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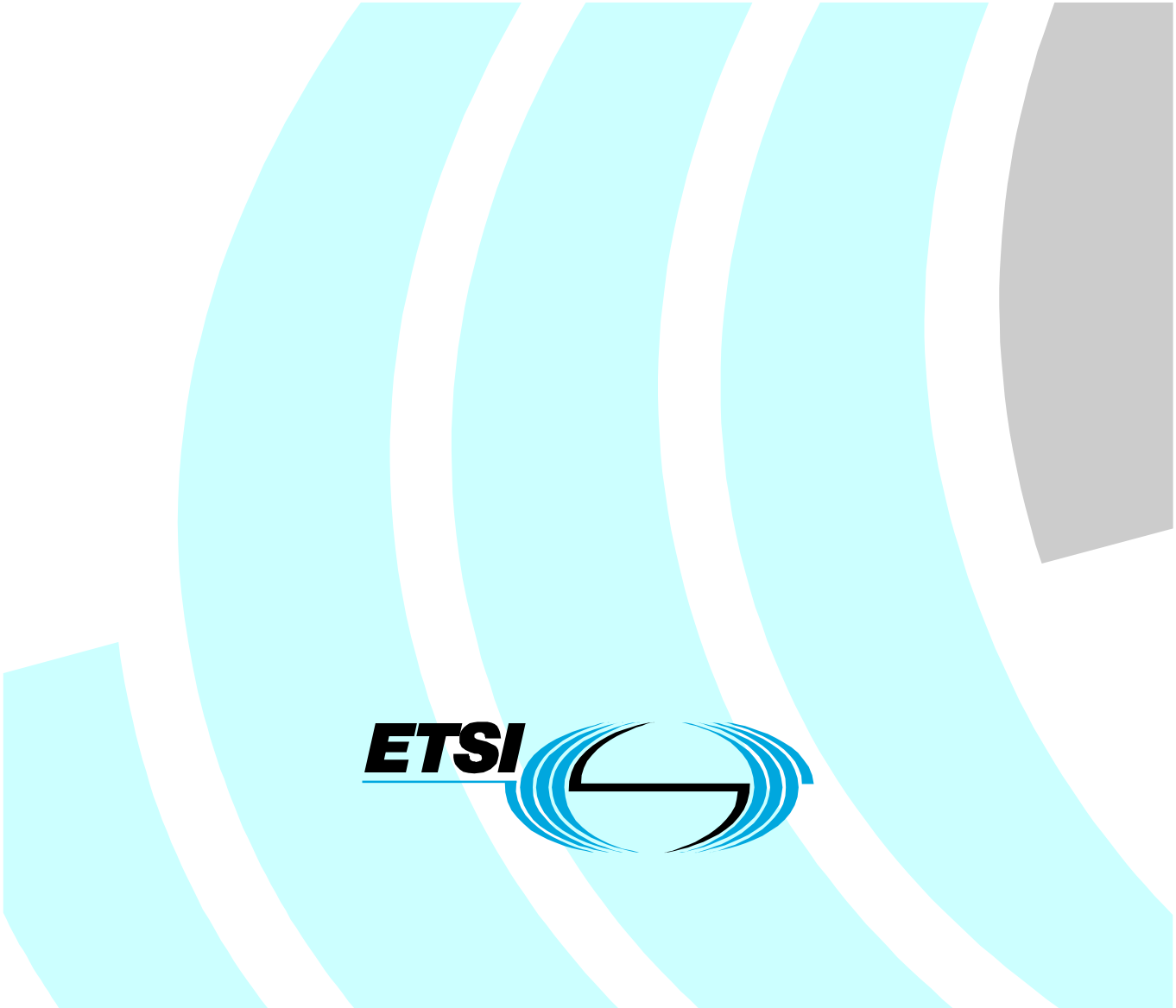
Short Message Service (SMS) for PSTN/ISDN;
Service description



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Foreword

This ETSI Standard (ES) has been produced by ETSI Technical Committee Services and Protocols for Advanced Networks (SPAN).

In accordance with ITU-T Recommendation I.130 [1] the following three level structure is used to describe the supplementary telecommunication services as provided by European public telecommunications operators under the pan-European Integrated Services Digital Network (ISDN):

- Stage 1: is an overall service description, from the user's stand-point;
- Stage 2: identifies the functional capabilities and information flows needed to support the service described in stage 1; and
- Stage 3: defines the signalling system protocols and switching functions needed to implement the service described in stage 1.

The present document details the stage 1 aspects (overall service description) for the Short Message Service (SMS).

Introduction

The Short Message Service (SMS) is a service that shall make it possible to offer seamless SMS over different networks (PSTN, ISDN, PLMN).

In the following of this present document it is assumed that both the sending and receiving Terminal Equipment (TE) have appropriate capabilities to send, receive, store, display and delete short messages.

1 Scope

The present document defines the stage 1 service description of the Short Message Service (SMS). Stage 1 is an overall service description, primarily from the service subscriber's and user's point of view, but does not deal with the details of the human interface itself.

The SMS can be provided via ISDN and PSTN accesses. The present document includes information applicable to service providers and equipment manufacturers. Where the text indicates the status of a requirement, (i.e. as strict command or prohibition, as authorization leaving freedom or, as a capability or possibility), this shall be reflected in the text of the relevant stage two and stage three standards.

The present document describes only the short message service between terminal equipment (TE) and a Short Message Service Centre (SM-SC). The kind of protocols for sending and receiving a Short Message (SM) as well as charging principles are outside the scope of the present document.

Interactions with supplementary services not mentioned in clause 7 and the respective annexes are outside the scope of the present document.

The present document contains the core service features and also optional service features for the Short Message Service. A service may be provided on the basis of the core requirements alone. The present document does not deal with a Short Message Service Broadcast.

