**3GPP TSG-CT WG1 Meeting #128-eC1-21xxxx**

**Electronic meeting, 25 February – 5 March 2021**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **23.040** | **CR** | **0158** | **rev** | **1** | **Current version:** | **16.0.0** |  |
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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 |  | Radio Access Network |  | Core Network | **X** |

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| ***Title:*** | Clarification for SMS support over 5GS in the network entities | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Nokia, Nokia Shanghai Bell, Huawei, HiSilicon | | | | | | | | | |
| ***Source to TSG:*** | C1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** |  | | | | |  | ***Date:*** | | | 2021-02-10 |
|  |  | | | |  | |  | | |  |
| ***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-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | **1)** SA3-LI has sent the LS **S3i210061** to CT1/CT4/SA2 with the following question:  3GPP SA3-LI would like to ask 3GPP CT1/CT4/SA2 to confirm how and through which specifications the UDM supports a MAP interface  Indeed, it is not mentioned clearly in TS 23.040 whether UDM supports the MAP and the Diameter interfaces, and how it supports them. In Annex K.1, there are only the following two statements:  NOTE 3: Reference point 2 is used as reference from UDM to/from SMS-GMSC and SMS Router.  ….  3) The protocol used on reference point 2 is based on MAP as specified in 3GPP TS 29.002 [15]. In addition, it optionally may be based on Diameter as specified for reference point S6c (see 3GPP TS 29.338 [50]).  Which don't tell whether UDM needs to support MAP/Diameter or not, especially in a standalone 5GC scenario as questioned in the LS from SA3-LI. Hence this topic needs to be clarified in TS 23.040.  **2)** The following statement was added in Annex K.1 to reflect how SMS on 5GS works:  "HLR" is to be replaced with "UDM/HLR";  But HSS is missing from the above statement, where in order to support MAP or Diameter, UDM uses the same interface as HSS/HLR functions to communicate with the SMS-GMSC/IWMSC/SMS Router. Hence HSS shall be added to the statement, i.e.:  "HLR" is to be replaced with "UDM/HSS/HLR";  **3)** There is a typo in Annex K.1 in the table number that shall be corrected. | | | | | | | | |
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| ***Summary of change:*** | | 1) Clarifying that, UDM uses the same interface as HSS/HLR functions to communicate with the SMS-GMSC/IWMSC/SMS Router as defined in TS 29.002 and TS 29.338.  2) Clarifying that HLR is to be replaced with UDM/HLR/HSS in case of SMS in 5GS.  3) Correcting the typo in Annex K.1 in the table number. | | | | | | | | |
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| ***Consequences if not approved:*** | | Wrong interpretation and vagueness regarding how SMS in 5GS is supported in the network entities and how the UDM works. | | | | | | | | |
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| ***Clauses affected:*** | | K.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:*** | | Revision 1:  Some improvements in the introduced text. | | | | | | | | |

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

K.1 General

A 5GS network delivers short message services over 5GS NAS signalling.

For the architecture and the definition of reference points for SMS in 5GS see 3GPP TS 23.501 [51], subclause 4.2.

Between the architecture and the reference points for SMS in 5GS and the architecture and the reference points shown in subclause 4.1, and figure 5, of the present specification the following mapping is used:

**Table K.1: Mapping between architecture and reference points for SMS in 5GS and the present specification**

|  |  |  |
| --- | --- | --- |
|  | **SMS in 5GS** | **present specification** |
|  | UDM | HSS/HLR |
| Network entities | SMSF | MSC + VLR |
|  | UE | MS |
|  | AMF | MME (NOTE 1) |
|  | N20/Namf/Nsmsf | (not shown in figure 5) |
|  | N21/Nsmsf | (not shown in figure 5) |
|  | N8/Nudm | (not shown in figure 5) |
|  | Not shown in 3GPP TS 23.501 (NOTE 3) | 2 |
| Reference points | Not shown in 3GPP TS 23.501 (NOTE 2) | 3 |
|  | (not applicable) | 4 |
|  | N1 | 5 |
|  | (not applicable) | 6 |
| NOTE 1: In figure 5, the MME is only acting as a relay for SMS transfer via the SGs.  NOTE 2: Reference point 3 is used between the SMSF and SMS-GMSC/IWMSC and SMS Router.  NOTE 3: Reference point 2 or S6c is used between the UDM and SMS-GMSC/SMS Router. With reference point 2, the UDM and the SMS-GMSC/SMS Router use MAP as defined in 3GPP TS 29.002 [15] between HLR and SMS-GMSC/SMS Router. With reference point S6c, the UDM and the SMS-GMSC/SMS Router use Diameter as defined in 3GPP TS 29.338 [50] between HSS and SMS-GMSC/SMS Router. | | |

For the purpose of supporting SMS in 5GS, the SMSF shall implement the requirements specified in the present specification for the MSC and the VLR with the following modifications:

1) "GSM/UMTS system" is to be replaced with "5GS".

2) Throughout the text and in the figures, message names, parameter names and cause values:

"MSC" is to be replaced with "SMSF";

"VLR" is to be replaced with "SMSF internal subscriber register";

"HLR" is to be replaced with "UDM/HSS/HLR";

"MS" is to be replaced with "UE"; and

"non GPRS" is to be replaced with "5GS".

3) The protocol used on reference point 2 is based on MAP as specified in 3GPP TS 29.002 [15]. In addition, it optionally may be based on Diameter as specified for reference point S6c (see 3GPP TS 29.338 [50]).

4) The protocol used on reference point 3 is based on MAP as specified in 3GPP TS 29.002 [15]. In addition, it optionally may be based on Diameter as specified for reference point SGd (see 3GPP TS 29.338 [50]).

5) Reference point 4 is SMSF internal, and operations performed on this reference point are not standardized. In the message flows of clause 10, the SMSF replaces the combination of MSC and VLR, and messages exchanged between MSC and VLR are replaced with SMSF internal communication.

The architecture for SMS in 5GS is defined in 3GPP TS 23.501 [51] and uses the following reference points:

**N1**: Reference point between the UE and the AMF.

**N8**: Reference point between the UDM and the AMF.

**N20**: Reference point between the AMF and the SMSF.

**N21**: Reference point between SMSF and the UDM.

The following service based interfaces are used for SMS in 5GS:

**Namf:** Service-based interface exhibited by AMF. Usage of Namf service operations for SMS in 5GS is defined in 3GPP TS 23.502 [52].

**Nsmsf:** Service-based interface exhibited by SMSF. Usage of Nsmsf service operations for SMS in 5GS is defined in 3GPP TS 23.502 [52].].

**Nudm:** Service-based interface exhibited by UDM. Usage of Nudm service operations for SMS in 5GS is defined in 3GPP TS 23.502 [52].

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