ETSI ES 202 060-5 V1.2.1 (2005-01)

ETSI Standard

**Short Message Service (SMS) for fixed networks;
Network Based Solution (NBS);
Part 5: Network access protocol**

ETSI

Reference

RES/TISPAN-03031-5

Keywords

SMS, PSTN, protocol, SS7

ETSI

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Sous-Préfecture de Grasse (06) N° 7803/88

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Foreword

This ETSI Standard (ES) has been produced by ETSI Technical Committee Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN).

The present document is part 5 of a multi-part deliverable covering the Short Message Service (SMS) for fixed networks; Network Based Solution (NBS), as identified below:

Part 1: "Overview";

Part 2: "Architecture and functional entities";

Part 3: "Integrated Services Digital Network (ISDN) access protocol";

Part 4: "Interworking between Signalling System No.7 (SS7) and Digital Subscriber Signalling System No. one (DSS1)";

Part 5: "Network access protocol".

NOTE: The choice of a multi-part format for this deliverable is to facilitate maintenance and future enhancements.

In accordance with ITU-T Recommendation I.130 [5], the following three level structure is used to describe the supplementary telecommunication services as provided by European public telecommunications operators under the pan-European ISDN:

- Stage 1 is an overall service description, from the user's standpoint;

- 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 3 aspects (signalling system protocols and switching functions) needed to support the SMS. The stage 1 aspects are detailed in ES 201 986 [8]. The stage 2 aspects of the SMS have not been specified.

The present version updates the references to the basic call specification.

Introduction

The Short Message Service (SMS) is a service providing the served user the ability to send and receive Short Messages (SM). The Short Messages (SM) are exchanged between the sending and receiving user via a Short Message Service Centre (SM-SC).

1 Scope

The present document specifies the stage three of the Short Message Service (SMS) for the pan-European Integrated Services Digital Network (ISDN) as provided by the European public telecommunications operators by means of the Signalling System No.7 (SS7) Transaction Capabilities (TC) application protocol. The stage three identifies the protocol procedures and switching functions needed to support a telecommunication service (see ITU-T Recommendation I.130 [5]).

The SMS is provided independently of a call.

Charging principles are outside the scope of the present document.

Testing and maintenance requirements are outside the scope of the present document.

The SMS enables the originating SMS user to send Short Messages (SMs) to the receiving SMS user via a Short Message Service Centre (SM-SC), belonging to the network of the SMS originating user or separated from the network of the SMS originating user.

NOTE: The SMS is typically used between a Short Message service provider and a user of the Short Message service provided.

The SM-SC can be connected to the network by SS7 or behind a NE-SC with DSS1 or other protocols.

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]   ETSI EN 300 009: "Integrated Services Digital Network (ISDN); Signalling System No.7; Signalling Connection Control Part (SCCP) (connectionless and connection-oriented) to support international interconnection".

[2]   ETSI ETS 300 287: "Integrated Services Digital Network (ISDN); Signalling System No.7; Transaction Capabilities Application Part (TCAP) version 2".

[3]   ITU-T Recommendation E.164: "The international public telecommunication numbering plan".

[4]   ITU-T Recommendation I.112: "Vocabulary of terms for ISDNs".

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

[6]   ITU-T Recommendation I.210: "Principles of telecommunication services supported by an ISDN and the means to describe them".

[7]   ITU-T Recommendation X.680: "Information technology - Abstract Syntax Notation One (ASN.1) Specification of basic notation".

[8]   ETSI ES 201 986: "Services and Protocols for Advanced Networks (SPAN); Short Message Service (SMS) for PSTN/ISDN; Service description".

[9]   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".

[10]   ETSI EN 300 195: "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Supplementary service interactions".

3   Definitions and abbreviations

3.1   Definitions

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

basic call procedures: procedures by which a call (as an instance of a telecommunications service) is established and terminated

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 local exchange: local exchange where the receiving SMS user is connected to

Integrated Services Digital Network (ISDN): See ITU-T Recommendation I.112 [4].

ISDN number: number conforming to the numbering plan and structure

NOTE: See ITU-T Recommendation E.164 [3].

Network Element Service Centre (NE-SC): network element where the SM-SC is connected to

originating SMS user: user that originates and sends the SM

originating local exchange: local exchange where the originating SMS user is connected to

Protocol Data: NBS protocol parameter where the access protocol (UBS1, UBS2) is encapsulated

receiving SMS user: user that receives the Short Message and who may also deactivate the reception of SMs and reactivate the reception later on

Service; Telecommunication Service: See ITU-T Recommendation I.112 [4].

Short Message (SM): information, that may be conveyed by means of the SMS described in ES 202 060-5

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-TE

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

Short Message Terminal Equipment (SM-TE): terminal which 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

Supplementary Service: See ITU-T Recommendation I.210 [6].

3.2 Abbreviations

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

ASE	Application Service Element
ASN.1	Abstract Syntax Notation one
DLE	Destination Local Exchange
GT	Global Title
ISDN	Integrated Services Digital Network
MTP	Message Transfer Part
NBS	Network Based Solution
NE-SC	Network Element Service Centre
OLE	Originating Local Exchange
PL	Physical Layer
RL	Relay Layer
SCCP	Signalling Connection Control Part
SMS	Short Message Service
SMs	Short Messages
SM-SC	Short Message Service Centre
SM-TE	Short Message Terminal Equipment
TC	Transaction Capabilities
TCAP	Transaction Capabilities Application Part
TL	Transfer Layer
UBS	User Based Solution

4 Description

The Short Message Service (SMS) provides a means for sending a message of a limited size to and from a terminal equipment.