Furthermore, additional functionalities not covered in this present document may be implemented. The requirements of which are considered outside of the scope of this present document are consequently outside the scope of the corresponding stage 2 and stage 3 standards. Such additional functionalities may be on a network-wide basis, or particular to one user or a group of users. Such additional functionalities do not compromise conformance to the core requirements of the service.

Furthermore, conformance to the present document is met by conforming to the stage three standards with the field of application appropriate to the equipment being implemented. Therefore no method of testing is provided for the present document.

The SMS can be realized in two ways, either as a network based solution or as a user based solution using the basic call procedures only. The sending and/or receiving part can be preceded in the same or in a different way.

1) Network Based Solution: a supplementary service offered as part of a function within the public network.

2) User Based Solution: a service offered as part of a function within the end-user equipment, which does not require any specific short message transfer function inside the public network.

The present document covers in general both possibilities but if different or specific descriptions are necessary, the relevant clauses are marked as "NBS" (Network Based Solution) or "UBS" (User Based Solution). Clauses that are valid for both realizations are not marked.

The specification for the NBS contained in the present document may require further additions when the network scenarios and service interactions have investigated. For further study.

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 and/or edition number or version number) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.

[1] ITU-T Recommendation I.130: "Method for the characterization of telecommunication services supported by an ISDN and network capabilities of an ISDN".

[2] Void.

[3] ETSI ES 201 912: "Access and Terminals (AT); Short Message Service (SMS) for PSTN/ISDN; Short message Communication between a fixed network Short Message Terminal Equipment and a Short Message Service Centre".

[4] ETSI ETS 300 345: "Integrated Services Digital Network (ISDN); Interworking between public ISDNs and private ISDNs for the provision of telecommunication services; General aspects".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

Deliver report: response from the destination terminal to the SM-SC indicating that an SM has been accepted or not with the appropriate cause, if rejected

Replace Short Message Function: optional function of the SM-SC and the SM-TE that enables the automatic replacing of a Short Message by a new one

NOTE: The replacement indication is transmitted in conjunction with the Short Message. See Replace Short Message Type.

Replace Short Message Type: indication to be sent with a short message (in both submission and delivery cases) that the short message is of a particular type allowing the receiving SM-TE or SM-SC to replace an existing message of the same type held in the SM-TE or SM-SC provided it comes:

- in SM delivery cases: from the same SM-SC and originating address;
- in SM submission cases: from the same SM-TE.

Reply Path Procedure: mechanism which allows an SM-TE to request that an SM-SC should be permitted to handle a reply sent in response to a message previously sent from that SM-TE to another SM-TE

NOTE: This may happen even though the SM-SC may be unknown to the SM-TE that received the initial message.

Service Centre Time Stamp (SCTS): information element offering the receiving SM-TE of an SM the information of when the message arrived at the SM-SC

Short Message (SM): information that may be conveyed by means of the SMS described in the present document

Short Message Service Centre (SM-SC): function unit, which is responsible for the relaying and store-and-forwarding of a short message (SM) between two SM-TEs

NOTE: The SM-SC can functionally be separated from or integrated in the network.

Short Message Terminal Equipment (SM-TE): terminal that may send or receive short messages

Status Report: information used to inform the originating SM-TE of the status of a short message previously submitted by this SM-TE, e.g. whether the SM-SC was able to successfully forward the message or not, or whether the message was stored in the SM-SC for later delivery

Submit report: response from the SM-SC to the originating terminal indicating that an SM has been accepted or not with the appropriate cause, if rejected

Validity Period (VP): information element enabling the sending SM-TE to indicate the time period during which the originating user considers the SM to be valid

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

CLIP	Calling Line Identification Presentation
CLIR	Calling Line Identification Restriction
DTMF	Dual Tone Multi-Frequency
FSK	Frequency Shift Keying
GSM	Global System for Mobile communications
ISDN	Integrated Services Digital Network
ISDN	Integrated Services Digital Network
MSN	Multiple Subscriber Number
NBS	Network Based Solution
PIN	Personal Identification Number
PLMN	Public Land Mobile Network
PSTN	Public Switched Telephone Network
SCTS	Service Centre Time Stamp
SM	Short Message
SMS	Short Message Service
SM-SC	Short Message Service Centre
SM-TE	Short Message Terminal Equipment
TE	Terminal Equipment
UBS	User Based Solution
UMTS	Universal Mobile Telecommunications System
VP	Validity Period
xDSL	x Digital Subscriber Line

4 Description

The Short Message Service (SMS) enables an originating user to send a SM of a limited size to a destination user.

The Short Message Service described in the present document applies to PSTN and ISDN accesses.

A short message can be initiated upon a request of the sending user or by the service provider itself, and shall be sent to the receiving user. An SM is always conveyed via an SM-SC. The SM-SC receives the SM from an originating SM-TE (sending user), converts the message if necessary, and relays the SM to the terminating SM-TE (receiving user).

Having received one or more SM, the receiving user can subsequently read, store or delete the messages on its terminal.

If the SM-TE supports the optional Replace Short Message Function, Short Messages with the respective Replace Short Message Type indication held in the SM-TE are automatically replaced by received new ones.

The means by which the receiving user manages these features are outside the scope of the present document.

The preparation of an SM as well as the kind of data transmission between the sending or receiving users and the SM-SC are outside the scope of the present document.

The annexes describe the interactions with PSTN and ISDN supplementary services.

The SMS shall support "core service features", available to all SMS users. In addition "optional service features" may be provided.

4.1 Core service features

4.1.1 Role of the short message service centre

For both, outgoing and incoming messages, the SM-SC acts as a store and forward centre. The SM-SC can be functionally separated from the network (PSTN/ISDN) although this does not preclude an integrated implementation. More than one SM-SC may be connected to a network (PSTN/ISDN). Messages may be input to the SM-SC by means of a suitable telecommunication service either from the fixed network, e.g. speech, telex, facsimile, etc. or from a mobile network customer. It is entirely open to the SM-SC provider what telecommunication services it supports. The SM-SC shall reformat the messages into the correct format before delivery to the receiving SM-TE. In case that the originating user has required a status report in conjunction with an outgoing message, a report (positive or negative) shall be sent to the sending SM-TE as soon as this information is available.

