

Services and Protocols for Advanced Networks (SPAN); Short Message Service (SMS) for PSTN/ISDN; Service description



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Content

Intellectual Property Rights	6
Foreword.....	6
Introduction	6
1 Scope	7
2 References	8
3 Definitions and abbreviations.....	8
3.1 Definitions	8
3.2 Abbreviations	9
4 Description	10
4.1 Core service features	11
4.1.1 Short Message Service Centre (SM-SC) capabilities.....	11
4.1.2 Outgoing message (from the originating SM-TE)	11
4.1.3 Submit report	12
4.1.4 Incoming message (to the destination SM-TE).....	12
4.1.5 Deliver report.....	13
4.1.6 Message length	13
4.1.7 Character set	14
4.1.8 Terminal memory	14
4.1.9 Service Centre Time Stamp	14
4.2 Optional service features	14
4.2.1 Reply path.....	14
4.2.2 Validity period	15
4.2.3 Encryption or protection	15
4.2.4 Destination media	15
4.2.5 Replace short message function.....	15
4.2.6 Anonymous Short Message	16
4.3 Other features	16
4.3.1 SM Sending User Identification Restriction (SMSUIR).....	16
4.3.2 SM Forwarding (SMF)	16
4.3.3 Anonymous SM Rejection (ASMR).....	16
4.3.4 Malicious SM IDentification (MSMID)	17
4.3.5 Outgoing SM White List/Black List (OSMWL/OSMBL).....	17
4.3.6 Incoming SM White List/Black List (ISMWL/ISMBL).....	17
4.3.7 SM Distribution List (SMDL) (Multi Messaging).....	17
5 Procedures	18
5.1 Provision and withdrawal.....	18
5.2 Normal procedures	19
5.2.1 Registration and erasure.....	19
5.2.1.1 Core requirements	19
5.2.1.2 Optional requirements.....	19
5.2.2 Activation and deactivation	19
5.2.2.1 Core requirements	19
5.2.2.2 Optional requirements.....	20
5.2.3 Invocation and operation	20
5.2.3.1 Outgoing message.....	20
5.2.3.1.1 Core requirements	20
5.2.3.1.2 Optional requirements	21
5.2.3.2 Submit report.....	21
5.2.3.2.1 Core requirements	21
5.2.3.2.2 Optional requirements	21
5.2.3.3 Incoming message.....	22
5.2.3.3.1 Core requirements	22
5.2.3.3.2 Optional requirements	22

5.2.3.4	Deliver report	23
5.2.3.4.1	Core requirements	23
5.2.3.4.2	Optional requirements	23
5.2.3.5	Status report	23
5.2.3.5.1	Core requirements	23
5.2.3.5.2	Optional requirements	24
5.2.4	Interrogation	24
5.2.4.1	Core requirements	24
5.2.4.2	Optional requirements	24
5.3	Exceptional procedures	25
5.3.1	Registration and erasure	25
5.3.2	Activation and deactivation	25
5.3.3	Invocation and operation	25
5.3.3.1	Core requirements	25
5.3.3.1.1	Outgoing message	25
5.3.3.1.2	Submit report	26
5.3.3.1.3	Incoming message	26
5.3.3.1.4	Deliver report	27
5.3.3.2	Optional requirements	27
5.3.4	Interrogation	27
6	Interworking requirements	27
6.1	Interworking between the SMS service provider's equipment and other networks	27
6.2	Interworking between public networks providing the transfer of short messages between the Service Centre and the terminal	27
6.3	Interworking with private networks	28
6.4	Interworking with other types of services	28
7	Interaction with supplementary services	28
Annex A (normative): Interaction with ISDN supplementary services		29
A.1	Advice Of Charge services (AOC-S, AOC-D, AOC-E)	29
A.2	Call Waiting (CW)	29
A.3	Call HOLD (HOLD)	29
A.4	Explicit Call Transfer (ECT)	29
A.5	Calling Line Identification Presentation (CLIP)	29
A.6	Calling Line Identification Restriction (CLIR)	30
A.7	Connected Line identification Presentation (COLP)	30
A.8	Connected Line identification Restriction (COLR)	30
A.9	Closed User Group (CUG)	30
A.10	Completion of Calls to Busy Subscriber (CCBS)	30
A.11	Completion of Calls on No Reply (CCNR)	30
A.12	CONFerence call, add-on (CONF)	30
A.13	Call Forwarding Unconditional (CFU)	31
A.14	Call Forwarding Busy (CFB)	31
A.15	Call Forwarding No Reply (CFNR)	31
A.16	Call Deflection (CD)	31
A.17	Selective Call Forwarding (SCF)	31
A.18	Malicious Call IDentification (MCID)	31
A.19	Three ParTY (3PTY)	31