The SMS can be realized in two ways, either as a User Based Solution (UBS) or as a Network Based Solution (NBS).

NOTE 1: For recall, the User Based Solution is provided as part of a function within the end-user equipment, which does not require any specific short message transfer function inside the public network. Only the basic call procedures within the public network and the CLI supplementary service are used.

Two UBS protocols (UBS1 and UBS2) are available and described in the AT document (see ES 201 912 [9]).

Protocol 1: Transfer and application layers are fully compliant with the GSM SMS service, and with the DSS1 SM payload.
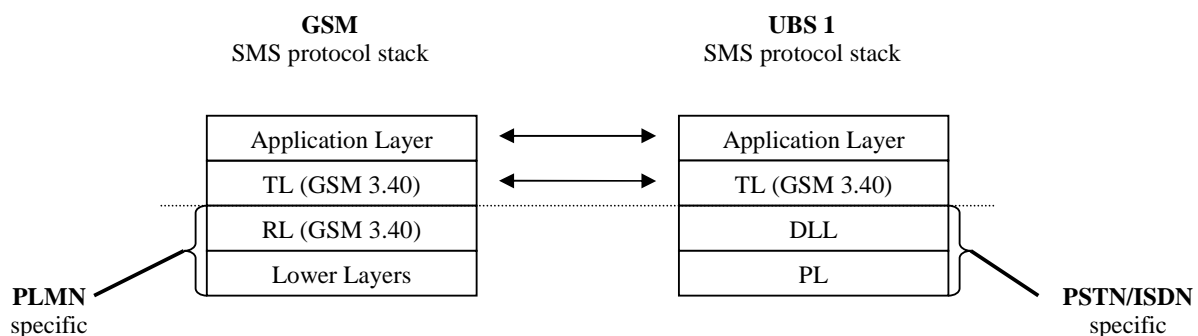
Figure 1: Relationship between SMS protocol stacks for GSM and for UBS 1 (see ES 201 912 [9])

Protocol 2: This protocol is specifically focused on the residential fixed network environment.

NOTE 2: The Network Based Solution is provided as part of a function within the public network and does not require a voice-band communication path between the SM-TE and SM-SC.

For compatibility with UBS and the access NBS protocol solution, UBS1 or UBS2 transfer layer is encapsulated within the NBS network protocol messages.

UBS1 or 2
SMS protocol stack

SS7 NBS
SMS protocol stack

Application Layer

TL (UBS1or2)

Application Layer
TL (UBS1or2)

SMS-ASE

TCAP

SCCP
MTP3

SS7
specific

DLL
PL

MTP2
MTP1

PSTN/ISDN
specific
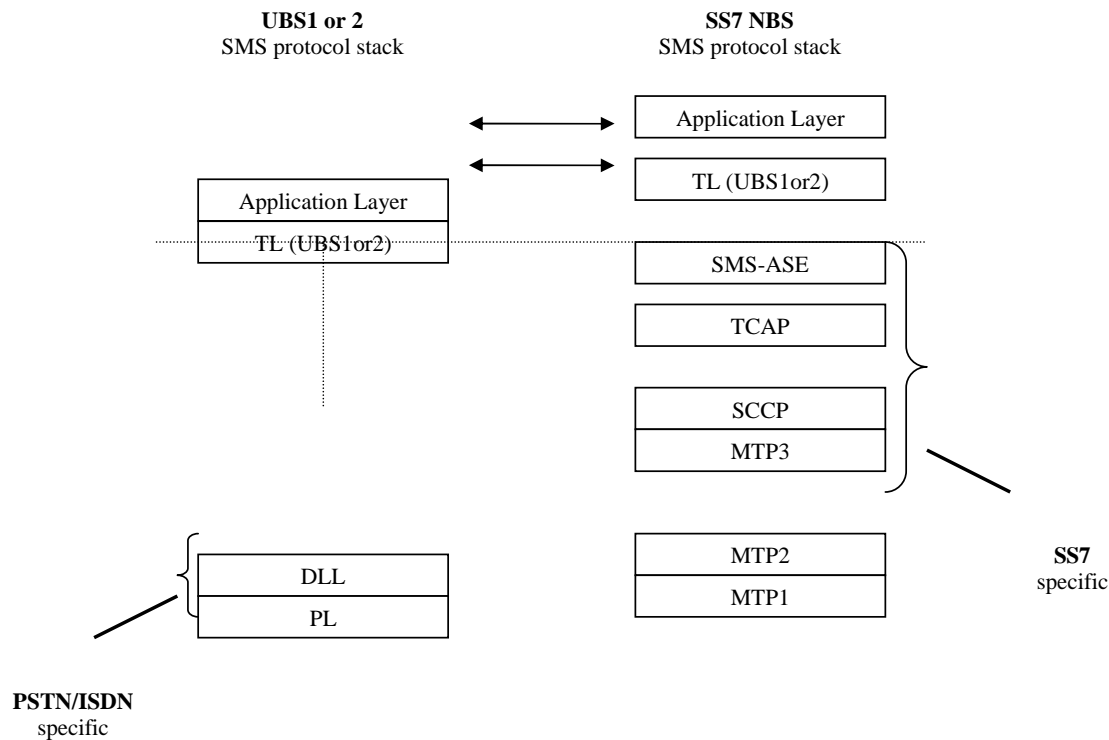
Figure 2: Relationship between SMS protocol stacks for UBS1 or UBS2 and for SS7

5 Operational requirements

5.1 Provision and withdrawal

See ES 201 986 [8] for provision or withdrawal conditions of the service.