As a service provider option, an SM-SC may serve multiple types of accesses.

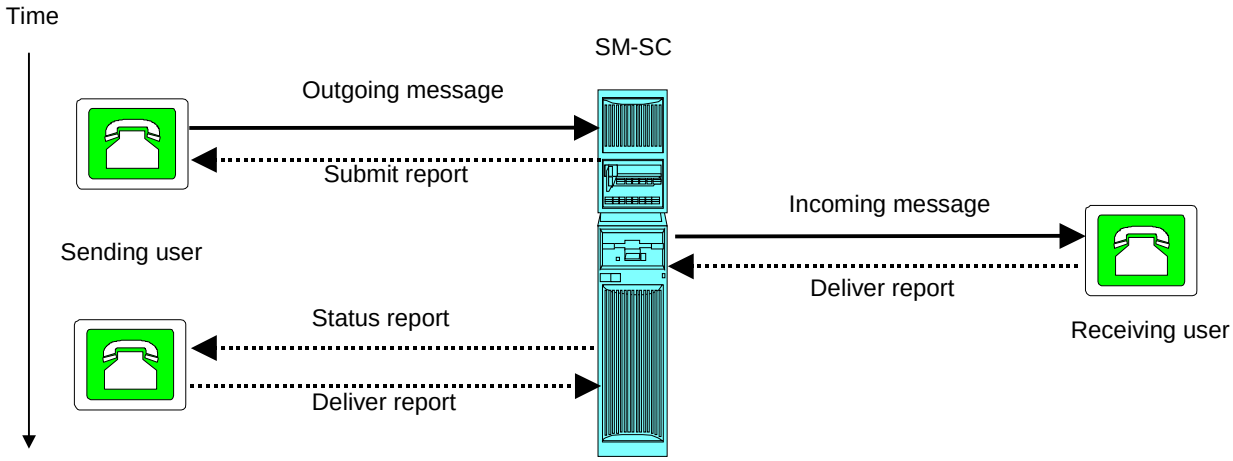

Figure 1: Role of the SM-SC

4.1.2 Outgoing message (SM-TE originated)

UBS:

The outgoing message from the originating SM-TE shall be sent to the SM-SC and shall contain the address of the receiving user. The SM-SC shall send a submit report to the originating SM-TE.

NBS:

The outgoing message from the originating SM-TE shall be transferred to the network. The network shall convert and forward this SM to the SM-SC.

The SM-SC shall send a submit report via the network to the originating SM-TE.

If feasible, any SM may be sent when the originating SM-TE is engaged on a call (e.g. voice or data), or in idle mode. However, messages which overlap the boundary of such a call, or being manually interrupted by the user, may be lost; in that case the SM may be sent again.

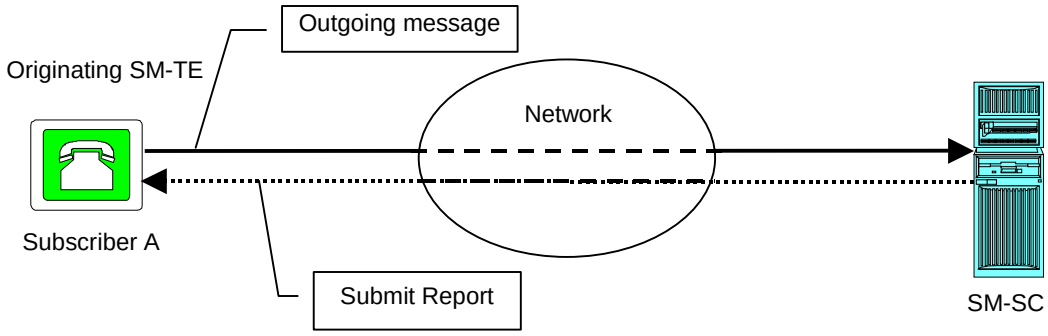

Figure 2: Outgoing message

4.1.3 Submit report

A submit report is sent to an SM-TE from an SM-SC and may be either a positive report, which confirms the correct submission of an SM to the SM-SC, or a negative report, which informs the SM-TE that the SM was not successfully submitted and gives the reason why.

4.1.4 Incoming message (SM-TE terminated)

The destination SM-TE should store the incoming messages in an appropriate memory. These messages should be displayed, modified and deleted under control of the user. These functions are out of the scope of the present document.

UBS:

The incoming message from the SM-SC shall include the date and time when the SM was submitted to the SM-SC. The receiving SM-TE shall send a deliver report to the SM-SC.

In case of non-delivery, the SM-SC re-attempts delivery. The timing and the number of repetitions are service provider options.

NBS:

The incoming message shall be transferred from the SM-SC to the receiving user's network. The network shall deliver this SM to the receiving user. The receiving user's network shall send a deliver report to the SM-SC.

If feasible, any SM may be received when the destination SM-TE is engaged in a call (e.g. voice or data), or in idle mode. However, messages which overlap the boundary of such a call, or being manually interrupted by the user, may be lost; in that case the SM may be sent again. The timing and the number of repetitions are network provider options.

