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Short message communication for PSTN/ISDN

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0. Document history

Every update of this document results in a complete new version with new version number and release date.

Version	Date	Main or important changes since previous version
1.0	25 APR 2002	<ul style="list-style-type: none">• First version
1.1	13 SEP 2002	<ul style="list-style-type: none">• Delivery Number adapted (chapter 5, point 5.5.1)
1.2	10 MAR 2003	<ul style="list-style-type: none">• Clarification of TP-TL parameters (Appendix A)
1.3	10 JUN 2003	<ul style="list-style-type: none">• Change in supported DCS values (Appendix A)

1. Scope

This document gives technical information about the Short Message communication within the Belgacom PSTN/ISDN network.

(The document is applicable for the following Belgacom digital exchanges and software packages)

- S12 - P7 and P8
- EWSD - V14B and V16B

The document describes the technical specifications applicable to the user-network interface in order to send and receive Short Messages on the fixed network (PSTN/ISDN).

2. References

Whenever a date of edition is mentioned, the document with this date should be consulted. If no date is present, the latest version of this document should be consulted.

ETSI ES 201 986 V1.1.2	Short Message Service for PSTN/ISDN; Service Description
ETSI ES 201 912 V1.1.1 (2002-01)	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
ETSI TS 103 912 V1.2.1 (2003-01)	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 (Corrections to ES 201 912 V1.1.1)
ETSI ETS 300 659-1	Subscriber line protocol over the local loop for display (and related) services; Part 1: On-hook data transmission
ETSI ETS 300 659-2	Subscriber line protocol over the local loop for display (and related) services; Part 2: Off-hook data transmission
ETSI EN 300 778-1 V1.2.1	Access and Terminals (AT); Analogue access to the Public Switched Telephone Network (PSTN); Protocol over the local loop for display and related services; Terminal Equipment requirements; Part 1: On-hook data transmission
ETSI EN 300 778-2 V1.2.1	Access and Terminals (AT); Analogue access to the Public Switched Telephone Network (PSTN); Protocol over the local loop for display and related services; Terminal Equipment requirements; Part 2: Off-hook data transmission
BGC_D_48_9809_30.01_E.pdf	BGC UNI spec: "Euro-ISDN (Basic Call)"
BGC_D_48_9807_30_02_E.pdf	BGC UNI spec: "Analog Subscriber Line Signalling (Basic Call)"
BGC_D_48_9811_30_09_E.pdf	BGC UNI spec : "PSTN: Subscriber line protocol for display (and related) services"
BGC_D_48_0105_30_01_E.pdf	BGC UNI spec: "ISDN – DSS1 – Network Layer 3 – Calling Name Identification Presentation (CNIP)"
ETSI TS 100 900 V7.2.0	Digital cellular telecommunications system (Phase 2+) (GSM); Alphabets and language-specific information (GSM 03.38 version 7.2.0 Release 1998)
ETSI TS 100 901 V7.4.0	Digital cellular telecommunications system (Phase 2+) (GSDM) ;Technical realization of the Short Message Service (SMS) (GSM 03.40 version 7.4.0 Release 1998)
ETSI EN 300 403-1 V1.3.2	Integrated Services Digital Network (ISDN); Digital subscriber Signalling System No. one (DSS1) protocol; Signalling network layer for circuit –mode basic call control; Part 1:Protocol specification [ITU-T Recommendation Q.931 (1993), modified]

3. General description

The Short Message Service (SMS) is a service that allows text messages to be sent and received.

The ETSI ES 201 986 V1.1.2 gives an overall service description of the Short Message Service (SMS) that can be provided via ISDN and PSTN accesses.

The ETSI ES 201 912 V1.1.1 specifies two protocols to provide the SMS service on the fixed network using a User Based Solution (UBS).

This document specifies how the Short Message Service will be realised in the Belgacom network. The document will also describe the network provider options.