5.2 Requirements on OLE

The OLE needs the capabilities of Signalling Connection Control Part (SCCP) (see EN 300 009 [1]) and TC (see ETS 300 287 [2]) with an SMS-ASE.

5.3 Requirements on intermediate exchanges

The intermediate exchanges involved in the transmission of the SMS operation need the capability of SCCP (see EN 300 009 [1]).

5.4 Requirements on DLE

The receiving user's exchange needs the capabilities of SCCP (see EN 300 009 [1]) and TC (see ETS 300 287 [2]) with an SMS-ASE.

6   Coding requirements

6.1   Application Service Element (ASE) for SMS

6.1.1   Protocol element list

Table 1: Between OLE and SM-SC

Operation	TCAP component	TCAP operation class
SMSFacility	Invoke, Result, Error	1

Table 2: From SM-SC to DLE

Operation	TCAP component	TCAP operation class
SMSFacility	Invoke	1

Table 3: From DLE to SM-SC

Operation	TCAP component	TCAP operation class
SMSFacility	Result, Error	1

6.1.2   List of parameter types

Addressing and identification parameters:

    a)   originating number;

    b)   additional originating number;

    c)   destination number;

    d)   additional destination number.

The country code shall be included in the originating user number, in case of international SMS.

Service parameters:

    a)   type of protocol transported;

    b)   protocol data. Parameter where access transfer layer protocol (UBS1 (GSM3.40) or UBS2) is encapsulated.

6.1.3   Error types

    a)   Resource unavailable;

    b)   Invalid originating number;

    c)   Invalid destination number;

    d)   Destination Line Busy;

    e)   User not responding.

6.1.4 Abstract syntax, general

Clause 6.2 specifies the abstract syntax for the SMS-ASE protocol, using the Abstract Syntax Notation one (ASN.1), as defined in ITU-T Recommendation X.680 [7].

The mapping of OPERATION, RESULT and ERROR components to TC primitives is described in clause 9.4.

The ASN.1 data type which follows the keywords "PARAMETER" or "RESULT" (for OPERATION and ERROR) is always optional from a syntactic point of view. However, except when explicitly specified otherwise, it has to be considered as mandatory from a semantic point of view.

When a mandatory element is missing in any component or inner data structure, a reject component is returned (if the dialogue still exists). The problem cause to be used is "Mistyped parameter".

6.2 ASN.1 module

The following table shows the definitions of the operations, errors and types required for the SMS using ASN.1 as specified in ITU-T Recommendation X.680 [7] and using the OPERATION and ERROR macros as defined in ETS 300 287 [2].

The formal definition of the component types to encode these operations, errors and types is provided in ETS 300 287 [2].

```
SMS-Operations-and-Errors {itu-t identified-organization etsi(0) 30287 operations-and-errors(1)
version1(0)}
DEFINITIONS EXPLICIT TAGS EXTENSIBILITY IMPLIED ::=
BEGIN
IMPORTS


        Code, ERROR, OPERATION
        FROM Remote-Operations-Information-Objects
        {joint-iso-itu-t remote-operations(4) informationObjects(5) version1(0)}



        PartyNumber, PresentedNumberScreened
    FROM Addressing-Data-Element
            { itu-t identified-organization etsi(0) 196 addressing-data-elements(6)}
;

sMSFacility         OPERATION ::= {
        ARGUMENT        SMSArgument
        RESULT          SMSResult
        ERRORS          {sMSFailure}
        CODE            sMSFacilityCode
}

-- Timer T = SMS-Tsup
-- End of SMSMessage operation definition




SMSArgument         ::=SEQUENCE {
            sMSDestinationAddress           [0] PartyNumber,
            sMSAdditionalDestinationAddress [1] PartyNumber          OPTIONAL,
            sMSOriginatingAddress           [2] PartyNumber              OPTIONAL,
            sMSAdditionalOriginatingAddress [3] SMS-AOA-TypeOfNumber   OPTIONAL,
            sMSProtocolData                 [4] Data,
            sMSAdditions                    [5] AdditionalData         OPTIONAL
}




SMSResult           ::=SEQUENCE {
                sMS-POS-NEG-CONF    CHOICE{
                sMSAck  [1]     Data,
                                --SMSACK contains a positive
                                --SMS-SUBMIT-REPORT or SMS-DELIVER-REPORT
                sMSNack [2]     Data
                                --SMSACK contains a negative
                                --SMS-SUBMIT-REPORT or SMS-DELIVER-REPORT
```

```
                                    }
}

sMSFailure          ERROR ::= {
          PARAMETER          TypeOfError
          CODE               sMSFailureCode
}


TypeOfError        ::= ENUMERATED {
          resourceUnavailable       (0),
          invalidDestinationNr      (1),
          invalidOriginatingNr      (2),
          accessIncompatible        (3),
          shortTermDenial           (4),
          indicationNotDelivered    (5),
          destinationLineBusy       (6),
          noReply                   (7)
}

SMS-AOA-TypeOfNumber   ::=CHOICE {
          sMS-AOA      [0] PresentedNumberScreened,
          sMS-ID       [1] INTEGER (0..255)
}


Data               ::= OCTET STRING (SIZE(0..max))
AdditionalData         ::= CHOICE {
      freeData      [0] OCTET STRING (SIZE (0..255)),
      networkData   [1] OCTET STRING (SIZE (0..255))
}
                        -- for network specific use
                        -- (Note: The Additional Information Field can be constructed
                        -- either as a "free" octet string or as a list of ISUP-parameters)
                        -- "NetworkData" is encoded as a list of ISUP parameters


max           INTEGER ::= 255



sMSOID OBJECT IDENTIFIER    ::= { itu-t identified-organization etsi(0) 30287}


sMSFacilityCode        Code ::= global : {sMSOID 2}
sMSFailureCode         Code ::= global : {sMSOID 3}

END -- SMS-Operations-and-Errors
```

7   Signalling procedures

The SM transfer is split up into two steps:

- the SM submission (transfer of a SM from the "sender" to the SM-SC);

- the SM delivery (transfer of a SM from the SM-SC to the "receiver").