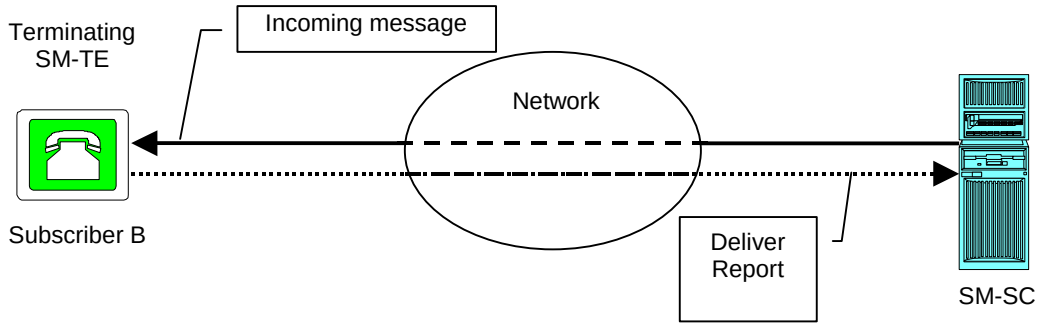

Figure 3: incoming message

4.1.5 Deliver report

A deliver report is sent to an SM-SC and may be either a positive report, which confirms the correct delivery of an SM to the receiving SM-TE, or a negative report, which informs the SM-SC that the SM was not successfully delivered and gives the reason why.

When issued by the destination SM-TE the deliver report confirms the correct receipt of an SM at the SM-TE, but not the delivery of the SM to the user.

When issued by the network the deliver report confirms that the message was sent to the destination SM-TE, but not the correct receipt of the SM at the SM-TE.

If the option to provide a status report is invoked and supported, a deliver report is sent from the originating SM-TE or network to the SM-SC to acknowledge correct receipt of the status report.

4.1.6 Message length

A message length of up to 160 characters shall be guaranteed. Longer messages may be optionally allowed.

4.1.7 Character set

The used character set for the short message service is out of the scope of the present document.

4.1.8 Terminal memory

A terminal that provides SMS capabilities shall be able to store at least one short message with a length of 160 characters.

4.1.9 Service Centre Time Stamp

The SM-SC shall inform the destination SM-TE about the time of arrival of that SM at the SM-SC. The time value shall be included in every message being delivered to the destination SM-TE.

4.2 Optional service features

4.2.1 Reply path

In conjunction with an outgoing message, the originating user may request the SM-SC to guarantee to forward a single reply regarding to this message back to him (Reply Path).

As a result of a "Reply Path" request of the originating user, the receiving user of this SM shall get an indication by the SM-SC that a reply via this SM-SC can be accepted on a non-subscription basis (Reply Path Procedure). The receiving user may then submit a reply to this SM-SC (within a period of time defined by the SM-SC operator), which is then forwarded to the originating SM-TE.

No subscription with the service provider is needed by the replying user. The costs, if any, for the reply path are allocated to the originator.

4.2.2 Validity period

In conjunction with an outgoing message to an SM-SC an originating SM-TE may send, as an additional information, a specific time period for the validity of the message; i.e. for how long the SM-SC shall guarantee its existence in the SM-SC memory before delivery to the receiving user has been carried out.

4.2.3 Encryption or protection

To guarantee the privacy of the communication, the originating user may be able to use an encryption or protection on an outgoing message.

4.2.4 Destination protocol

The originating user may also be able to indicate the receiving destination media (e.g. SMS-TE, Fax or Electronic mailbox). In case of Electronic mailbox the subscriber shall compose the email address instead of the phone number.

4.2.5 Replace short message function

In conjunction with an outgoing SM, the originating user may indicate that this SM may be replaced by a new SM later.

The Replace Short Message function is optional for the SM-SC and the SM-TE but if implemented it shall be performed as described here.

For SM delivered from the SM-SC to the SM-TE, on receipt of a short message from the SM-SC, the SM-TE shall check to see if it contains a Replace Short Message Type code.

If such a code is present, then the SM-TE will check the originating address and replace any existing stored message having the same Replace Short Message Type and originating address with the new short message. If there is no message to be replaced, the SM-TE shall store the message in the normal way. The SM-TE may also check the SM-SC address as well as the originating address.

If such a code is not present then the SM-TE will store the message in the normal way.

For SM submitted to the SM-SC, the SM-SC reacts similarly but only the address of the originating SM-TE or any other source is checked.

4.3 Other features

Other features may be possible. These other features are out of the scope of the present document.

5 Procedures

5.1 Provision and withdrawal

UBS:

The SMS shall be provided to the SMS user after prior arrangement with the SMS service provider or, as a service provider option, be generally available. The SMS shall be withdrawn on the SMS user's request or for service provider reasons.

NBS:

The SMS shall be provided to the service provider (SM-SC) after prior arrangement with the network operator. The SMS shall be withdrawn on the service provider's (SM-SC) request or for network operator reasons.

The SMS shall be provided to the SMS user after prior arrangement with the network operator and/or the service provider or be generally available. The SMS shall be withdrawn on the SMS user's request or for network operator or service provider (SM-SC) reasons.

Provision of the SMS shall be possible on an access or number basis.

In case of ISDN the SMS supplementary service shall apply to the basic access and to the primary rate access.

As a network operator option, the SMS user can have a subscription option to register the SM-SC number to which outgoing messages shall be sent to. The maximum number of SM-SC numbers from which incoming messages shall be accepted is a network operator option. The maximum number of active instances for incoming messages is a network operator option and should be at least one. See table 1.

Table 1

Network operator option	Values
Support of subscription option for registration of the SM-SC number to which outgoing messages shall be sent to.	yes no
Maximum number of SM-SC numbers from which incoming messages shall be accepted.	any integer value
Maximum number of active instances for incoming messages.	any integer value

In addition, the following subscription options should be made available for the receiving terminals, other than SM-TE. See table 2.

Table 2

Subscription option	Incoming messages shall be converted
telex	to telex
group 3 telefax	to fax (3)
group 4 telefax	to fax (4)
voice telephone	to speech
ERMES (European Radio Messaging System)	to ERMES
National Paging system	to NPS
any public X.400 based message handling system	to X.400
UCI (Universal Computer Interface, ETSI DE/PS 3 01 3)	to UCI
Internet Electronic Mail	into e-mail format

5.2 Normal procedures

5.2.1 Registration and erasure

5.2.1.1 Core requirements

Service registration and erasure are administrative procedures controlled by the network operator and/or the service provider.

