once 5G roaming kicks off, making the SOR-CMCI feature optional will not allow the operator to control all its roaming UEs in the field in a consistant manner leding to monetary cost for the operator from business perspective, as well as unfair user expererience and thus user satisfaction. | | | | | | | | |
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| ***Clauses affected:*** | | C.4.1 | | | | | | | | |
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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:*** | |  | | | | | | | | |

\*\*\*\*\*\*\*\*\* C.4 Enhanced 5G control plane steering of roaming for the UE in connected mode \*\*\*\*\*\*\*\*\*\*

## C.4.1 General

The HPLMN or subscribed SNPN, based on operator policy, may provide the UE with SOR-CMCI to control the timing when the UE enters idle mode and performs higher priority PLMN/access technology or SNPN selection. This is achieved by the HPLMN indicating to the UE the criteria for releasing specific PDU session(s) or services and entering idle mode.

NOTE 1: The released PDU sessions may be re-established by the application once the UE successfully registers on a higher priority PLMN or SNPN. User interaction is required for some applications.

The HPLMN or subscribed SNPN may configure the SOR-CMCI in the UE, and may also provide the SOR-CMCI to the UE over N1 NAS signalling. The SOR-CMCI received over N1 NAS signalling takes precedence over the SOR-CMCI stored in the non-volatile memory of the ME or stored in the USIM.

NOTE 2: The SOR-CMCI received over N1 NAS signalling in the SOR information is either the SOR-CMCI in the USAT REFRESH with command qualifier of type "Steering of Roaming" (see 3GPP TS 31.111 [41]) which is received in a secured packet, or the SOR-CMCI received in plain text.

If the UE receives SOR information containing the list of preferred PLMN/access technology combinations or SOR-SNPN-SI without SOR-CMCI, or the ME receives USAT REFRESH with command qualifier (see 3GPP TS 31.111 [41]) of type "Steering of Roaming" without SOR-CMCI, or the security check of the received steering of roaming information is not successful as described in clause C.2, clause C.3 and clause C.4.3, then:

1) if the UE has SOR-CMCI stored in the non-volatile memory of the ME, the UE shall use the SOR-CMCI stored in the non-volatile memory of the ME; and

2) if the UE has no SOR-CMCI stored in the non-volatile memory of the ME, the UE shall use the SOR-CMCI stored in the USIM, if any.

The UE shall delete the stored SOR-CMCI, if any, in the non-volatile memory of the ME and store the received SOR-CMCI in the non-volatile memory of the ME when:

1) the ME receives SOR-CMCI in the USAT REFRESH with command qualifier (see 3GPP TS 31.111 [41]) of type "Steering of Roaming"; or

2) the UE receives the steering of roaming information containing the SOR-CMCI over N1 NAS signalling and the UE receives the "Store SOR-CMCI in ME" indicator set to "Store SOR-CMCI in ME";

The SOR-CMCI shall be stored in the non-volatile memory of the ME together with the SUPI from the USIM. The ME shall not delete the SOR-CMCI when the UE is switched off. The ME shall delete the SOR-CMCI when a new USIM is inserted.

SOR-CMCI consists of SOR-CMCI rules. Each SOR-CMCI rule consists of the following parameters:

i) a criterion of one of the following types:

- PDU session attribute type criterion;

- service type criterion;

- SOR security check criterion; or

- match all type criterion; and

ii) a value for Tsor-cm timer associated with each criterion presented in i) indicating the time the UE shall wait before releasing the PDU sessions or the services and entering idle mode.

SOR-CMCI contains zero, one or more SOR-CMCI rules with PDU session attribute type criterion, zero, one or more SOR-CMCI rules with service type criterion, and zero or one SOR-CMCI rule with match all type criterion.

PDU session attribute type criterion consists of one of the following:

a) DNN of the PDU session;

b) S-NSSAI STT of the PDU session; or

c) S-NSSAI SST and SD of the PDU session.

Service type criterion consists of one of the following:

a) IMS registration related signalling;

b) MMTEL voice call;

c) MMTEL video call; or

d) SMS over NAS or SMSoIP.

SOR security check criterion consists of:

a) SOR security check not successful.

Match all type criterion consists of:

a) match all.

The UE shall support the "MMTEL voice call" and "MMTEL video call" of the "service type criterion" and the "match all type criterion". The UE support for other SOR-CMCI criteria is optional, and in this case the UE ignores the unsupported SOR-CMCI rules if any.

When the SOR-CMCI received by the UE over N1 NAS signalling contains no SOR-CMCI rules, the UE shall stop all running Tsor-cm timers, if any, and act as if no SOR-CMCI is configured. Additionally:

- if the SOR-CMCI is received in plain text and it also contains the "Store SOR-CMCI in ME" indicator, the UE shall delete the stored SOR-CMCI in the non-volatile memory of the ME, if any; and

- if the SOR-CMCI is received in a secured packet, and the USIM provides the ME with the SOR-CMCI in the USAT REFRESH with command qualifier of type "Steering of Roaming" (see 3GPP TS 31.111 [41]), then the UE shall delete the stored SOR-CMCI in the non-volatile memory of the ME, if any.

The HPLMN may update the SOR-CMCI in the USIM such that it contains no SOR-CMCI rules, in which case the UE behaviour described in clause C.4.2 applies. Also the HPLMN may make the SOR-CMCI file in the USIM unavailable (see 3GPP TS 31.102 [40]).

If there are more than one criterion applicable for a PDU session (e.g., a criterion for the PDU session and another one for the service) then the Tsor-cm timer with the highest value shall apply.

If there are more than one criterion applicable to different ongoing PDU sessions or services leading to multiple applicable Tsor-cm timers, then all the applicable Tsor-cm timers shall be started. Further handling of such cases is described in clause C.4.2.

If the value for Tsor-cm timer equals "infinity" then the UE shall wait until the PDU session is released or the service is stopped.

The Tsor-cm timer is applicable only if the UE is in automatic network selection mode.

Upon switching to the manual network selection mode, the UE shall stop any Tsor-cm timer, if running. In this case, the UE is not required to enter idle mode and perform the de-registration procedure.

The UE shall consider the following services as exempted from being forced to release the related established PDU session, if any, enter idle mode and perform high priority PLMN/access technology or SNPN selection. These services are known to the UE by default and the UE shall not follow the SOR-CMCI criteria even if configured to interrupt such services:

i) emergency services.

The UE configured with high priority access in the selected PLMN or SNPN shall consider all services and all related established PDU sessions, if any, to be exempted from being forced to be released to enter idle mode and perform high priority PLMN/access technology or SNPN selection.