As a result, two kinds of NNI procedures have to be considered:

- Exchanges from OLE to SM-SC.

- Exchanges from SM-SC to OLE and DLE.

7.1 Exchanges from OLE to SM-SC

7.1.1 Registration

Registration is a service provider feature. Registration is done by the SM-SC, information exchanged between SM-TE and SM-SC are inside SMS Data.

7.1.2 Activation of the SMS

The activation of SMS is a service provider feature. Activation is done by the SM-SC, information exchanged between SM-TE and SM-SC are inside SMS Data.

7.1.3 Deactivation of the SMS

The deactivation of SMS is a service provider feature. Deactivation is done by the SM-SC, information exchanged between SM-TE and SM-SC are inside SMS Data.

7.1.4 Deactivation of the reception of SMs

The deactivation of the reception of SMs is a service provider feature. This deactivation is done by the SM-SC, information exchanged between SM-TE and SM-SC are inside SMS Data.

7.1.5 Interrogation

Interrogation is a service provider feature. Interrogation is done by the SM-SC, information exchanged between SM-TE and SM-SC are inside SMS Data.

7.1.6 SMS sending authorization

The SMS sending authorization procedure allows the subscriber to permit or block outgoing SM form his/her subscriber line by using a PIN. This function is either a service provider or a terminal feature. The authorization is done by the SM-SC or the SM-TE. If information is to be exchanged between SM-TE and SM-SC, they are inside SMS Data.

7.1.7 Submission of SMs

7.1.7.1 Normal Operation

When the OLE has received from the originating SMS user the SMs and when it decides to send SMs to the SM-SC, it shall used a SMSFacility invoke component.

The invoke component shall contain:

- the "sMSOriginatingAddress" parameter, the ISDN number of the SMS user from whom the SM is sent, this number is provided by the local exchange;

- the "sMSAdditionnalOriginatingAddress" parameter, the ISDN number of the originating SMS user (from whom the SM is sent). This number is provided by the user;

- the "sMSDestinationAddress" parameter, the ISDN number of the Short Message Service Centre (SM-SC);

- the "sMSAdditionnalDestinationAddress" parameter, the ISDN number of the receiving SMS user, to which the SM shall be sent;

- the "sMSUserData" parameter. This parameter contains all of the transfer layer parameters of the sub layer protocol.

The TC-INVOKE primitive shall include the value of the SMS supervision operation timer SMS-Tsup.

When the SM-SC has to reply to the OLE, it shall send an SMSFacility return result component to the OLE.

The return result component shall contain:

- the "sMSUserData" parameter. This parameter contains all of the transfer layer parameters of the sub layer protocol.

The TC resources shall be released. The SMS supervision operation timer SMS-Tsup is stopped by TC when the TC-RESULT primitive is received.

7.1.7.2 Exceptional procedure

7.1.7.2.1 TC cancellation or SCCP routing failure

If the OLE receives either a TC-P-ABORT, TC-U-ABORT, TC-U-REJECT, TC-L-CANCEL, TC-L-REJECT, TC-R-REJECT or a TC-NOTICE primitive as response to the SMSFacility invoke component, the exchange shall consider the submission of SMs request as not successful and shall provide the access signalling system with an appropriate error value.

The TC-resources shall be released.

7.1.7.2.2 Network failure cause

If a connection with TC-dialogue primitives can not be established, the SMS-SC provides the error component sent to the OLE with the error value coded as follows:

- "resourceUnavailable", if the resources required are not available to perform adequately the SMS. This error shall be used to indicate a congestion situation;

- "invalidDestinationNr", if the ISDN number provided to identify the SM-SC is not a valid number;

- "accessIncompatible", if the nature of the destination line is incompatible with the service;

- "indicationNotDelivered", this the default cause for every other case.

7.2 Exchanges from SM-SC to DLE or OLE

NOTE: In this clause, the SMSFacility is used to convey the Deliver message (From SMS-C to DLE) and the Status Report (from SMS-C to OLE).

7.2.1 Normal Operation

If the SM-SC has to deliver SMs to an SMS user, it shall use a SMSFacility invoke component.

This invoke component shall contain:

- the "sMSDestinationAddress" parameter, the ISDN number of the destination or originating SMS user, this number is provided by the user terminal;

- the "sMSAdditionnalDestinationAddress" parameter. This parameter may contain the ISDN number of the destination or originating SMS user. This number is provided by the network;

- the "sMSOriginatingAddress" parameter, the ISDN number of the SM-SC;

- the "sMSAdditionnalOriginatingAddress" parameter, the ISDN number of the destination or originating SMS user, this number is provided by the user terminal;

- the "sMSUserData" parameter. This parameter contains all of the transfer layer parameters of the sub layer protocol.

The TC-INVOKE primitive shall include the value of the SMS supervision operation timer SMS-Tsup.

When the Local Exchange has to reply to the SM-SC, it shall send an SMSFacility return result component to the SM-SC.

The return result component shall contain:

- the "sMSUserData" parameter. This parameter contains all of the transfer layer parameters of the sub layer protocol.