5.2.1.2 Optional requirements

A user registration procedure may be required to obtain access rights. In this case, the SMS is available to the user at that access only after the user registration procedure has been successfully completed. As a network operator and/or a service provider option the user registration and erasure procedures are only necessary for incoming messages (receiving user).

The SMS user may register and erase data in his/her service profile by means of procedures (e.g. using DTMF signalling; the definition of these DTMF signalling procedures is outside the scope of the present document). As a network operator and/or service provider option it could be possible to give the SMS user knowledge of some or all the data in his/her service profile and to define the limit of restriction for the registration and erasure procedures.

The network or the relevant SM-SC shall respond with the requested information to the SMS user if access to the service profile is allowed.

UBS:

As a service provider option, the SMS user may have to register its address (e.g. phone number) at the SM-SC in order to be able to send and/or receive SM.

As a user option, it should be possible to register one or more SM-SC addresses in the terminal in order to be able to send and/or receive SM to or from the respective SM-SC.

As a service provider option the SMS user may supply a PIN when requesting the registration or erasure of the SMS supplementary service.

NBS:

The network shall support procedures for service registration and erasure.

As a network operator option the SMS user may supply a PIN when requesting the registration or erasure of the SMS supplementary service.

5.2.2 Activation and deactivation

5.2.2.1 Core requirements

NBS:

Service activation and deactivation procedures are controlled by the network operator for the service provider access.

The SMS supplementary service shall be activated on provision.

The SMS supplementary service shall be deactivated on withdrawal.

5.2.2.2 Optional requirements

UBS:

As a service provider option it should be possible to activate and deactivate the receipt of short messages temporarily by the SMS user. This procedure shall cause no other changes in the user profile.

The service provider may offer the user the possibility to activate and deactivate an SM forwarding to another destination. In this case the service provider should support procedures for activation, deactivation and interrogation of SMF (short message forwarding).

NBS:

As a service provider option it should be possible to activate and deactivate the receipt of short messages by the SMS user. This procedure shall cause no other changes in the user profile. In this case the network should support procedures for activation and deactivation of incoming messages.

The service provider may offer the user the possibility to activate and deactivate an SM forwarding to another destination. In this case the network should support procedures for activation, deactivation and interrogation of SMF (short message forwarding).

As a network operator option the SMS user shall supply a PIN when requesting the activation or deactivation of the SMS supplementary service.

NOTE: For UBS and NBS: during a deactivation period any SM should be stored at the SM-SC for a limited time. This time should follow the validity period if the validity period has been specified by the sending user. The number of stored messages is a service provider option.

5.2.3 Invocation and operation

5.2.3.1 Core requirements

5.2.3.1.1 Outgoing message

This procedure includes all necessary operations to:

1) transfer an SM (optionally including a request for a status report) from the originating SM-TE to the SM-SC;

2) return a submit report from the SM-SC to the originating SM-TE.

UBS:

An SM is sent to the SM-SC by using a basic call procedure.

All necessary information regarding an outgoing message and submit report is found in ES 201 912 [3].

NBS:

To invoke an outgoing message the SM-TE has to provide the following mandatory information to the network:

- SM-SC number;
- receiving user's number;
- SM data (e.g. text, binary information, etc.).

If an SMS user originates an outgoing message, the network shall convert and complete the data by supplying the originating number (i.e. the calling party number to which responses are directed).
Then the network shall invoke the SMS supplementary service at the corresponding SM-SC by sending the necessary data to the SM-SC.

A submit report of this operation shall be sent to the originating SM-TE (sending user).

To invoke a submit report the SM-SC has to provide the following mandatory information to the network:

- receiving user's number;
- negative or positive submit report data.

5.2.3.1.2 Incoming message

This procedure includes all necessary operations to:

1) transfer an SM from the SM-SC to the destination SM-TE;
2) return a deliver report from the destination SM-TE/network to the SM-SC;

UBS:

In case of fixed network subscribers the discrimination between an incoming call bearing short messages and normal operation is made by using the calling address information. If the address equals with a known SM-SC number, the incoming call bears a short message.

NOTE 1: If the CLIP information is transmitted prior to the second ringing, the TE may suppress the first ringing in order to achieve that the receipt of a short message causes no disturbing ringing on the considered terminal.

The receipt of an incoming message is only possible if the receiving SM-TE is ready to accept this message. As a service provider option, an indication of the availability of a new short message may be sent to the receiving user, also when the fixed network subscriber is engaged in a call. The indication is received by call signalling (D-channel or FSK). In order to get the waiting short message the subscriber may establish a call to the appropriate SM-SC.

NOTE 2: In case of PSTN networks it is also possible to have more than one TE connected in parallel to the same line, although only one TE should answer the SMS call. In this case a mechanism may be established to design which TE may accept the incoming call (e.g. using one digit of the calling address information sent from the SM-SC). Independent to this, a mechanism may also be provided to determine, if a TE should accept the call or should call back the SM-SC later on. (e.g. using again one digit of the calling address information sent from the SM-SC).

All necessary information for an incoming message and deliver report is found in ES 201 912 [3].

NBS:

To invoke an incoming message the SM-SC has to provide the following information to the network:

- receiving user's number;
- Service Centre Time Stamp;
- SM data (e.g. text, binary information, etc.).

After an incoming message has been requested by the SM-SC to the network, the SMS supplementary service shall be invoked at the corresponding user's network.

Then the network shall convert and transmit the received short message data to the destination SM-TE.

A deliver report of this operation shall be sent to the SM-SC.

To invoke a deliver report the SM-TE has to provide the following mandatory information to the network:

- SM-SC number;
- Negative or positive deliver report data.

NOTE 3: In case of PSTN lines the deliver report may be sent from the SM-TE to the network by using simple DTMF signalling procedures.

5.2.3.1.3 Status report

This facility is a report sent to the originating SM-TE from the SM-SC. It indicates the status of a previously submitted SM. This information is only sent if requested by the originating SM-TE when the SM is submitted.