A.20	User-to-User Signalling (UUS).....	31
A.21	Fixed Outgoing Call Barring (OCB-F)	31
A.22	User Controlled Outgoing Call Barring (OCB-UC).....	32
A.23	Message Waiting Indication (MWI).....	32
A.24	Meet-Me Conference (MMC)	32
A.25	Direct Dialling In (DDI).....	32
A.26	Multiple Subscriber Number (MSN).....	32
A.27	SUB addressing (SUB).....	32
A.28	Terminal Portability (TP)	32
A.29	Line Hunting (LH)	32
A.30	Anonymous Call Rejection (ACR).....	32
Annex B (normative):	Interaction with PSTN supplementary services.....	33
B.1	Calling Line Identification Presentation (CLIP)	33
B.2	Calling Line Identification Restriction (CLIR)	33
Annex C (informative):	Interaction with PSTN supplementary services.....	34
C.1	Advice Of Charge services (AOC-S, AOC-D, AOC-E)	34
C.2	Call Waiting (CW)	34
C.3	Call HOLD (HOLD)	34
C.4	Completion of Calls to Busy Subscriber (CCBS)	34
C.5	Completion of Calls on No Reply (CCNR).....	34
C.6	Call Forwarding Unconditional (CFU)	35
C.7	Call Forwarding Busy (CFB)	35
C.8	Call Forwarding No Reply (CFNR)	35
C.9	Selective Call Forwarding (SCF)	35
C.10	Malicious Call IDentification (MCID).....	35
C.11	Three ParTY (3PTY).....	35
C.12	Fixed Outgoing Call Barring (OCB-F)	35
C.13	User Controlled Outgoing Call Barring (OCB-UC).....	35
C.14	Message Waiting Indication (MWI).....	36
C.15	Multiple Subscriber Number (MSN).....	36
C.16	SUB addressing (SUB).....	36
C.17	Anonymous Call Rejection (ACR).....	36
Annex D (informative):	Definition of registration, erasure, activation, deactivation, invocation and interrogation procedures for a network based solution.....	37
Annex E (informative):	Bibliography	38
History		39

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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 the 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 the present document may be implemented. The requirements of which are considered outside of the scope of the 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 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 marked as "**UBS/NBS**".

There are two different protocols known for the UBS (protocol 1 and protocol 2; see ES 201 912 [3]) and a third one for NBS. The handling between terminals with different protocols on the same subscriber line and service centres should be managed within the service centres or the terminals. These handling matters are outside the scope of the present document.

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.

Referenced documents which are not found to be publicly available in the expected location might be found at <http://docbox.etsi.org/Reference>.

- [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

destination SM-TE: terminal with short message functionalities on the receiving user's side, connected to the subscriber line which receives an incoming message

originating SM-TE: terminal with short message functionalities on the sending user's side, connected to the subscriber line which initiates an outgoing message

receiving user: user who receives an incoming message on his/her SM-TE from the SM-SC via the subscriber line

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 destination 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.

sending user: user who sends an outgoing message from his/her SM-TE to the SM-SC via the subscriber line

Service Centre Time Stamp (SCTS): information element offering the destination 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 ES 201 986

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

SM data: contains all the information which is needed by the SM-SC (e.g. destination address, text, etc.)

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 SM-TE indicating that an SM has been accepted or not with the appropriate cause, if rejected

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

3.2 Abbreviations

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

3PTY	Three ParTY
ACR	Anonymous Call Rejection
ASMR	Anonymous SM Rejection
CCBS	Completion of Calls to Busy Subscriber
CCNR	Completion of Calls on No Reply
CD	Call Deflection
CFB	Call Forwarding Busy
CFNR	Call Forwarding No Reply
CFU	Call Forwarding Unconditional
CLIP	Calling Line Identification Presentation
CLIR	Calling Line Identification Restriction
COLP	COnnected Line identification Presentation
COLR	COnnected Line identification Restriction
CONF	CONFerence call, add-on
CUG	Closed User Group
DDI	Direct Dialling In
FSK	Frequency Shift Keying
GSM	Global System for Mobile communications
ISDN	Integrated Services Digital Network
ISMBL	Incoming SM Black List
ISMWL	Incoming SM White List
LH	Line Hunting
MCID	Malicious Call IDentification
MMC	Meet-Me Conference
MSMID	Malicious SM IDentification
MSN	Multiple Subscriber Number
MWI	Message Waiting Indication

NBS	Network Based Solution
OCB-F	Fixed Outgoing Call Barring
OCB-UC	User Controlled Outgoing Call Barring
OSMBL	Outgoing SM Black List
OSMWL	Outgoing SM White List
PIN	Personal Identification Number
PLMN	Public Land Mobile Network
PSTN	Public Switched Telephone Network
SCF	Selective Call Forwarding
SCTS	Service Centre Time Stamp
SM	Short Message
SMDL	SM Distribution List
SMF	SM Forwarding
SMS	Short Message Service
SM-SC	Short Message Service Centre
SMSUIR	SM Sending User Identification Restriction
SMSUIR	SM Sending User Identification Restriction
SM-TE	Short Message Terminal Equipment
SUB	SUB addressing
TE	Terminal Equipment
TP	Terminal Portability
UBS	User Based Solution
UMTS	Universal Mobile Telecommunications System
UUS	User-to-User Signalling
VP	Validity Period
xDSL	x Digital Subscriber Line

4 Description

UBS/NBS:

The Short Message Service (SMS) enables a sending user to send a SM of a limited size to a receiving user via an SM-SC.

The Short Message Service described in the present document applies to PSTN and ISDN accesses. In case of ISDN the SMS shall be possible on a number basis.

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

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.

UBS:

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

NBS:

None.