4. Abbreviations and terminology

4.1. Abbreviations

PSTN	Public Switched Telephone Network
CLI	Calling Line Identity
CLIP	Calling Line Identification Presentation
APP	Application
CCBS	Completion of Calls to Busy Subscriber
CM	Connection Manager
DLC	Data Link Control
DLL	Data Link Layer
DSS1	Digital Subscriber Signalling No 1
DTMF	Dual Tone Multi-Frequency
FSK	Frequency Shift Keying
GSM	Global System for Mobile communication
ISDN	Integrated Services Digital Network
ISUP	ISDN User Part
PIN	Personal Identification Number
PL	Presentation Layer
RL	Relay Layer
SM	Short Message(s)
SMS	Short Message Service
SM-SC	Short Message Service Center
SM-TE	Short Message Terminal Equipment
SM-TE-T	Short Message Terminal Equipment Terminated
SM-TE-	Short Message Terminal Equipment Originated
O	
SS7	Signalling System No. 7
TL	Transfer Layer
UBS	User Based Solution

4.2. Terminology

Following abbreviations are used in the tables :

S = 'Supported'. That means that the Belgacom network supports the feature in a uniform way for the whole network.

US = 'Under study'. That means that :

- the Belgacom network does not generally support the feature, but Belgacom studies the implementation for a later phase; some Belgacom switches may already support the feature.

or

- the Belgacom network does not support the feature in a uniform way for the whole network

NS = 'Not supported'. That means that the Belgacom network does not support the feature.

GID = 'General Information and Definitions'

5. Short Message communication between a fixed network Short Message Terminal Equipment and a Short Message Service Centre

Normative reference: ETSI ES 201 912 V1.1.1

The numbering is according to ETSI ES 201 912 V1.1.1

ETSI ES 201 912 V1.1.1	Belgacom status	Remarks
1. Scope	GID	
2. References	GID	
3. Definitions and abbreviations	GID	
4. Functional description of UBS	S	Belgacom's SM-SC will be connected to the network via a SS7 network. The standard Belgacom call control procedures according to the related access types will be used to set-up the voice calls between the Belgacom SM-SC and SM-TE. Please refer to the following Belgacom UNI specs: "EURO-ISDN (Basic Call)" and "Analog subscriber line signalling (Basic Call)"
5. Protocol 1	GID	
5.1 Overview	GID	
5.2 Interworking between SM entities and PSTN/ISDN	GID	
5.2.1 SM Submission from SM-TE and SM-SC	S	Belgacom's SM-SC will support the complete subaddress range "0" -> "9". The default subaddress value, which will be used if no subaddress is specified by the sending user, is "0". The Belgacom SM-SC will <u>not</u> provide the user the possibility to define password- or PIN-protected SMS mailboxes within the SM-SC.
5.2.2 SM Delivery from SM-SC to SM-TE	S	In case of a SM-TE with PSTN access, the CLI is provided according to the Belgacom UNI spec: "PSTN: Subscriber line protocol for display (and related) services" In case of a SM-TE with ISDN access, the CLI is provided according to the Belgacom UNI spec: "ISDN – DSS1 – Network Layer 3 – Calling Name Identification Presentation (CNIP)" In a first phase, the Belgacom SM-SC will set the Deliver Mode Identifier on "1".
5.3 Protocol architecture		

5.3.1 Physical layer	S	Belgacom will use the following value for the T10 timer: 2100 ms
5.3.2 Data Link Layer		
5.3.2.1 Overview	S	
5.3.2.2 Error handling	S	
5.3.2.3 Timer	S	
5.3.3 Transfer Layer		
5.3.3.1 Overview	S	In a first phase the TP_Status_Report_Indicator will not be used by the Belgacom SM-SC to know when to send or to not send back a status report (delivered or not delivered).
5.3.3.2 Error handling	S	
5.3.3.3 Timer	S	The value of the Transfer Layer timer: T_est = 20s
5.4 Requirements to the Gateway	S	
5.5 Requirements to the Short Message Terminal Equipment	GID	
5.5.1 SM-SC Phone Numbers	S	<p>The following Belgacom SM-SC numbers will be used:</p> <ul style="list-style-type: none"> A) "1717"; this number will be used to submit a SM B) "01717"; this number will be used for the delivery of a SM <p>To submit an SM, the SM-TE will generate the following called party number: 1717<Calling Subaddress Digit>0 (See clause 5.5.7)</p> <p>In case of an incoming SM-SC call (SM delivery), the SM-TE will see the following calling party number: 01717<Called Subaddress Digit> <Deliver Mode Identifier Digit></p>
5.5.2 Ringing Suppression	S	SM-TEs with PSTN access, <u>should</u> suppress the first ringing cadence if the PSTN transmits the caller ID information between the first and second ringing cadence.
5.5.3 SMS Memory Full	S	Based on the Deliver Mode Identifier value "1", which will be used by the Belgacom SM-SC in a first phase, the SM-TE will not call back the SM-SC after sufficient memory. It will be the Belgacom SM-SC, which will call the SM-TE again later.