This facility requires the following operations:

1) Transfer of a status report from the SM-SC to the originating SM-TE, containing the delivery result of the message transfer attempt(s); the result is either positive or negative. It may also indicate that the message has been stored for further delivery attempts;

2) Transfer of a deliver report from the originating SM-TE back to the SM-SC.

More than one status report may be sent to the originating SM-TE in the event of the SM not being immediately delivered.

UBS:

All necessary information for a status report and deliver report is found in ES 201 912 [3].

NBS:

To invoke a status report the SM-SC has to provide the following parameters to the network:

- receiving user's number (originating user who has requested a status report);
- Status report data (e.g. text, binary information, etc.).

A deliver report of this operation shall be sent to the SM-SC. The mandatory information is the same as in clause 5.2.3.1.2.

NOTE: In case of PSTN lines the deliver report may be sent from the SM-TE to the network by using simple DTMF signalling procedures.

5.2.3.2 Optional requirements

Not applicable.

5.2.4 Interrogation

5.2.4.1 Core requirements

Not applicable.

5.2.4.2 Optional requirements

As a service provider option it could be possible to give the SMS user knowledge of some or all the data in its service profile and to define the limit of interrogation and modification procedures. In this case the service profile of a registered SM-TE may be interrogated and partially modified by the SMS user (e.g. using DTMF signalling; the definition of these DTMF signalling procedures is outside the scope of the present document). The requested information should be sent in an appropriate way to the SMS user.

NBS:

The SMS user may have the possibility to interrogate the status of the SMS supplementary service. In response to interrogation the SMS user shall be given either an indication that the SMS supplementary service is currently activated or not.

No PIN is required in the interrogation request. If a PIN is provided, it shall be ignored.

5.3 Exceptional procedures

5.3.1 Registration and erasure

5.3.1.1 Core requirements

NBS:

The network may reject a registration request from an SMS user with an appropriate failure indication for any of the following reasons:

- the network does not provide the SMS supplementary service;
- the originating user is not authorized to use the SMS supplementary service on its access;
- the network does not support the activation or deactivation procedures;
- the originating user is not authorized to use the selected service centre;
- no originating number provided.

UBS and NBS:

The service provider (SM-SC) may reject a service registration from an SMS user with an appropriate failure indication for any of the following reasons:

- the originating user is not authorized to use the selected service centre;
- the SM-SC is not able to identify the originating number.

5.3.1.2 Optional requirements

UBS and NBS:

The service provider (SM-SC) may reject a service registration from an SMS user with an appropriate failure indication for any of the following reasons:

- the optional supplied PIN is not correct.

5.3.2 Activation and deactivation

5.3.2.1 Core requirements

NBS:

The network and/or the service provider (SM-SC) may reject an activation or deactivation request from an SMS user with an appropriate failure indication for any of the following reasons:

- the network operator does not provide the SMS supplementary service;
- the user is not registered or authorized to use the SMS supplementary service on its access;
- the network and/or the service provider do not support the activation or deactivation procedures;
- no originating number provided.

5.3.2.2 Optional requirements

NBS:

The network and/or the service provider (SM-SC) may reject an activation or deactivation request from an SMS user with an appropriate failure indication for any of the following reasons:

- the optional supplied PIN is not correct.

5.3.3 Invocation and operation

5.3.3.1 Core requirements

5.3.3.1.1 Outgoing message

NBS:

The network shall be able to convert different signalling protocols, received from a sending user, into a comprehensible data protocol which is used between the network and an SM-SC. This includes D-channel signalling as well as modem data transmission or DTMF signalling mechanism (the definitions of these signalling procedures are outside the scope of the present document).

The network may reject outgoing message requests from an SMS user with an appropriate failure indication for any of the following reasons:

- unknown or incorrect protocol;
- unknown or incorrect data;
- no originating number provided.

5.3.3.2 Incoming message

Stored messages at the user's terminal shall be deleted under user control. If the SM-TE supports the optional Replace Short Message Function, Short Messages with the respective Replace Short Message Type indication held in the SM-TE are automatically replaced by received new ones.

If the memory capacity of the terminal is exceeded, the message store overflow indicator shall be activated, and the terminal shall reject any further SM deliveries. An appropriate specific rejection message may be returned. An undelivered SM may be transmitted after the terminal has confirmed back to the SM-SC that further messages can be received again. The SM-SC may also retry to send the message to the destination SM-TE.

NBS:

If it is impossible to deliver an incoming message to a destination SM-TE or the receiving SM-TE is not able to accept or proceed short messages (e.g. if an analogue access is engaged in a call) while an incoming SM or a status report has been received at the network, an indication shall be sent by the network to the SM-SC that the attempt was unsuccessful and the reason why. Further attempts shall than be made by the SM-SC to deliver the SM. The delay between delivery attempts and the number of repetitions are a service provider (SM-SC) options.

5.3.3.2.1 Optional requirements

Not applicable.

5.3.4 Interrogation

5.3.4.1 Core requirements

Not applicable.

5.3.4.2 Optional requirements

The network and/or the service provider (SM-SC) may reject an interrogation request from an SMS user with an appropriate failure indication for any of the following reasons:

- the network operator does not provide the SMS supplementary service;
- the user is not registered or authorized to use the SMS supplementary service on its access;
- the network and/or the service provider do not support the interrogation procedure;
- no originating number provided.

6 Interworking requirements

6.1 Interworking between the SMS service provider's equipment and other networks

Interworking between the SMS service provider's equipment and other networks (e.g. GSM, UMTS, xDSL) is outside the scope of the present document.

6.2 Interworking between public networks providing the transfer of short messages between the Service Centre and the terminal

Interworking between public networks providing the transfer of short messages between the Service Centre and the terminal is outside the scope of the present document.

6.3 Interworking with private networks

Public and private PSTN/ISDNs shall co-operate in the provision of this service. This implies that:

- the originating and/or the receiving user can be a user in a private PSTN/ISDN; and
- the SM-SC can be a user in a private PSTN/ISDN.

