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Short Message Service (SMS) for fixed networks; Network Based Solution (NBS); Part 3: Integrated Services Digital Network (ISDN) access protocol

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ETSI Standard

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Network Based Solution (NBS);
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access protocol**

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Foreword

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

The present document is part 3 of a multi-part standard covering the Short Message Services (SMS) for fixed networks; Networks Based Solution (NBS), as described 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 [4], 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 SM service. The stage 1 aspects are detailed in ES 201 986 [10]. The stage 2 aspects of the SM service have not been specified.

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

Introduction

The Short Message Service (SMS) is a service, applicable at the coincident S and T reference point and T reference point, to provide the served user the ability to send and receive Short Messages. 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 European public telecommunications operators at the T reference point or coincident S and T reference point (as defined in ITU-T Recommendation I.411 [6]) by means of the Digital Subscriber Signalling System No. one (DSS1) protocol. Stage three identifies the protocol procedures and switching functions needed to support a telecommunication service (see ITU-T Recommendation I.130 [4]).

In addition, the present document specifies the protocol requirements at the T reference point where the service is provided to the user via an intermediate private ISDN.

The present document does not specify the additional protocol requirements where the service is provided to the user via a telecommunication network that is not an ISDN but it does include interworking requirements of other networks with the public ISDN.

The SM service is provided independently of a call.

Charging principles are outside the scope of the present document.

The SM service 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 (served user) or separated from the network of the SM originating user.

NOTE: The SM service is typically used between a Short Message service provider and a user (receiving user) of the Short Message service provided.

Further parts of the present document specify the method of testing required to identify conformance to the present document.

The present document is applicable to equipment supporting the SM service, to be attached at either side of a T reference point or coincident S and T reference point when used as an access to the public ISDN.

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2 References

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

- References are either specific (identified by date of publication 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 300 196-1: "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".
- [2] ITU-T Recommendation E.164: "The international public telecommunication numbering plan".
- [3] ITU-T Recommendation I.112: "Vocabulary of terms for ISDNs".
- [4] ITU-T Recommendation I.130 (1988): "Method for the characterization of telecommunication services supported by an ISDN and network capabilities of an ISDN".
- [5] ITU-T Recommendation I.210: "Principles of telecommunication services supported by an ISDN and the means to describe them".
- [6] ITU-T Recommendation I.411 (1993): "ISDN user-network interfaces - Reference configurations".

- [7] ITU-T Recommendation Q.9 (1988): "Vocabulary of switching and signalling terms".
- [8] ITU-T Recommendation X.680: "Information technology - Abstract Syntax Notation One (ASN.1): Specification of basic notation".
- [9] ITU-T Recommendation X.880: "Information technology - Remote Operations: Concepts, model and notation".
- [10] ETSI ES 201 986 (2001-11): "Services and Protocols for Advanced Networks (SPAN); Short Message Service (SMS) for PSTN/ISDN; Service description".
- [11] ETSI TS 123 040 (V5.3.0): "Digital cellular telecommunications system (GSM); Universal Mobile Telecommunications System (UMTS); Technical realization of the Short Message Service (SMS) (3GPP TS 23.040 version 5.3.0 Release 5)".
- [12] 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".

3 Definitions and abbreviations

3.1 Definitions

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

basic access: See ITU-T Recommendation Q.9 [7].

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

delivery 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

Integrated Services Digital Network (ISDN): See ITU-T Recommendation I.112 [3].

ISDN number: number conforming to the numbering plan and structure specified in ITU-T Recommendation E.164

invoke component: where reference is made to a "xxxx" invoke component, an invoke component is meant with its operation value set to the value of the operation "xxxx"

NOTE: See EN 300 196-1 [1], clause 8.2.2.1.

network: DSS1 protocol entity at the network side of the user-network interface

originating SMS user: user that originates and sends the SM, also called the served user

primary rate access: See ITU-T Recommendation Q.9 [7].

private network: DSS1 protocol entity at the user side of the user-network interface at the T reference point

public network: DSS1 protocol entity at the network side of the user-network interface at the T reference point

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

receiving user number: ISDN number of the user, that receives the Short Message

reject component: See EN 300 196-1 [1], clause 8.2.2.4.

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 which received the initial message.

return error component: where reference is made to a "xxxx" return error component, a return error component is meant which is related to a "xxxx" invoke component

NOTE: See EN 300 196-1 [1], clause 8.2.2.3.

return result component: where reference is made to a "xxxx" return result component, a return result component is meant which is related to a "xxxx" invoke component

NOTE: See EN 300 196-1 [1], clause 8.2.2.2.

served user: user to whom the SMS is provided, also called the originating user

served user number: ISDN number of the user who subscribes to, activates, deactivates or interrogates the Short Message services

service/telecommunication service: See ITU-T Recommendation I.112 [3].

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

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

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

Short Message Service Centre Number (SM-SCNr): ISDN number of the Short Message Service Centre

Short Message Terminal (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

EXAMPLE: whether the SM-SC was able to successfully forward the message or not, or whether the message was stored in the SM-SC for later delivery.