4.1 Core service features

4.1.1 Short Message Service Centre (SM-SC) capabilities

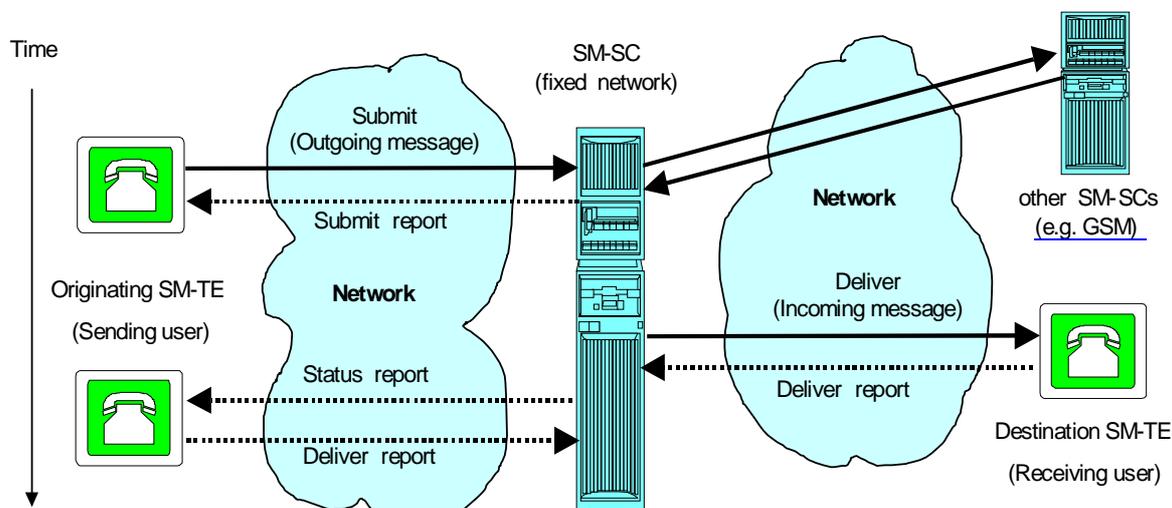


Figure 1: SM-SC capabilities

UBS/NBS:

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). Each SM-SC may have connections to other SM-SC (e.g. PLMN SM-SC). In case that the sending user has required a status report in conjunction with an outgoing message, a report (positive or negative) shall be sent to the originating SM-TE as soon as this information is available.

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

NOTE 1: The SM-SC shall deliver SM in an appropriate format to the destination SM-TE, this format depends on the protocol the destination SM-TE is using.

NOTE 2: Speech, telex, facsimile, etc., or a message from a mobile network customer may be input to the SM-SC by means of a suitable telecommunication service.

UBS:

None.

NBS:

None.

4.1.2 Outgoing message (from the originating SM-TE)

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:

To initiate an outgoing message the originating SM-TE has to provide the SM text, the sending user's number and the receiving user's number; further information may be provided by the sending user (e.g. SM-SC number, status report request, etc.).

The outgoing message from the originating SM-TE shall be transferred to the network. The network shall 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.

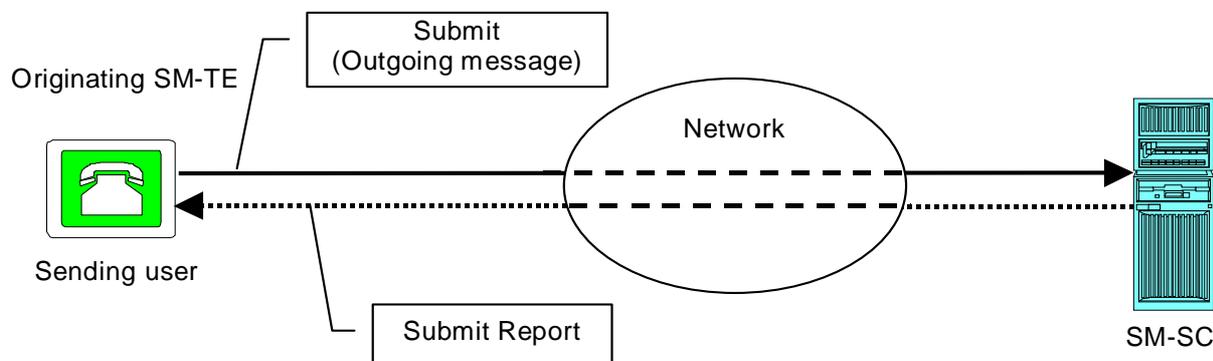


Figure 2: Outgoing message

4.1.3 Submit report

UBS/NBS:

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.

In case of a negative or no submit report, the SM-TE may re-attempt submission of the SM.

UBS:

None.

NBS:

None.

4.1.4 Incoming message (to the destination SM-TE)

UBS/NBS:

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. The incoming message from the SM-SC shall include the date and time when the SM was submitted to the SM-SC.

UBS:

The destination 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 destination SM-TE. The destination SM-TE shall send a deliver report via the network 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.

