**3GPP TSG-CT WG4 Meeting #110eC4-223490**

**E-Meeting, 12nd– 20th May 2022**

**3GPP TSG-CT WG1 Meeting #136eC1-224284**

**E-Meeting, 12nd– 20th May 2022**

**3GPP TSG-CT WG3 Meeting #122eC3-223678**

**E-Meeting, 12nd– 20th May 2022**

**Source: 3GPP TSG CT WG4**

**Title: Revised WID on Service-based support for SMS in 5GC**

**Document for: Approval**

**Agenda Item: 5**

3GPP™ Work Item Description

Information on Work Items can be found at <http://www.3gpp.org/Work-Items>
See also the [3GPP Working Procedures](http://www.3gpp.org/specifications-groups/working-procedures), article 39 and the TSG Working Methods in [3GPP TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm)

# Title: **Service-based support for SMS in 5GC**

## Acronym: SMS\_SBI

## Unique identifier: 890001

Potential target Release: Rel-17

Note that this field above indicates the proposed Release at the time of submission of the WID to TSG approval. It can later be changed without a need to revise the WID. The updated target Release is indicated in the Work Plan.

## 1 Impacts

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Affects:** | UICC apps | ME | AN | CN | Others (specify) |
| **Yes** |  |  |  | X |  |
| **No** | X | X | X |  |  |
| **Don't know** |  |  |  |  |  |

## 2 Classification of the Work Item and linked work items

### 2.1 Primary classification

|  |  |
| --- | --- |
| X | Feature |
|  | Building Block |
|  | *Work Task* |
|  | Study Item |

### 2.2 Parent Work Item

Not applicable

### 2.3 Other related Work Items and dependencies

Not applicable

## 3 Justification

The current Rel-16 architecture (cf. 3GPP TS 23.501) for 5G SMSoNAS (i.e. SMS over NAS) is depicted in the figure below. It can be clearly noticed that the SMSF and the UDM are not able to expose service-based interfaces to an IP-SM-GW, SMS Router or SMS Center. Apart from SMSF – AMF/UDM interfaces (Namf, Nudm and Nsmsf) that are based on 5G SBA/SBI principles, SMSoNAS transport to/from the SMSF/UDM (e.g. towards IP-SM-GW, SMS Router, SMS Center, etc.) enabling to send MO / MT SMS is carried out via legacy MAP or Diameter protocols.



This generates the following main issues:

* No SBI-based interface is defined for enabling the retrieval of routing information from the UDM for the transfer of short messages (used by SMS-Router, IP-SM-GW, etc.).
* No SBI-based interface is defined for MO / MT SMS from or to IP-SM-GW/SMS Router or any other NF that may want to send/receive SMS via interactions with SMSF.
* MAP and/or Diameter have to be supported by the SMSF and the UDM in order to fully support 5G SMSoNAS. It is hence not possible to deploy a pure SBI-based 5GC if SMS has to be supported.
* In the roaming scenarios, MO and MT SMS cannot benefit from the new inter-PLMN 5GC security framework based on the SEPP and the use of the secured N32 interface, relying instead on legacy MAP and/or Diameter SMS interfaces with all the well-known security vulnerabilities.

The LSs (S2-1902182 and then CP-193242/SP-190959) received from GSMA clearly point out these important issues.

A proposal to initiate a study at the SA level on this topic was submitted during SP-83 meeting in SP-190184. It was however concluded that CT was actually in a better position to undertake such activity, being already the responsible of the SMS stage 2 specification work and also in charge of the specification of the 5GC service-based interfaces (cf. SP-191281/CP-193301 and SP-191362).

It is also to be noted that the UDICOM framework, defined in 3GPP TS 23.632, for interworking between UDM and HSS, does not cover all the above listed issues.

