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*Technical Specification*

## **3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Value Added Services (VAS) for Short Message Service (SMS) requirements (Release 16)**



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### **3GPP**

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Postal address

---

3GPP support office address  
650 Route des Lucioles - Sophia Antipolis  
Valbonne - FRANCE  
Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

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Internet  
<http://www.3gpp.org>

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# Foreword

This Technical Specification has been produced by the 3<sup>rd</sup> Generation Partnership Project (3GPP).

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- z the third digit is incremented when editorial only changes have been incorporated in the document.

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# 1 Scope

The present document specifies the service requirements associated with series of value-added features for short message service (SMS). Specifically, the objective of this document is to specify potential new value-added services for SMS in 3GPP that need to be standardized.

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# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

- [1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".
- [2] 3GPP TS 23.040: "Technical realization of the Short Message Service (SMS)".
- [3] ITU-T E.164 (1997): "The International Public Telecommunications Numbering Plan".
- [4] IETF STD 0011 (RFC 2822): "Internet Message Format", URL: <http://www.ietf.org/rfc/rfc2822.txt>.
- [5] 3GPP TS 23.204: "Support of Short Message Service (SMS) over Generic 3GPP Internet Protocol (IP) Access. Stage 2".
- [6] 3GPP TR 22.942: "Study on Value Added Services (VAS) for Short Message Service (SMS)".

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# 3 Definitions, symbols and abbreviations

## 3.1 Definitions

For the purposes of the present document, the terms and definitions given in [1] and the following apply:

**Short Message Forwarding:** The service permits the network to send all incoming short messages addressed to the called mobile subscriber's directory number to another directory number.

**Short Message Filtering:** The service permits the network to filter certain short messages on behalf of a called/calling party based on the called/calling party's preferences.

**Short Message Receipt:** The service permits the network to send one or more receipts to inform a calling party the status of sent message.

**Short Message Network Storage:** The service permits the network to help the subscriber store messages that the subscriber has sent or received.

**SMS VPN service:** Enables the exchange of SMS messages between VPN (Virtual Private Network) members by using a short number, usually similar to the receiver fixed extension number, instead of using the full mobile number of the recipient.

**SMS Auto Reply:** The SMS Auto Reply service enables the subscriber to activate an automatic SMS reply in response to incoming SMS messages, both from in network subscribers as well as from foreign networks subscribers (incoming MT messages from foreign networks).

**SMS Personal Signature:** The service allows the end user to personalize its outgoing messages either with a personal remark or a business title. The service enables a user to pre-define a text that will automatically be added to all outgoing SMS messages.

**SMS Deferred Delivery:** The SMS deferred delivery service provides a subscriber the capability to control the actual delivery time of messages created by him. User using this capability can send a message and configure it to be delivered at a later time.

## 3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply in addition to [1]:

SMS-SC	Short Message Service - Service Centre
SM	Short Message
VAS-SMS	Value-added Services for SMS

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## 4 Requirements

### 4.1 High Level Requirements

The VAS-SMS shall be implemented without influencing the existing SMS service.

The VAS-SMS shall be implemented without depending on the terminal's capability.

Users shall be able to register, activate, deactivate, withdraw and reconfigure VAS-SMS via the UE, or web portals.

The VAS-SMS shall be designed and implemented in a way to provide users who joined the services one coherent and identical user experience, regardless of the SM flow and SM scenario (e.g. messages to and from applications, MO-MT in an in network and MT from Foreign Network).

Provisioning of VAS-SMS by one operator should not depend on the support of other operators i.e. originating or terminating VAS-SMS services should be independently.

### 4.2 Overall Service Requirements

#### 4.2.1 Management of Service Information

##### 4.2.1.1 Capabilities provided to the user

The VAS-SMS shall be able to support a request from an application to query/change the choice of services for a subscriber.