When the SM-SC receives an SMSFacility return result component, this means that the operation has been successfully performed, the TC resources shall be released. The SMS supervision operation timer SMS-Tsubmit is stopped by TC when the TC-RESULT primitive is received.

7.2.2 Exceptional procedure

7.2.2.1 network error

If an error is to be returned from the Local Exchange to the SM-SC, the Local Exchange shall use the SMSFacility return error component coded as follows:

- "resourceUnavailable", if the resources required to perform adequately the SMS are not available. This error shall be used to indicate a congestion situation;

- "invalidDestinationNr", if the ISDN number provided to identify the SMS user is not a valid number;

- "DestinationLineBusy", if the analogous destination SMS line is busy;

- "NoReply", if the destination SMS line does not answer;

- "accessIncompatible", if the nature of the destination line is incompatible with the service;

- "shortTermDenial", if the network can not temporarily deliver the SM;

- "indicationNotDelivered", this is the default cause for every other case.

The TC resources shall be released.

7.3 Use of TC and SCCP

The service monitoring and management signals are defined as TC-based application messages (i.e. operations and corresponding results, see ETS 300 287 [2]). The coding of these messages is given in clause 6.2.

7.3.1 Routeing in the SCCP network

For routing based on the Global Title (GT) translation mechanism within the national network, the coding of the called party address and the calling party address in SCCP (see EN 300 009 [1]) shall comply with the following restrictions:

SSN indicator:	1	(SSN for ISDN supplementary services is always included)
GT indicator:	0100	(includes a translation type, numbering plan, encoding scheme and nature of address)
Translation type:	0001 0001	(translation table)
Numbering plan:	0001	(ISDN/Telephony Numbering plan E.164 [3])
Routeing indicator:	0	(Routeing on global title)

7.3.2 Number information used for routing

The exchange which initiates a dialogue using the GT translation mechanism, shall give the network provided ISDN number (see ITU-T Recommendation E.164 [3]) as GT in the SCCP calling party address field and the receiving user's ISDN number as the GT in the SCCP called party address field.

In case the SCCP called party address is coded as international number format, then the SCCP calling party address shall be coded as international number format.

The exchange which responds to the SMS dialogue may give the network provided calling party ISDN number as GT in the SCCP calling party address field and shall give the received SCCP GT calling party address as the GT in the SCCP called party address field.

7.3.3 SCCP message return procedure

The SCCP message return procedure shall always be requested by means of TC-primitives between the SMS-ASE and the TC protocols.

7.4 ASE for SMS

7.4.1 Subsystem number

The subsystem number 000 1011 dedicated to the ISDN supplementary services ASEs, shall be used.

7.4.2 Dialogue

7.4.2.1 General

The dialogues defined for the SMS between the peer-to-peer entities (TC-users) are structured dialogues. The dialogue ID parameter is used in both operation handling and transmission (dialogue) handling primitives to determine which component(s) pertain(s) to which dialogue.

Each TC-user has its own reference for a given dialogue. These references are local references and mapping of these local references into protocol references transaction ID, included in the messages, is done by TC.

Only class 1 operations are used.

Each TC message shall convey a single SMS operation.

7.4.2.2 Dialogue beginning

The OLE (*Resp*. SM-SC) establishes the dialogue by using a TC-BEGIN request primitive with a TC-INVOKE request primitive to transmit a SMSFacility invoke component to the SM-SC. (*Resp*. OLE or DLE).

7.4.2.3 Dialogue ending

Two ways of ending the dialogue are used.

a) Basic end:

   The dialogue end is requested by using a TC-END request primitive upon the following cases:

   -   with TC-INVOKE request primitive to transmit an SMSFacility return result component if the result is positive;

   -   with TC-U-ERROR request primitive to transmit an SMSFacility return error component if the result is negative;

   -   with TC-U-REJECT request primitive if the component check fails.

b) Abnormal end:

   -   the TC-user may abandon the service. In this case a peer to peer information shall be delivered at the time the abort is issued, to the remote TC-user, by sending a TC-END request primitive to transmit the TC-U-ABORT request primitive without abort reason;

- when the SMS supervision operation timer SMS-Tsup expires, at the controlling user's exchange, the SMS-ASE receives a TC-L-CANCEL indication primitive as response to either an SMS activation request or an SMS deactivation request. In this case the request shall be rejected with an appropriate reason;

- on receipt of TC-P-ABORT,TC-L-REJECT, TC-R-REJECT or a TC-NOTICE indication primitive, the TC-dialogue shall be terminated.

8   Interaction with non TC networks

8.1   Interworking with a network part without SMS-ASE capability

Interworking with a network part without SMS-ASE capability is not possible. A possible solution is to use UBS(1/2) inband.

8.2   Interworking with a network without SCCP/TC capability

In case where the SCCP/TC capability is not supported by either the OLE or the DLE, interworking is not possible. A possible solution is to use UBS(1/2) inband.

In case where an intermediate network does not support SCCP/TC capability the message return procedure is invoked. The OLE or the SM-SC will receive a TC-NOTICE indication. This may happen when the SMSFacility component is sent. The reception of this indication shall be notified to the originating SMS user if a status report has been requested.

9   Interaction with other supplementary services

The meaning of "No impact" is: "No effect on the protocol for the service".

The meaning of "Not applicable" is: "Has an effect on the interaction of the protocol".

NOTE: The interaction of Services are specified in EN 300 195 [10].

9.1   Advice of charge services

No impact.

9.1.1   Charging information at call set-up time

No impact.

9.1.2   Charging information during the call

No impact.

9.1.3   Charging at the end of a call

No impact.

9.2   Call waiting

No impact.