## 4 Objective

The main objective of this work item proposal is to specify architecture, procedures and services, which allow SMSF and UDM to only make use of SBA services in 5GC and avoid resorting to legacy MAP and Diameter interfaces within the PLMN and in roaming scenarios. This translates to the following:

* Under CT4’s responsibility:
	+ Study and specify solutions to enable a full SBI-based solution for SMS delivery in 5GC;
	+ Study and specify the routing mechanisms for SBI messages exchange between SMS nodes (SMS-Router, IP-SM-GW, etc.) and the 5GC, e.g. based on the MSISDN of the SMS recipient;
	+ Study the interworking needs between the UDM and the HSS/HLR, if any, and evaluate if, when and how they should be used;
	+ The target solution shall cover both roaming and non-roaming scenarios;
	+ Lead to create a stage 2 TS for SBI-based SMS, in which SBI\_SMS related services and procedures are defined in detail, and it can be treated as reference for stage 3 TS.
* Under CT1’s responsibility:
	+ Assess and review the outcomes of the study phase conducted by CT4;
	+ Assess and review the outcomes of the TS for SBI-based SMS, which is conducted by CT4.
* Under CT3’s responsibility:
	+ Specify NEF service for SBI-based MO transmit for MSISDN-less UE.

It is proposed to proceed in two steps:

- First, a study phase to capture all the main underlying Stage 3 requirements and study the potential solutions that would enable to cover them.

- Then, a normative phase to specify the conclusions and solutions agreed during the study phase.

## 5 Expected Output and Time scale

|  |
| --- |
| **New specifications** *{One line per specification. Create/delete lines as needed}* |
| Type  | TS/TR number | Title | For info at TSG#  | For approval at TSG# | Rapporteur |
| Internal TR | 29.829 | Study on Service-based support for SMS in 5GC | TSG CT#90-e (December 2020) | TSG CT#96 (June 2022) | Liu Liu, China Telecom, liuliu66@chinatelecom.cn |
| New TS | 23.540 | 5G System: Technical realization of Service Based Short Message Service; Stage 2 | TSG CT#94-e (December 2021) | TSG CT#96 (June 2022) | Liu Liu, China Telecom, liuliu66@chinatelecom.cn |
| New TS | 29.577 | 5G System; IP Short Message Gateway and SMS Router For Short Message Service; Stage 3 |  | TSG CT#96 (June 2022) | Hao Jing, Huawei hao.jing@huawei.com |
| New TS  | 29.578 | 5G System; Mobile Number Portability Services; Stage 3 |  | TSG CT#96 (June 2022) | Ulrich Wiehe, Nokia, Ulrich.wiehe@nokia.com |
| New TS  | 29.579 | 5G System; Interworking MSC For Short Message Service; Stage 3 |  | TSG CT#96 (June 2022) | Liu Liu, China Telecom, liuliu66@chinatelecom.cn |

The normative phase will be carried out once the study phase (and the TR) is completed. If a new TS is needed as per the conclusions of the study phase, this can be added in the table above.

|  |
| --- |
| **Impacted existing TS/TR** *{One line per specification. Create/delete lines as needed}* |
| TS/TR No. | Description of change  | Target completion plenary# | Remarks |
| 29.503 | Possible impacts on UDM services and potential definition of new services. | TSG CT#93 (September 2021) | CT4 Responsibility |
| 29.540 | Possible impacts on SMSF services and potential definition of new services. | TSG CT#93 (September 2021) | CT4 Responsibility |
| 29.571 | Possible impacts on common data types for Service Based Interfaces. | TSG CT#93 (September 2021) | CT4 Responsibility |
| 23.040 | Impacts on Stage 2 SMS related specification to adopt the agreed solutions in TS23.540. | TSG CT#93 (September 2021) | CT1 Responsibility |
| 29.591 | Possible impacts on NEF for Service Based Interfaces. | TSG CT#97 (September 2022) | CT3 Responsibility |

## 6 Work item Rapporteur(s)

HAOUARI, Wafa, Orange, wafa.haouari@orange.com

## 7 Work item leadership

CT4

## 8 Aspects that involve other WGs

Potential impacts on stage 2 specifications under SA2 remit.

## 9 Supporting Individual Members

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| --- |
| Supporting IM name |
| Orange |
| China Telecom |
| Deutsche Telekom |
| HPE |
| T-Mobile USA |
| CATT |
| China Unicom |
| NTT DOCOMO |
| ZTE |
| Ericsson |
| Cisco System |
| Huawei  |
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