The VAS-SMS shall be able to support a request from an application to query/change the subscriber's preferences for a certain service, for example:

- i) To add or delete or modify a subscriber's filtering conditions by which VAS-SMS can refuse some of the subscriber's incoming messages.
- ii) To modify a subscriber's signature that will be appended to an SM sent from the subscriber.
- iii) To modify a subscriber's forwarding address that substitutes for the subscriber's original receiving address.

#### 4.2.1.2 Capabilities provided to the network

The VAS-SMS shall be able to support a request to query/change the subscriber's information, for example:

- i) To get the detail information about the subscriber's service.
- ii) To add or delete a subscriber's service information.

The VAS-SMS shall be able to support a request to query the handling results of the subscription service.

#### 4.2.1.3 Capabilities provided to authorized third party

The VAS-SMS shall be able to support a request from an application to modify the contents that will be appended to an SM, for example:

- i) to load or unload a particular content provided by the third party
- ii) to associate a content with a particular subscriber or a type of subscribers
- iii) to define the trigger for inclusion or change of such content

Note: The management of VAS4SMS service is out of scope of 3GPP standardisation.

### 4.2.2 Short Message processing

The VAS-SMS should be able to deal with the content of an SM, for example:

- i) To insert content (as agreed with the subscriber, or as agreed with a third party and authorized by the subscriber) into the original SM and form a new SM (e.g. append the signature to the SM, append the content as provided by the third party, ...).
- ii) To compile an SM by containing operator's information (e.g. construct a delivery report).
- iii) To use certain words in an SM as the filtering criteria.

The VAS-SMS should be able to convert the format of an SM into other formats (e.g. email, WAP message, etc).

### 4.2.3 Short Message Forwarding

It shall be supported that users can set certain conditions (e.g., different time periods) for message forwarding. There are no significant delays to any part of the service.

With the advent of SM forwarding there is also the issue of how to handle the situation when a user by mistake sets forwarding to wrong number (a number that is in use). Ideally a recipient should be capable of stopping the delivery of such SM to its own address. As a minimum the recipient's operator should be capable of identifying forwarded SM and stop delivery. Infinite forwarding loops needs to be prevented and the maximum number of times the SM is forwarded should be limited.

SM Forwarding service should support forwarding to numbers of both the operator as well as other operators.

It shall be possible to Notify a recipient upon activation of the service and only upon his approval activate the service for the user.

There may be no relation between SM Forwarding service and Voice Call Forwarding service.

### 4.2.4 Short Message Forwarding multiple subscriptions

It may be supported that an operator can set a group of subscriptions for which SM are forwarded to the active/last activated subscription of that group, under the condition that the delivery address of the SM is associated to a subscription of that group and that address is not registered on the network.

### 4.2.5 Short Message filtering

It shall be supported that users can set certain conditions for message filtering.

### 4.2.6 Short Message receipt

It shall be supported that the callee can configure the content of an additional receipt SM for different callers, so the standard Status Report may be accompanied by a newly generated SM with the content provided by the operator.

### 4.2.7 Short Message Network Storage

It should be possible for the operator to support Short Message Network Storage to allow users to store the messages in the network.

It should be possible for users to store the messages in the network based on their personal settings (e.g. store all sent & received messages, store the messages from/to particular users, store the messages sent & received in a specified period of time etc).

It should be possible for users to store and manage the messages for their preference (e.g. users can set different folders to store different sort of messages, therefore it is convenient to inquire the stored messages based on message sort or key words).

It should be possible for the operator to ensure all relevant information of the messages stored in the network are consistent with that displayed to users, e.g. content of the messages, sender/recipient, sending/receiving time, etc.

It shall be supported that user can pre-set certain conditions for storage. The storage condition includes all sent messages, all received messages, messages sent to or received from one or more special phone numbers and so on.

It should be possible for the operator to prevent storage of configuration SM, notifications (e.g. voice mail, SM delivery notifications).

It shall be supported that users can transfer the messages stored in the message depository to any other mobile phone.

It shall be supported that users can inquire the messages stored in the message depository according to certain query conditions (e.g., short message receiver, short message sender, key words etc.).