9.3 Call hold

No impact.

9.4 Explicit call transfer

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

9.5 Number identification services

No impact.

9.6 Calling line identification presentation

No impact.

9.7 Calling line identification restriction

No impact.

9.8 Connected line identification presentation

No impact.

9.9 Connected line identification restriction

No impact.

9.10 Closed user group

No impact.

The same restriction will apply to the SM as speech/DATA.

9.11 Completion of calls to busy subscriber

No impact.

9.12 Conference services

9.12.1 Conference call, add-on

No impact.

9.12.2 Meet-me conference

No impact.

9.12.3 Direct dialling in

No impact.

9.13   Diversion services

9.13.1   Call forwarding unconditional

See service description ES 201 986 [8].

9.13.2   Call forwarding busy

See service description, ES 201 986 [8].

9.13.3   Call forwarding no reply

See service description ES 201 986 [8].

9.13.4   Call deflection

No impact.

9.14   Freephone

No impact.

9.15   Malicious call identification

No impact.

9.16   Multiple subscriber number

No impact.

9.17   Subaddressing

No impact.

> NOTE: In the SMS-ASE operations, the subaddress information is not supported.

9.18   Terminal portability

No impact.

9.19   Three party

No impact.

9.20   User-to-user signalling

No impact.

9.21   Message waiting indication

No impact.

10 Parameter values (timers)

10.1 Timers in the OLE or SM-SC
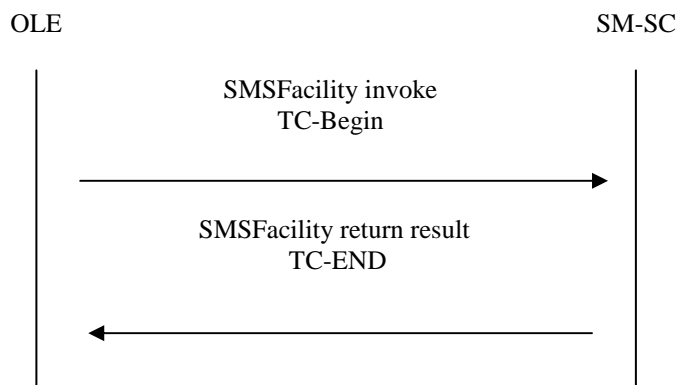
SMS-Tsup   SMS supervision operation timer.

Supervision of response to an SMSFacility operation, sent from the sender (OLE or SM-SC) to the receiver (OLE, SM-SC, DLE). SMS-Tsup will expire if signalling is not possible, at signalling failures or if the receiver cannot answer. Duration = 10 seconds.
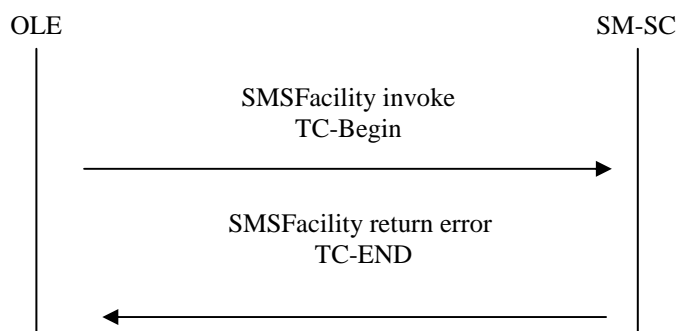
10.2 Timers in the receiver (DLE, OLE, SM-SC)

No need for timers has been identified.

Annex A (normative):
Signalling flow

This annex contains arrow diagrams showing the SMS-ASE signal flows for different cases of the SMS.

OLE   SM-SC

SMSFacility invoke
TC-Begin

SMSFacility return result
TC-END

Figure A.1: Successful submission of SMs

OLE   SM-SC

SMSFacility invoke
TC-Begin

SMSFacility return error
TC-END

Figure A.2: Unsuccessful submission of SMs

SM-SC   DLE

SMSFacility invoke
TC-Begin

SMSFacility return result
TC-END
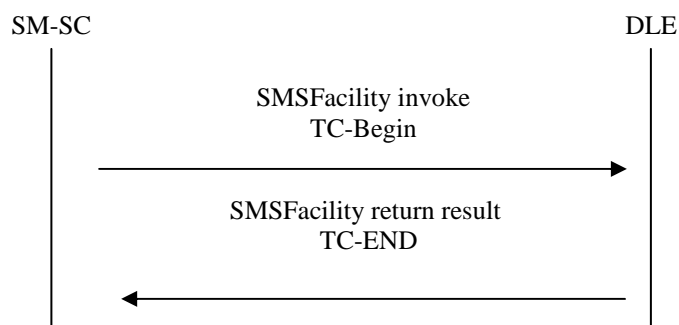
Figure A.3: Successful delivery of SMs without Status report