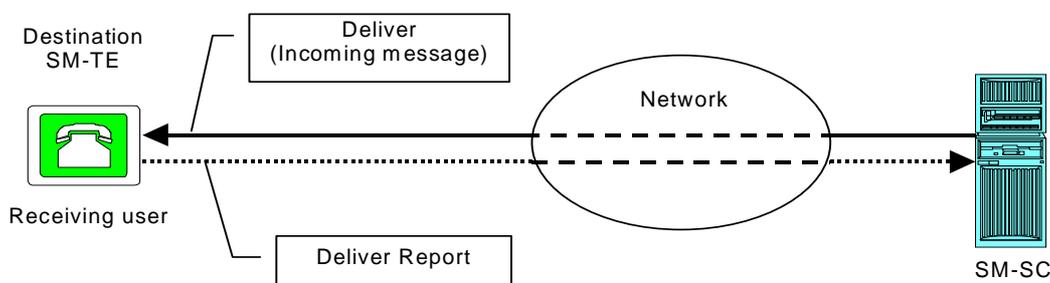


Figure 3: Incoming message

4.1.5 Deliver report

UBS/NBS:

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 destination SM-TE, or a negative report, which informs the SM-SC that the SM was not successfully delivered and gives the reason why.

A positive deliver report confirms the correct receipt of an SM at the SM-TE, but not the delivery of the SM to the user.

If a status report has been requested by the sending user and the status report has been delivered, a deliver report is sent from the originating SM-TE to the SM-SC to acknowledge the receipt of the status report.

In case of a negative or no deliver report, the SM-SC re-attempts delivery of the SM. The timing and the number of repetitions are service options.

UBS:

None.

NBS:

None.

4.1.6 Message length

UBS/NBS:

A message length of up to 140 octets shall be guaranteed. Longer messages may optionally be allowed; in these cases interworking with existing message services should be considered.

UBS:

None.

NBS:

None.

4.1.7 Character set

UBS/NBS:

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

UBS:

None.

NBS:

None.

4.1.8 Terminal memory

UBS/NBS:

A terminal that provides SMS capabilities shall be able to store at least one short message with a length of 140 octets.

UBS:

None.

NBS:

None.

4.1.9 Service Centre Time Stamp

UBS/NBS:

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 each short message being delivered to the destination SM-TE.

UBS:

None.

NBS:

None.

4.2 Optional service features

4.2.1 Reply path

UBS/NBS:

In conjunction with an outgoing message, the sending 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 sending 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.

UBS:

None.

NBS:

None.

4.2.2 Validity period

UBS/NBS:

In conjunction with an outgoing message to an SM-SC the sending user may enter, 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.

UBS:

None.

NBS:

None.

4.2.3 Encryption or protection

UBS/NBS:**UBS:**

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

NBS:

None.

4.2.4 Destination media

UBS/NBS:

The sending user may also be able to indicate the kind of media which shall be used on the destination side (e.g. SMS-TE, Fax or Electronic mailbox). In case of Electronic mailbox the subscriber may provide the email address inside the message itself.

UBS:

None.

NBS:

None.

4.2.5 Replace short message function

UBS/NBS:

In conjunction with an outgoing SM, the sending 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.

UBS:

None.

NBS:

None.

4.2.6 Anonymous Short Message

As a network operator/service provider option anonymous SM are supported. In this case the sending user's number will not be presented to the receiving user; the SM-SC is responsible to handle this feature.

Restricting the presentation of the originating SM-TE number may be associated with the CLIR supplementary service (e.g. CLIR permanent) being activated for the access line from which the SM originates.

A restriction of the originating SM-TE number on per SM basis may be realized by sending a control sequence (code) within the SM text.

4.3 Other features

Other features than in the following may be possible. These other features are out of the scope of the present document or not yet defined for the time being.

4.3.1 SM Sending User Identification Restriction (SMSUIR)

The SMSUIR is an optional SM-SC function which can be activated by the sending user if an outgoing message to the SM-SC is sent as an anonymous SM. In this case the SM-SC must not provide the sending user's number to the destination TE.

4.3.2 SM Forwarding (SMF)

The SMF is an optional SM-SC function which can be activated, deactivated, modified and interrogated by the SMS user. The necessary control information is conveyed by sending an SM from the SMS user to the SM-SC (to a specific service number, e.g. '8888') using keywords inside the SM. The minimum information sent to the SM-SC are the keyword for SMF and the destination number/address (e.g. ON: *21*<destaddr># or *SMF*<destaddr># / OFF: #SMF#) to which the following incoming SM will be sent to.

The result of an interrogation is provided from the SM-SC to the SMS user within an SM.

4.3.3 Anonymous SM Rejection (ASMR)

The ASMR is an optional SM-SC function which can be activated, deactivated and interrogated by the SMS user. The necessary control information is conveyed by sending an SM from the SMS user to the SM-SC (to a specific service number, e.g. '8888') using keywords inside the SM. The minimum information sent to the SM-SC are the keyword for ASMR (e.g. ON: *xx# or *ASMR# / OFF: #xx# / #ASMR#). After activating the ASMR service any anonymous incoming SM will be discarded by the SM-SC. In this case the SM-SC informs the sending user about the rejection.

It may be needed to allow certain SMS sending users that their identification is not made available to the receiving user and that ASMR is overridden. The originating service provider has to check whether the sending user falls in this category. If the sending user is allowed to do so, the service provider shall not reject the SM but shall deliver it to the receiving user.