It shall be supported that users can manage the stored messages via a website, and it shall be possible for the user to set access right for other users ( e.g. read only , read and download etc), in this way, other users are able to inquire his stored messages through a link to the website after valid authentication.

In case of multiple delivery attempts SM will be copied only once regardless of the number of delivery attempts.

It shall be possible to combine concatenated SM to single Message in the Network store or alternatively indicate in the message that it is part of concatenated SM.

The Short Message Network Storage service shall prevent duplicate storage message as a result of failure in transmission of the original SM.

Messages should be stored in the Network Storage regardless of the user availability and as soon as the original SM is being processed in the SMSC.

### 4.2.8 Short Message to multiple destinations

It shall be able to support inclusion of multiple recipients in a message when a user sends a single message to multiple individuals.

It should be possible for all recipients of the message to be aware of other recipients.

It should be possible for a recipient to choose to whom the reply message is sent, i.e. to the original sender and to other recipients of the original message.

It shall be supported that a user can include multiple destination addresses in a message. The recipient except those addresses displaying information is blocked shall receive information on all recipients of the message.



It shall be supported that each recipient of the message can send a message back to all recipients of the original message.

#### 4.2.9 Short Message Virtual Private Network (VPN)

Sending messages to local numbers based on the dialling plan should be supported. There shall be no significant delays to any part of the service.

#### 4.2.10 Short Message Auto Reply

It shall be possible that users can activate the SM Auto Reply Service to be active for different time periods. In addition it shall be possible to configure the system to reply only once to each sender in a predefined period of time.

It shall be possible for users to configure and manage their Automatic Reply messages, e.g. edit and delete the content of the message.

It shall be possible for users to set different Automatic Reply messages to different senders.

Auto reply to auto reply loops need to be prevented.

#### 4.2.11 Short Message Personal Signature

The SM Personal Signature Service shall support certain conditions configured by users or control system wide (e.g., append personal signature depending on the original short message length, append personal signature to certain destinations). There shall be no significant delays to any part of the service.

#### 4.2.12 Short Message Deferred Delivery

The SM Deferred delivery shall support the following delivery time options:

- Relative timing – The text will include information as for the of how many more days, hours, minutes shall pass before the message shall be delivered.
- Absolute timing - The text will include information indicating of the specific Date and Time for the message to be delivered

The SM Deferred Delivery Service shall support all type of languages

The SM Deferred Delivery Service shall support concatenated messages

There shall be no significant delays to any part of the service.

#### 4.2.13 Management and control of network based repository

VAS-SMS should be able to provide following capabilities to support network based repository:

- The VAS-SMS should allow configuring in such a way that certain sent or received messages of a particular user can be stored persistently in a network based repository.
- The VAS-SMS should be able to support a request from SMS-SC to persistently store a sent message in a network based repository at the time of sending.
- The VAS-SMS should be able to support a request from an application to upload certain messages into a network based repository for persistent storage.
- The VAS-SMS should be able to support a request from an application to retrieve/delete certain messages stored in a network based repository
- The VAS-SMS should be able to support a request from an application to view the list of messages and related attributes (e.g. sender, recipient, date/time, etc) in a network based repository

## 4.2.14 Addressing

The VAS-SMS should support different addressing formats to identify the sender and recipient; it should support both MSISDN[3] and e-mail addressing schemes[4].

A short number should be supported. This number should be unique within VPN where it is used.

The VAS-SMS should support an alpha-numeric addressing format (similar to specified in [2]).

The VAS-SMS should be able to submit one message to multiple recipients.

The VAS-SMS should be able to support the request to hide the sender's or other recipients' addresses.

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## 5 Requirements for service priority and Interaction

The different rules of VAS-SMS priority and interaction are provided by operator. For example, the priority order maybe as following:

- SM Filtering
- SM Network Storage
- SM Forwarding
- etc.

The VAS-SMS should be classified by priority and triggered according to priority order.

The VAS-SMS should provide the capability to configure certain priority.