OLE   SM-SC   DLE

SMSFacility invoke
TC-Begin

SMSFacility return result
TC-END

SMSFacility invoke
TC-Begin

SMSFacility return result
TC-END
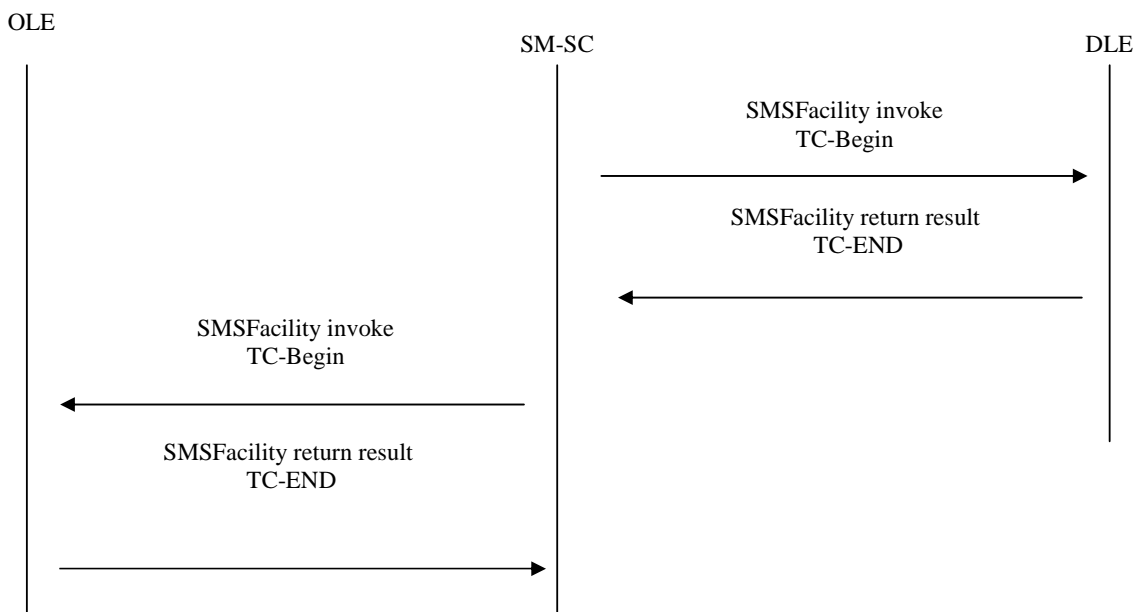
Figure A.4: Successful delivery of SMs with a status report requested

OLE   SM-SC   DLE

SMSFacility invoke
TC-Begin

SMSFacility return error
TC-END

SMSFacility invoke
TC-Begin

SMSFacility return result
TC-END
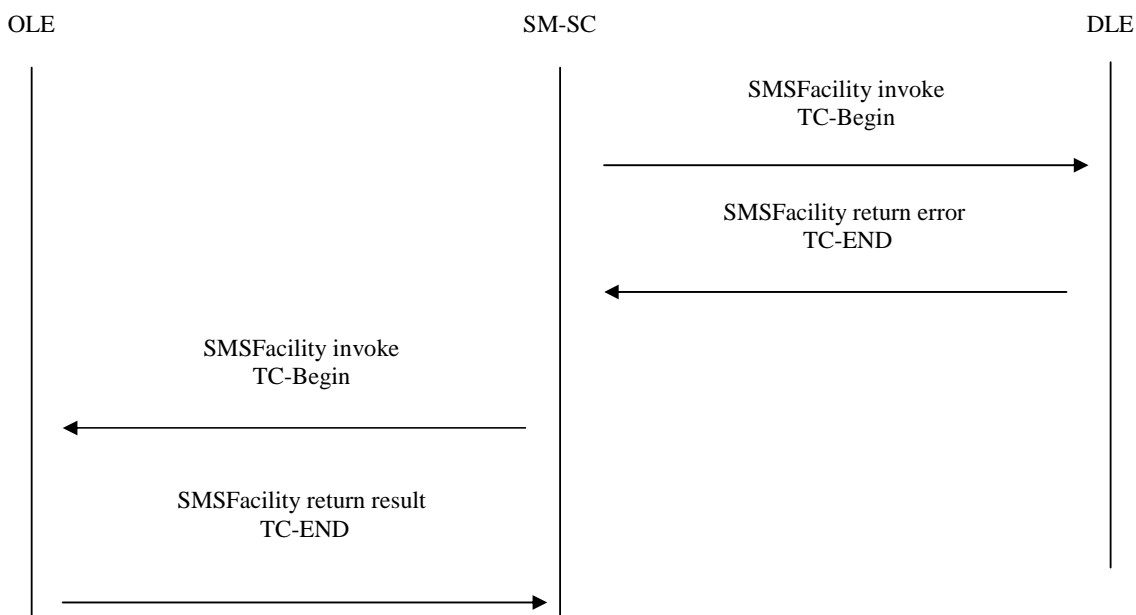
Figure A.5: Unsuccessful delivery of SMs with a status report requested