5.5.4 SM-TE Busy	S	<p>The SM-TE may support off-hook CLIP but it is not a mandatory option.</p> <p>In case the SM-TE supports off-hook CLIP, the SM-TE will not generate a return call to the SM-SC later on (based on the DMI value "1" which will be used by the Belgacom SM-SC in a first phase).</p> <p>Please refer to the Belgacom UNI specs, mentioned in point 5.2.2, for the way the CLI will be provided to the SM-TE in the off-hook state.</p> <p>The Belgacom SM-SC will not use CCBS to complete the call as soon as possible.</p>
5.5.5 Calling Line Identification Restriction (CLIR)	S	<p>Based on the SS7 connection of the Belgacom SM-SC, all the submit SM calls will be accepted independent whether the CLIR is activated or not.</p> <p>By default the CLI of the SM-TE-O will always be communicated to the SM-TE-T.</p> <p>Belgacom will not use an appropriate hash code to know when the originating CLI may be communicated or not.</p>
5.5.6 Incoming calls	S	<p>In the initial phase, the DMI value of all incoming SM calls will be set on "1".</p>
5.5.7 Outgoing Calls	S	<p>In the initial phase, the collect option will not be available.</p>
5.6 Extensions to the cited GSM Standards	US	<p>In a first phase the TP-FCS value E0 will not be used by the Belgacom SM-SC to know when it is allowed to transmit the CLI of the SM-TE-0 to the SM-TE-T.</p>
6. Protocol 2	NS	

Appendix A. Clarification on TP-TL parameters

1. SMS-DELIVER

TP-MMS	Not used	
TP-RP	Not used	
TP-UDHI	Not used	
TP-SRI	Not used	
TP-OA	Used Type-of-Address field: Type-of-number = 000 (unknown) Numbering-plan-identification = 0001 (ISDN/telephone numbering plan)	
TP-PID	Not used	
TP-DCS	F1 and 00	
TP-SCTS	For the time zone, a fixed value will be set for Belgium (first bit set to 0)	

2. SMS-DELIVER-REPORT

TP-FCS	Behaviour of BGC's SMSC on following failure causes: A rejection of sms in case of: 81 82 8F 91 9F B0 A re-scheduling of sms in case of: Other failure causes	

3. SMS-SUBMIT

TP-RD	Not interpreted by BGC's SMSC (no duplicate check is done)	
TP-VPF	Not interpreted by BGC's SMSC	
TP-RP	Not interpreted by BGC's SMSC	
TP-UDHI	BGC's SMSC will reject SMS messages with TP-UD field containing a header	
TP-SRR	Not interpreted by BGC's SMSC – BGC is using another notification request mechanism	
TP-DA	BGC's SMSC will only correctly interpret the TP-DA using the following Type-of-Address field: Type-of-number = 000 (unknown) Numbering-plan-identification = 0001 (ISDN/telephone numbering plan)	

TP-PID	BGC's SMSC will reject SMS messages with a non-default TP-PID field	
TP-DCS	BGC's SMSC will only accept correctly SMS messages with TP-DCS field F1 and 00. Other TP-DCS values are for further studies.	
TP-VP	Not interpreted by BGC's SMSC – BGC's SMSC is using its own validity mechanism	

4. SMS-SUBMIT-REPORT

TP-FCS	<p>The following failure causes are used by BGC's SMSC:</p> <p>8F Unspecified PID 9F Unspecified DCS B3 Invalid destination number B4 Invalid destination number (invalid number format) C1 Originating number barred C4 Destination number barred F0 Problems with BGC's SMSC FF Unspecified error</p>	
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5. SMS-STATUS-REPORT

Not used

6. SMS – COMMAND

Rejected – Not interpreted