Caller SMS receipt has higher priority than Callee SMS Receipt service.

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## 6 Quality of Service

The quality of basic SMS service should not be affected by introducing the VAS-SMS.

The following key performance for quality of VAS-SMS shall be kept consistent with basic SMS. For example:

- SMS delivery successful rate
- authentication successful rate
- end to end data loss rate
- end to end data delay
- charging successful rate
- reliability of network and service

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## 7 Charging aspects for VAS-SMS

The VAS-SMS shall provide accounting rules for accurate accounting. It shall be able to support following charging aspects.

- Charging Model

The VAS-SMS charging includes basic communication fee and special service fee.

Basic communication fee is paid for usage of network resource. CDR is generated by SMSC. Special service fee is paid for usage of the VAS-SMS. CDR is generated by the VAS-SMS system. Charging models of special service fee shall include but not limit to the following items:

- i) charging per VAS-SMS
- ii) monthly basis

Per each service category, different charging models and rates should be configurable for the special service fee.

- Charging principle

The following principles shall be supported according to different service categories:

- i) VAS-SMS triggered by sending party – basic communication fee and special service fee are paid by the sending party.
  - ii) VAS-SMS services triggered by recipient – basic communication fee is paid by the sending party, whilst special service fee is paid by the recipient.
  - iii) Charging only happens after the status report has been received by the SMSC.
- Charging Scheme

The VAS-SMS shall support a standardized interface to transfer CDRs and other charging related information between the VAS-SMS and the billing system for prepaid and post-paid billing solutions.

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## 8 Security

Security of the VAS-SMS services shall be consistent with basic SMS service. The user shall be able to use and access the VAS-SMS services in a secure manner.

VAS-SMS should support Lawful Interception as required by Regional Regulations.

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## 9 Interworking

Interworking with existing messaging technologies and messaging services should be supported.

The VAS-SMS should be able to send the content of an SM to a reachable address, for example:

- i) To send an email to email servers after converting the SM into an email.
- ii) To send a WAP message to a WAP Push Gateway after converting the SM into a WAP message.
- iii) To send an SM to a subscriber by sending an SM to SMSC.
- iv) To send an SM via IMS. Refer to [5].
- v) To send a delivery report .

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## 10 Roaming

General roaming requirements should be compliant with roaming function of SMS.

The user should be able to experience the consistent VAS-SMS services whether in home network or roaming.

## Annex A:

### Change history

Change history											
TSG SA#	SA Doc.	SA1 Doc	Spec	CR	Rev	Rel	Cat	Subject/Comment	Old	New	WI
SP-44	SP-090376	S1-091375	22.142	0001	1	Rel-9	C	Limiting the maximum number of times the SM is forwarded	9.0.0	9.1.0	VAS4SMS
SP-44	SP-090376	S1-091376	22.142	0002	1	Rel-9	C	To prevent auto reply to auto reply loop	9.0.0	9.1.0	VAS4SMS
SP-44	SP-090376	S1-091362	22.142	0003	1	Rel-9	B	Independent provisioning of VAS-SMS	9.0.0	9.1.0	VAS4SMS
2011-03	-	-	-	-	-	-	-	Update to Rel-10 version (MCC)	9.1.0	10.0.0	
2012-09	-	-	-	-	-	-	-	Updated to Rel-11 by MCC	10.0.0	11.0.0	
2014-10	-	-	-	-	-	-	-	Updated to Rel-12 by MCC	11.0.0	12.0.0	
2015-12	-	-	-	-	-	-	-	Updated to Rel-13 by MCC	12.0.0	13.0.0	
2017-03	-	-	-	-	-	-	-	Updated to Rel-14 by MCC	13.0.0	14.0.0	
2019-07	-	-	-	-	-	-	-	Update to Rel-15 version (MCC)	14.0.0	15.0.0	
SA#88e	-	-	-	-	-	-	-	Updated to Rel-16 by MCC	15.0.0	16.0.0	