The result of an interrogation is provided from the SM-SC to the SMS user within an SM.

4.3.4 Malicious SM IDentification (MSMID)

The MSMID is an optional SM-SC function which can be provided by the SM-SC (service provider) to the SMS user after prior arrangement with the service provider. This function allows the served user (in this case the receiving user) that a malicious SM can be identified. Usually, a received SM contains an identification of the sending user which enables the receiver of a malicious SM to take appropriate measures. However, an identification of the sending user may not be contained in a received malicious SM (see also: SMSUIR). In this case, it should also be possible to identify the sender. If the sending user requests that the presentation of his/her identification shall be restricted to the receiving user and if the receiving user has requested the MSMID service, then a special SMS-ID is sent from the SM-SC to the receiving user instead of the sending user's number.

NOTE: A feature like ASMR does not help because it rejects all anonymous SM but the receiving user may accept or even wish to receive anonymous SMS. Only malicious SMS are an issue.

4.3.5 Outgoing SM White List/Black List (OSMWL/OSMBL)

The OSMWL/OSMBL are optional SM-SC functions which can be installed, deinstalled, modified (i.e. adding or deleting numbers in a list, etc.) and interrogated by the SMS user. The necessary control information is conveyed by sending an SM from the SMS user to the SM-SC (to a specific service number, e.g. '8888') using keywords inside the SM.

After installing and activating an OSMWL/OSMBL, outgoing SM from the SMS user can only be sent to certain destinations (white list) or can not sent to certain destinations (black list).

In case of an activated OSMWL/OSMBL the SM-SC has to check each outgoing SM from the SMS user whether the indicated destination is allowed or not. If it is allowed then the SM is forwarded towards the receiving user. If it is not allowed to send an SM to the wanted destination, the SM will be discarded by the SM-SC and the SM-SC informs the sending user about the rejection.

The result of an interrogation is provided from the SM-SC to the SMS user within an SM.

4.3.6 Incoming SM White List/Black List (ISMWL/ISMBL)

The ISMWL/ISMBL are optional SM-SC functions which can be installed, deinstalled, modified (i.e. adding or deleting numbers in a list, etc.) and interrogated by the SMS user. The necessary control information is conveyed by sending an SM from the SMS user to the SM-SC (to a specific service number, e.g. '8888') using keywords inside the SM.

After installing and activating an ISMWL/ISMBL, incoming SM to the SMS user can only be received from certain origins (white list) or can not received from certain origins (black list).

In case of an activated ISMWL/ISMBL the SM-SC has to check each incoming SM to the SMS user whether an SM from the indicated sending user is allowed or not. If it is allowed then the SM is forwarded towards the receiving user. If it is not wanted to receive an SM from the origin, the SM will be discarded by the SM-SC and the SM-SC informs the sending user about the rejection.

The result of an interrogation is provided from the SM-SC to the SMS user within an SM.

4.3.7 SM Distribution List (SMDL) (Multi Messaging)

The SMDL is an optional SM-SC function which can be installed, deinstalled, modified (i.e. adding or deleting numbers in a list, etc.) and interrogated by the SMS user. The necessary control information is conveyed by sending an SM from the SMS user to the SM-SC (to a specific service number, e.g. '8888') using keywords inside the SM.

After installing an SMDL, outgoing SM from the SMS user addressed to a certain SMDL list will be distributed to all destinations of this distribution list.

The SMS user may have the possibility to interrogate his/her distribution lists, the content of a certain list and/or sending an SMDL to a certain receiving user or to another SMDL. The result of any interrogation is provided from the SM-SC to the SMS user within an SM.

5 Procedures

5.1 Provision and withdrawal

UBS/NBS:

None.

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 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 in the network 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. 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

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 (see note)
NOTE: In conjunction with electronic mail the kind of character set (e.g. HMTL or ASCII) has to be selected by the user.	

5.2 Normal procedures

5.2.1 Registration and erasure

5.2.1.1 Core requirements

UBS/NBS:

Service registration and erasure are controlled in the SM-SC. For administration reasons the service provider shall have access to the user profiles.

UBS:

None.

NBS:

None.

5.2.1.2 Optional requirements

UBS/NBS:

As a service provider option a user registration procedure may be required to obtain access rights. In this case, the SMS is available to the user only after the user registration procedure has been successfully completed.

Registration and erasure in the SM-SC may be realized by means of procedures (e.g. keywords inside an SM).

As a service provider option the user registration and erasure procedures are only necessary for incoming messages (receiving user).

As a result of a registration or erasure procedure the SM-SC may respond with an appropriate information within an SM.

As a service provider option the SMS user may supply a PIN when requesting the registration or erasure of the SMS. In this case this PIN is necessary for all further procedures (e.g. activation, deactivation, invocation).

As a SM-TE 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.

UBS:

None.

NBS:

None.

5.2.2 Activation and deactivation

5.2.2.1 Core requirements

UBS/NBS:

None.

UBS:

None.

NBS:

None.

5.2.2.2 Optional requirements

UBS/NBS:

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).

Any activation or deactivation operation in the SM-SC may be realized by means of procedures (e.g. keywords inside an SM).