Interworking with private networks shall include the requirements given in ETS 300 345 [4]. Interworking shall take place in a co-operative manner.

6.4 Interworking with other types of services

The SMS may interwork with other types of services; examples are listed below:

- telex;
- group 3 telefax; (i.e. conversion to fax);
- group 4 telefax; (e.g. conversion to fax);
- voice telephone (i.e. conversion to and from speech);
- ERMES (European Radio Messaging System);
- National Paging system (known to the SM-SC);
- UCI (Universal Computer Interface, ETSI DE/PS 3 01 3);
- any public X.400 based message handling system;
- TETRA (Terrestrial Trunked Radio);
- Internet Electronic Mail.

7 Interaction with supplementary services

Interactions between the SMS and supplementary services need to be considered on a per access type basis. Further information is contained in the annexes to the present document.

Annex A (normative): Interaction with ISDN supplementary services

The provider of the SMS is the organization that has authority over the SM-SC, and it is not necessarily the same as the provider of the ISDN.

The service requirements given in the main body of this present document shall apply, with the additions given in this annex. The interactions concerning the UBS cover only calls bearing SM.

NOTE 1: The meaning of "No impact" is: neither service shall affect the operation of the other service.

NOTE 2: The meaning of "Not applicable" is: it is not possible to have the two services in operation at the same time.

A.1 Advice Of Charge services (AOC-S, AOC-D, AOC-E)

No impact.

NOTE: The AOC services may only support call charging.

A.2 Call Waiting (CW)

NBS:

No impact.

UBS:

No impact.

A.3 Call HOLD (HOLD)

No impact.

A.4 Explicit Call Transfer (ECT)

NBS:

No impact (The SMS destination address is not affected by ECT).

UBS:

Not applicable.

A.5 Calling Line Identification Presentation (CLIP)

No impact.

NOTE: For UBS: the CLIP supplementary service is needed.

A.6 Calling Line Identification Restriction (CLIR)

NBS:

Not applicable.

UBS:

Due to the fact that CLIP is necessary, the CLIR supplementary service shall be deactivated, either permanent or temporary for SM transmission in case that the network access of the SM-SC does not provide the calling line identity of the SM-TE to the SM-SC.

A.7 COnnected Line identification Presentation (COLP)

No impact.

A.8 COnnected Line identification Restriction (COLR)

No impact.

A.9 Closed User Group (CUG)

No impact.

A.10 Completion of Calls to Busy Subscriber (CCBS)

No impact.

A.11 Completion of Calls on No Reply (CCNR)

No impact.

A.12 CONFerence call, add-on (CONF)

NBS:

No impact.

UBS:

Not applicable.

A.13 Call Forwarding Unconditional (CFU)

NBS:

SM will not be forwarded.

UBS:

No impact, e.g. calls bearing SM will be forwarded as normal calls.

NOTE: The SM-SC may also disable CF for SM calls, if its network access allows that.

A.14 Call Forwarding Busy (CFB)

NBS:

SM will not be forwarded.

UBS:

No impact, e.g. calls bearing SM will be forwarded as normal calls.

NOTE: The SM-SC may also disable CF for SM calls, if its network access allows that.

A.15 Call Forwarding No Reply (CFNR)

No impact.

A.16 Call Deflection (CD)

No impact.

A.17 Selective Call Forwarding (SCF)

NBS:

SM will not be forwarded.

UBS:

No impact.

NOTE: The SM-SC may also disable CF for SMS calls, if its network access allows that.

A.18 Malicious Call IDentification (MCID)

No impact.

A.19 Three ParTY (3PTY)

NBS:

No impact.

UBS:

Not applicable.

A.20 User-to-User Signalling (UUS)

No impact.

A.21 Fixed Outgoing Call Barring (OCB-F)

No impact.

A.22 User Controlled Outgoing Call Barring (OCB-UC)

No impact.

A.23 Message Waiting Indication (MWI)

No Impact.

A.24 Meet-Me Conference (MMC)

NBS:

No impact.

UBS:

Not applicable.

A.25 Direct Dialling In (DDI)

No impact.

A.26 Multiple Subscriber Number (MSN)

No impact.

A.27 SUB addressing (SUB)

No impact.

A.28 Terminal Portability (TP)

No impact.

A.29 Line Hunting (LH)

No impact.

A.30 Anonymous Call Rejection (ACR)

No impact.

Annex B (normative): Interaction with PSTN supplementary services

The provider of the SMS is the organization that has authority over the SM-SC, and it is not necessarily the same as the provider of the PSTN.

The service requirements given in the main body of this present document shall apply, with the additions given in this annex. The interactions concerning the UBS cover only calls bearing SM.

NOTE 1: The meaning of "No impact" is: neither service shall affect the operation of the other service.

NOTE 2: The meaning of "Not applicable" is: it is not possible to have the two services in operation at the same time.

B.1 Calling Line Identification Presentation (CLIP)

No impact.

NOTE: For UBS: the CLIP supplementary service is needed.

B.2 Calling Line Identification Restriction (CLIR)

NBS:

Not applicable.

UBS:

Due to the fact that CLIP is necessary, the CLIR supplementary service shall be deactivated, either permanent or temporary for SM transmission in case that the network access of the SM-SC does not provide the calling line identity of the SM-TE to the SM-SC.

Annex C (informative): Interaction with PSTN supplementary services

The provider of the SMS is the organization that has authority over the SM-SC, and it is not necessarily the same as the provider of the PSTN.

The service requirements given in the main body of this present document shall apply, with the additions given in this annex. The interactions concerning the UBS cover only calls bearing SM.

NOTE 1: The meaning of "No impact" is: neither service shall affect the operation of the other service.

NOTE 2: The meaning of "Not applicable" is: it is not possible to have the two services in operation at the same time.

C.1 Advice Of Charge services (AOC-S, AOC-D, AOC-E)

No impact.