SM-SC   DLE

SMSFacility invoke
TC-Begin

SMSFacility return error
TC-END
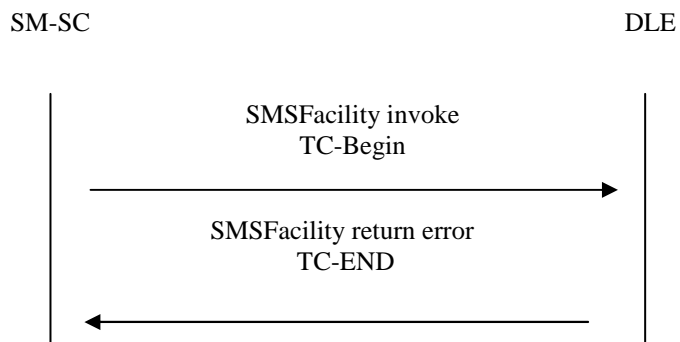
NOTE: The SM-SC has SCCP capabilities.
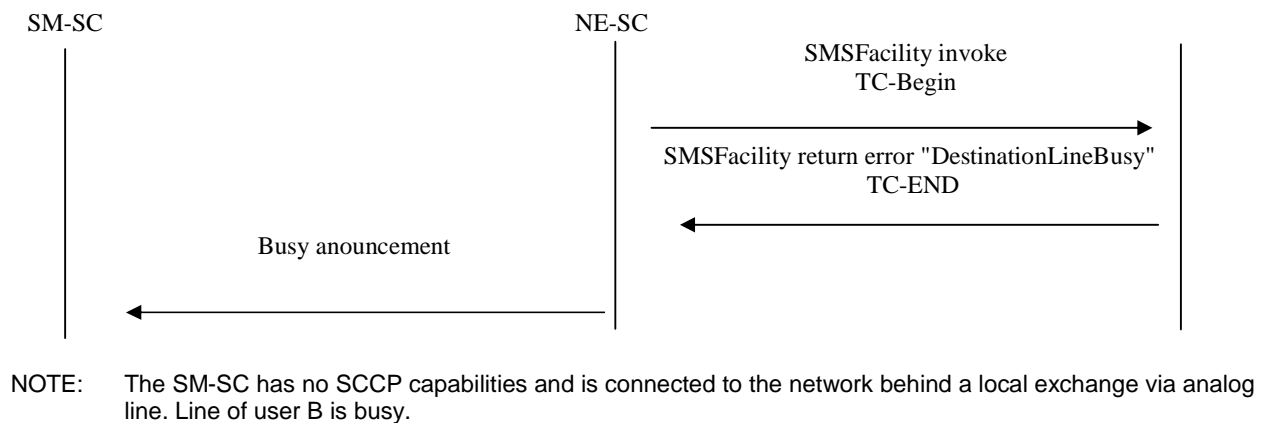
Figure A.6: Unsuccessful delivery of SMs without a status report requested

SM-SC   NE-SC   DLE

SMSFacility invoke
TC-Begin

SMSFacility return error "DestinationLineBusy"
TC-END

Release message with
cause 17

Release complete

NOTE: The SM-SC has no SCCP capabilities and is connected to the network behind a local exchange via SS7 or
          DSS1. Line of user B is bus.
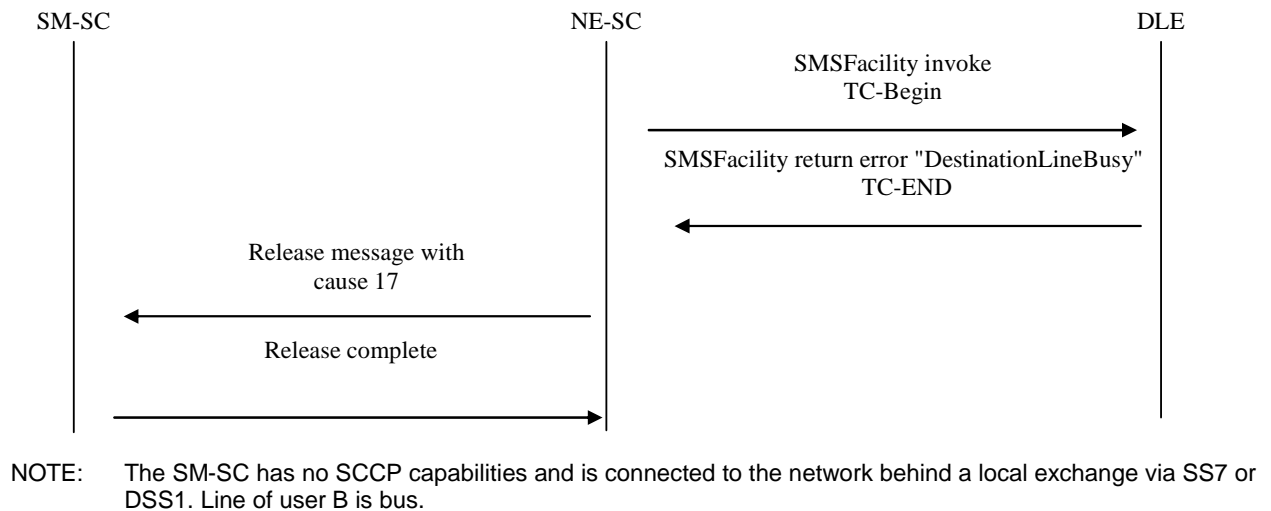
Figure A.7: Unsuccessful delivery of SMs

SM-SC   NE-SC

SMSFacility invoke
TC-Begin

SMSFacility return error "DestinationLineBusy"
TC-END

Busy anouncement

NOTE: The SM-SC has no SCCP capabilities and is connected to the network behind a local exchange via analog
          line. Line of user B is busy.

Figure A.8: Unsuccessful delivery of SMs

Annex B (informative):
Assignment of object identifier values

The following object identifier values are assigned in the present document:

{ITU-T identified-organization etsi(0) 30287 operations-and-errors(1)}

{ITU-T identified-organization etsi(0) 30287 operations-and-errors(1) 1}

{ITU-T identified-organization etsi(0) 30287 operations-and-errors(1) 2}

{ITU-T identified-organization etsi(0) 30287 operations-and-errors(1) 3}

Annex C (informative):
Bibliography

ETSI ETS 300 356: "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 2 for the international interface".

ETSI EN 300 356-1: "Integrated Services Digital Network (ISDN); Signalling System No.7 (SS7); ISDN User Part (ISUP) version 4 for the international interface; Part 1: Basic services [ITU-T Recommendations Q.761 to Q.764 (1999) modified]".

ETSI EN 300 196-1: "Integrated Services Digital Network (ISDN); Generic functional protocol for the support of supplementary services; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".

History

Document history			
V1.1.1	May 2003	Publication	
V1.2.1	November 2004	Membership Approval Procedure	MV 20050107: 2004-11-09 to 2005-01-07
V1.2.1	January 2005	Publication	