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

NOTE: 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 maximum number of stored messages is a service provider option.

UBS:

None.

NBS:

None.

5.2.3 Invocation and operation

5.2.3.1 Outgoing message

5.2.3.1.1 Core requirements

UBS/NBS:

None.

UBS:

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.

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 originating SM-TE has to provide the following mandatory information to the network:

- originating SM-TE number (sending user's number);
- destination SM-TE number (receiving user's number);
- SM data (e.g. text, binary information, etc.).

If a sending user originates an outgoing message without or with an invalid originating SM-TE number, this SM shall be rejected by the SM-SC.

NOTE 1: In some arrangements the LE may reject the SMS request.

If a sending user originates an outgoing message without providing an SM-SC number, the network shall send this SM to the default SM-SC number.

Then the network shall forward the SM by sending the necessary data to the corresponding SM-SC.

NOTE 2: The destination SM-TE number (receiving user's number) to which the SM shall be sent to as well as other information are included in the SM data.

5.2.3.1.2 Optional requirements

UBS/NBS:

None.

UBS:

None.

NBS:

With an outgoing message the originating SM-TE may optionally provide the following information to the network:

- SM-SC number (where the outgoing message has to be sent to).

NOTE: As an SM-TE option the user may have the possibility to select the SM-SC to which his/her SM shall be forwarded to.

5.2.3.2 Submit report

5.2.3.2.1 Core requirements

UBS/NBS:

None.

UBS:

None.

NBS:

As a result of an outgoing message, a submit report shall be sent from the SM-SC to the originating SM-TE (sending user). Before sending the submit report a processing can be required inside the SM-SC.

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

- SM data (positive or negative submit report, etc.).

5.2.3.2.2 Optional requirements

UBS/NBS:

None.

UBS:

None.

NBS:

None.

5.2.3.3 Incoming message

5.2.3.3.1 Core requirements

UBS/NBS:

None.

UBS:

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 to the SM-SC.

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 matches 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 destination 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:

- SM-SC number (where the deliver report has to be sent to);
- destination SM-TE number (receiving user's number);
- SM data (e.g. text, binary information, etc.).

After an incoming message has been invoked by the SM-SC the network shall forward the SM to the destination SM-TE.

NOTE 3: The originating SM-TE number (sending user's number) from which the SM has been initiated as well as other information are included in the SM data.

5.2.3.3.2 Optional requirements

UBS/NBS:

None.

UBS:

None.

NBS:

With an incoming message the SM-SC may optionally provide the following information to the network:

- originating SM-TE number (sending user's number).

5.2.3.4 Deliver report**5.2.3.4.1 Core requirements****UBS/NBS:**

None.

UBS:

None.

NBS:

As a result of an incoming message or a status report, a deliver report shall be sent from the destination SM-TE to the SM-SC.

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

- SM data (positive or negative deliver report, etc.).

Then the network shall forward the deliver report by sending the necessary data to the corresponding SM-SC.

5.2.3.4.2 Optional requirements**UBS/NBS:**

None.

UBS:

None.

NBS:

None.

5.2.3.5 Status report**5.2.3.5.1 Core requirements****UBS/NBS:**

The status report is 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.

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

UBS:

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.

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:

- SM-SC number (where the deliver report has to be sent to);
- originating SM-TE number (sending user' number who has requested a status report);
- SM data (status report, text, binary information, etc.).

After a status report has been invoked by the SM-SC the network shall forward the status report to the originating SM-TE.

A deliver report of this operation shall be sent to the SM-SC. The mandatory information is the same as in clause 5.2.3.4.

5.2.3.5.2 Optional requirements

UBS/NBS:

None.

UBS:

None.

NBS:

With an status report the SM-SC may optionally provide the following information to the network:

- destination SM-TE number (receiving user's number).

5.2.4 Interrogation

5.2.4.1 Core requirements

UBS/NBS:

None.

UBS:

None.

NBS:

None.

5.2.4.2 Optional requirements

UBS/NBS:

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. by sending control procedures within an SM). The requested information should be sent back within one or more SM to the SMS user.

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

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

UBS:

None.

NBS:

None.

5.3 Exceptional procedures

5.3.1 Registration and erasure

UBS/NBS:

None.

UBS:

None.

NBS:

None.

5.3.2 Activation and deactivation

UBS/NBS:

None.

UBS:

None.

NBS:

None.

5.3.3 Invocation and operation

5.3.3.1 Core requirements

5.3.3.1.1 Outgoing message

UBS/NBS:

The service provider (SM-SC) may reject an outgoing message request from a SM-TE (sending user) with an appropriate failure indication for any of the following reasons:

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

UBS:

None.

NBS:

The network may reject an outgoing message request from a SM-TE (sending user) with an appropriate failure indication for any of the following reasons:

- the network does not provide the SMS;
- the subscriber is not authorized to use the SMS on its access;
- the subscriber is not authorized to use the selected SM-SC;
- the selected SM-SC number is not complete or unknown;
- the network is not able to forward or deliver the SM;
- no originating number provided.

5.3.3.1.2 Submit report**UBS/NBS:**

None.

UBS:

None.

NBS:

None.

5.3.3.1.3 Incoming message**UBS/NBS:**

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.

UBS:

None.