NOTE: For UBS: if available, the AOC-S and AOC-D services should be deactivated to avoid interference of the SM data transmission.

C.2 Call Waiting (CW)

NBS:

No impact, an SM is only presented on idle line.

UBS:

For each outgoing SM the TE may deactivate the CW supplementary service temporarily.

C.3 Call HOLD (HOLD)

NBS:

No impact.

UBS:

Not applicable.

C.4 Completion of Calls to Busy Subscriber (CCBS)

No impact.

C.5 Completion of Calls on No Reply (CCNR)

No impact.

C.6 Call Forwarding Unconditional (CFU)

NBS:

SM will not be forwarded.

UBS:

No impact, e.g. calls bearing SM will be forwarded as normal calls.

NOTE: The SM-SC may also disable CF for SM calls, if its network access allows that.

C.7 Call Forwarding Busy (CFB)

NBS:

SM will not be forwarded.

UBS:

No impact, e.g. calls bearing SM will be forwarded as normal calls.

NOTE: The SM-SC may also disable CF for SM calls, if its network access allows that.

C.8 Call Forwarding No Reply (CFNR)

NBS:

SM will not be forwarded.

UBS:

No impact.

NOTE: Under exceptional circumstances (e.g. damaged or unplugged SM-TE and additionally certain timing settings) it could happen that an SM call is forwarded like a normal call.

The SM-SC may also disable CFNR for SM calls, if its network access allows that.

C.9 Selective Call Forwarding (SCF)

NBS:

SM will not be forwarded.

UBS:

No impact.

NOTE: The SM-SC may also disable CF for SMS calls, if its network access allows that.

C.10 Malicious Call IDentification (MCID)

No impact.

C.11 Three ParTY (3PTY)

No impact.

C.12 Fixed Outgoing Call Barring (OCB-F)

No impact.

NOTE: For UBS: any call from this subscriber line to the SM-SC (outgoing SM) may be blocked by the OCB-F service.

C.13 User Controlled Outgoing Call Barring (OCB-UC)

No impact.

NOTE: For UBS: any call from this subscriber line to the SM-SC (outgoing SM) may be blocked by the OCB-UC service.

C.14 Message Waiting Indication (MWI)

No impact.

C.15 Multiple Subscriber Number (MSN)

No impact.

C.16 SUB addressing (SUB)

No impact.

C.17 Anonymous Call Rejection (ACR)

No impact.

Annex D (informative): Definition of registration, erasure, activation, deactivation, invocation and interrogation procedures for a network based solution

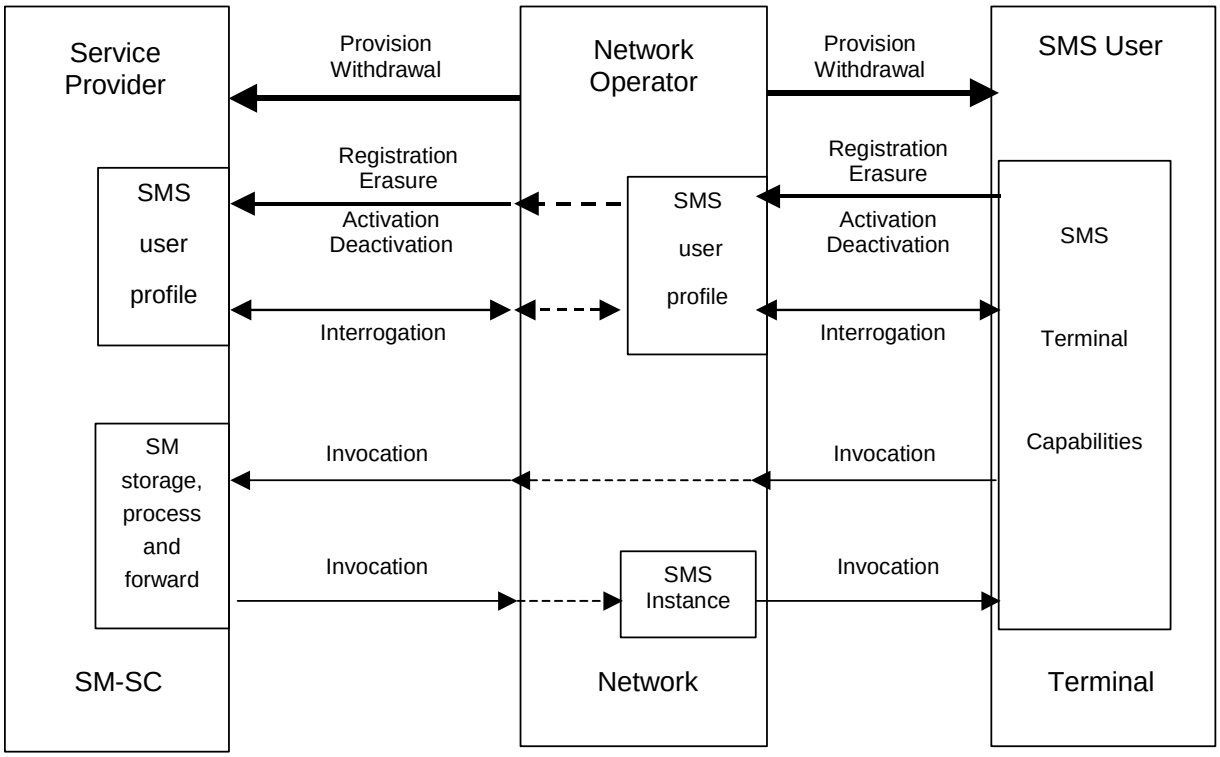

Figure D.1: Definition of registration, erasure, activation, deactivation, invocation and interrogation procedures for a network based solution

Annex E (informative): Bibliography

ETSI ETS 300 536: "Digital cellular telecommunications system (Phase 2) (GSM); Technical realization of Short Message Service (SMS) Point-to-Point (PP) (GSM 03.40)".

History

Document history		
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