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

supplementary service: See ITU-T Recommendation I.210 [5], clause 2.4.

user: DSS1 protocol entity at the user side of the user-network interface

3.2 Abbreviations

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

| | |
|-------|--|
| ASE | Application Service Element |
| ASN.1 | Abstract Syntax Notation One |
| DSS1 | Digital Subscriber Signalling System No. one |
| DLL | Data Link Layer |
| ISDN | Integrated Services Digital Network |
| PDU | Protocol Data Unit |
| PL | Physical Layer |
| PIN | Personal Identification Number |
| RL | Relay Layer |
| SDL | Specification and Description Language |
| SM | Short Message |
| SMs | Short Messages |
| SMS | Short Message Service |
| SM-SC | Short Message Service Centre |

SM-TE Short Message Terminal
TL Transport Layer

4 Description

The Short Message Service (SM) service shall be available to users who are connected to the network via a basic access or primary rate access.

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

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

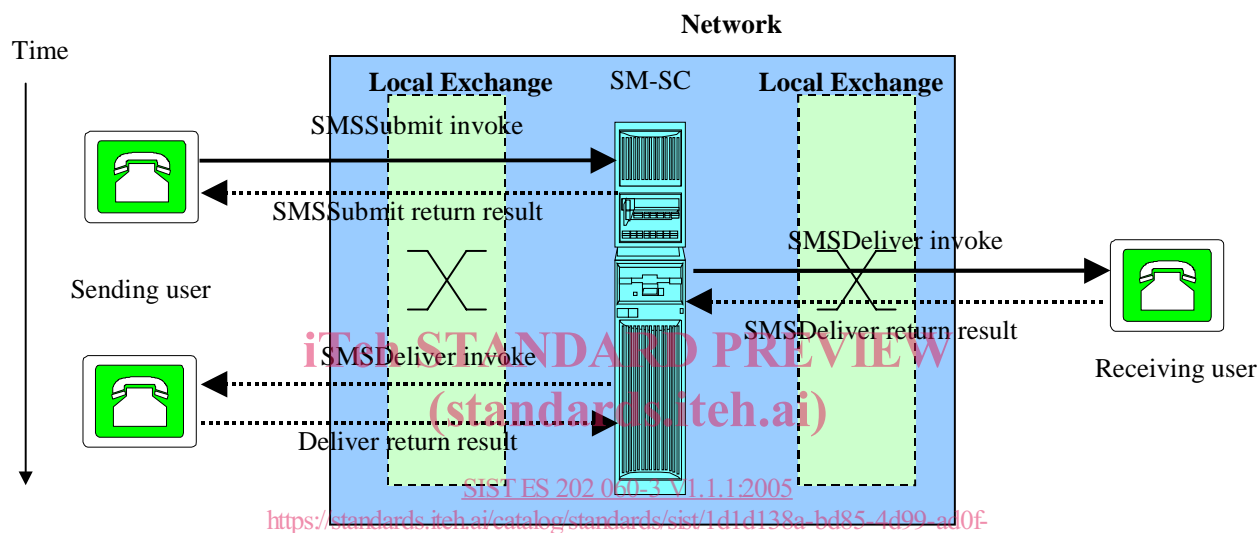


Figure 1: SMS submission, delivery and confirmation

A submit report is sent from an SM-SC to an SM-TE within a sMSSubmit return result component 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 with the error reason.

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

If the option to provide a status report is invoked and supported, a status report is sent from the SM-SC to the originating SM-TE in a sMSDeliver invoke component; the SM-TE acknowledges correct receipt of the status report.

Having received one or more SMs, 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 (SMs) with the respective Replace Short Message Type indication held in the SM-TE are automatically replaced by received new ones.

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

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

5 Operational requirements

5.1 Provision and withdrawal

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 on a number basis.

The SM service shall apply to the basic access and to the primary rate access.

As a network operator option, the SMS user can have a subscription option to register the SM-SC number to which outgoing messages shall be sent to.

The maximum number of SM-SC numbers from which incoming messages shall be accepted is a network operator option.

Table 1 contains the network and service provider options for SMS.

Table 1: Network options/service provider options

| Network options | Values | Network option | Service Provider option |
|--|-------------------|----------------|-------------------------|
| Support of subscription option for registration of the SM-SC number to which outgoing messages shall be sent | yes no | X | |
| Maximum number of SM-SC numbers from which incoming messages shall be accepted | any integer value | X | |
| Registration and erasure procedure for the SM-originating user | yes no | | X |
| Registration and erasure procedure for the SM-receiving user | yes no | | X |
| PIN required for registration and erasure procedure | yes no | | X |
| Activation/deactivation of the receipt of SM | yes no | | X |
| PIN required for activation/deactivation procedure | yes no | | X |
| Interrogation of SM service, whether the service is activated or deactivated | yes no | | X |

5.2 Requirements on the receiving user's network side

Void.

5.3 Requirements on the controlling user's network side

Void.