NBS:

If it is impossible to deliver an incoming message to a destination SM-TE or the destination SM-TE is not able to accept or proceed short messages 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 then 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.

The network may reject an incoming message request from an SM-SC with an appropriate failure indication for any of the following reasons:

- the network does not provide the SMS;
- the SM-SC is not authorized to use the SMS on its access;
- the destination number is not complete or unknown;
- the network is not able to forward or deliver the SM.

5.3.3.1.4 Deliver report

UBS/NBS:

None.

UBS:

None.

NBS:

None.

5.3.3.2 Optional requirements

UBS/NBS:

None.

UBS:

None.

NBS:

None.

5.3.4 Interrogation

UBS/NBS:

None.

UBS:

None.

NBS:

None.

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 User Based Solution and supplementary services need to be considered on a per access type basis. Further information concerning the UBS is contained in the annexes to the present document.

For the SMS Network Based Solution there are generally no interactions with standard ISDN supplementary services since the Short Message Service is an independent service. Due to this fact there is 'no impact' to all of the supplementary services contained in the annexes of the present document.

NOTE (for NBS only): The originating number (e.g. in case of an outgoing message) is always presented to the SM-SC and is forwarded to the destination SM-TE. As an option the 'Anonymous SMS' may be provided by the network operator/service provider (see clause 4.2.6).

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 the present document shall apply, with the additions given in this annex. The interactions concern the UBS 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.

NOTE 3: The meaning of '-' is: not relevant in this case.

NOTE 4: The relevant interactions are subdivided in two parts, depended on the point of observation :

- TEO - Originating TE, which is sending an SM to the SM-SC;
- TED - Destination TE, which is receiving an SM from the SM-SC.

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

P. of O.	Interactions with Calls bearing Voice	Interactions with Calls bearing SM
TEO	-	No impact
TED	-	Not applicable

A.2 Call Waiting (CW)

No impact.

NOTE: CW should be deactivated to avoid any disturbances initiated by the CW tone.

A.3 Call HOLD (HOLD)

Not applicable.

A.4 Explicit Call Transfer (ECT)

Not applicable.

A.5 Calling Line Identification Presentation (CLIP)

P. of O.	Interactions with Calls bearing Voice	Interactions with Calls bearing SM
TEO	-	Not applicable (CLIP is necessary for Status Report)
TED	-	No impact; CLIP is necessary

A.6 Calling Line Identification Restriction (CLIR)

P. of O.	Interactions with Calls bearing Voice	Interactions with Calls bearing SM
TEO	-	No impact (see note)
TED	-	Not applicable

NOTE: If the CLIR supplementary service is activated:

- it has to be deactivated by the sending user, either permanently or temporarily for a SM submission; otherwise else the SM shall not accepted by the SM-SC; or
- the CLI is passed on to the SM-SC and the SM-SC is responsible (as a service provider option) to forward or not the CLI to the destination SM-TE.

A.7 Connected Line identification Presentation (COLP)

P. of O.	Interactions with Calls bearing Voice	Interactions with Calls bearing SM
TEO	-	Not applicable
TED	-	No impact

A.8 Connected Line identification Restriction (COLR)

P. of O.	Interactions with Calls bearing Voice	Interactions with Calls bearing SM
TEO	-	No impact
TED	-	Not applicable

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)

Not applicable.

A.13 Call Forwarding Unconditional (CFU)

No impact, i.e. calls bearing SM or voice will be forwarded.

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

A.14 Call Forwarding Busy (CFB)

No impact, i.e. calls bearing SM or voice will be forwarded.

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)

Not applicable.

A.17 Selective Call Forwarding (SCF)

No impact, i.e. calls bearing SM or voice will be forwarded if the conditions apply.

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)

Not applicable.

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

No impact.

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

No impact.

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

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

No impact.

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

A.23 Message Waiting Indication (MWI)

No impact.

A.24 Meet-Me Conference (MMC)

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)

P. of O.	Interactions with Calls bearing Voice	Interactions with Calls bearing SM
TEO	No impact	Not applicable
TED	No impact	Not applicable

A.30 Anonymous Call Rejection (ACR)

P. of O.	Interactions with Calls bearing Voice	Interactions with Calls bearing SM
TEO	No impact	No impact (the SM-SC number is always provided)
TED	No impact	No impact (the SM-SC number is always provided)

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 the present document shall apply, with the additions given in this annex. The interactions concern the UBS 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.

NOTE 3: The meaning of '-' is: not relevant in this case.

NOTE 4: The relevant interactions are subdivided in two parts, depended on the point of observation:
 TEO - Originating TE, which is sending an SM to the SM-SC;
 TED - Destination TE, which is receiving an SM from the SM-SC.

B.1 Calling Line Identification Presentation (CLIP)

P. of O.	Interactions with Calls bearing Voice	Interactions with Calls bearing SM
TEO	-	Not applicable (CLIP is necessary for Status Report)
TED	-	No impact; CLIP is necessary

B.2 Calling Line Identification Restriction (CLIR)

P. of O.	Interactions with Calls bearing Voice	Interactions with Calls bearing SM
TEO	-	No impact (see note)
TED	-	Not applicable

NOTE: If the CLIR supplementary service is activated:

- it has to be deactivated by the sending user, either permanently or temporarily for a SM submission; otherwise else the SM shall not accepted by the SM-SC; or
- the CLI is passed on to the SM-SC and the SM-SC is responsible (as a service provider option) to forward or not the CLI to the destination SM-TE.

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 the present document shall apply, with the additions given in this annex. The interactions concern the UBS 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.

NOTE 3: The meaning of '-' is: not relevant in this case.

NOTE 4: The relevant interactions are subdivided in two parts, depended on the point of observation:
 TEO - Originating TE, which is sending an SM to the SM-SC;
 TED - Destination TE, which is receiving an SM from the SM-SC.

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

P. of O.	Interactions with Calls bearing Voice	Interactions with Calls bearing SM
TEO	-	No impact (see note)
TED	-	Not applicable
NOTE: 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)

P. of O.	Interactions with Calls bearing Voice	Interactions with Calls bearing SM
TEO	No impact (see note 1)	No impact (see note 1)
TED	No impact (see note 2)	No impact (see note 2)
NOTE 1: For each outgoing SM the TE may deactivate the CW supplementary service temporarily.		
NOTE 2: The CW supplementary service should be deactivated to avoid any disturbances initiated by the CW tone.		

C.3 Call HOLD (HOLD)

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)

No impact, i.e. calls bearing SM or voice will be forwarded.

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

C.7 Call Forwarding Busy (CFB)

No impact, i.e. calls bearing SM or voice will be forwarded.

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

C.8 Call Forwarding No Reply (CFNR)

Not applicable.

NOTE 1: 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.

NOTE 2: The SM-SC may also disable CFNR for SM calls, if its network access allows that.

C.9 Selective Call Forwarding (SCF)

No impact, i.e. calls bearing SM or voice will be forwarded if the conditions apply.

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)

Not applicable.

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

No impact.

NOTE: 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: 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)

P. of O.	Interactions with Calls bearing Voice	Interactions with Calls bearing SM
TEO	No impact	No impact (the SM-SC number is always provided)
TED	No impact	No impact (the SM-SC number is always provided)

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

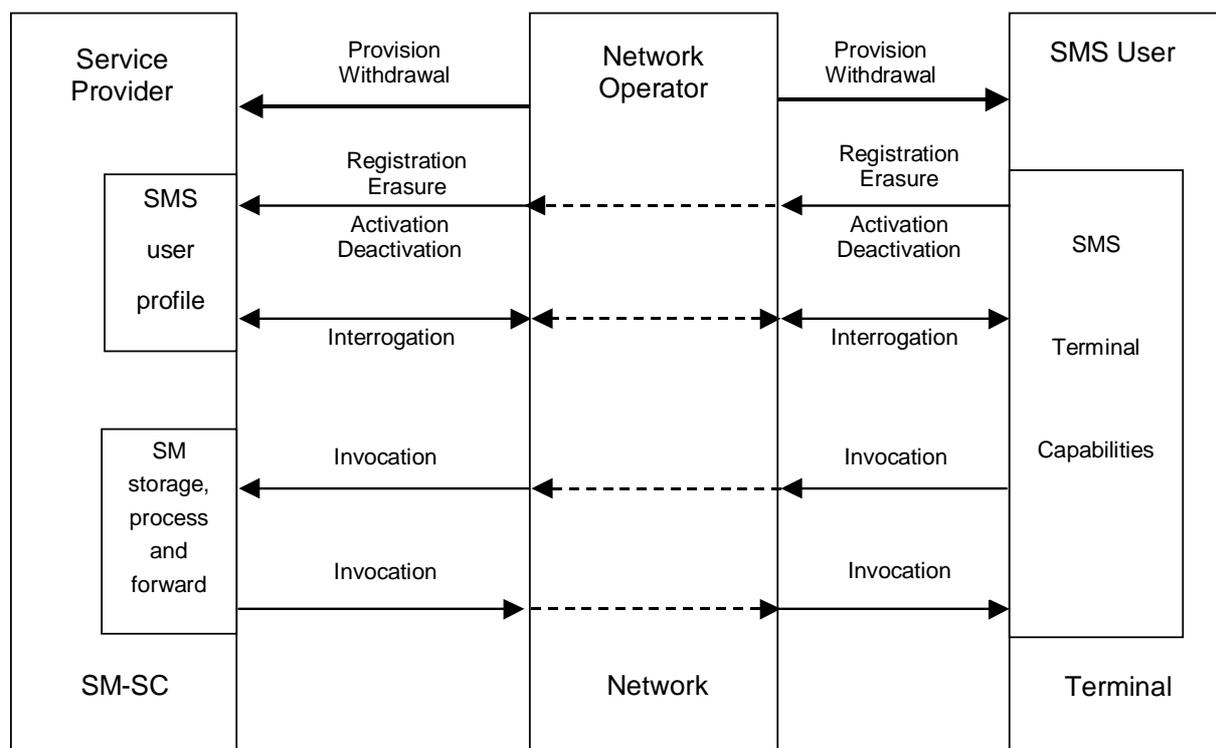


Figure D.1: Definition of registration, erasure, activation, deactivation, invocation and interrogation procedures for a network based solution

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		
V1.1.2	January 2002	Publication
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