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Sending Content over SMS to Nokia Phones

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Third Party Developer Support

Additional information on the Smart Messaging can be obtained from Forum Nokia website <http://www.forum.nokia.com>.

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1. INTRODUCTION

1.1 Purpose

The syntax for sending content to Nokia mobile phones is defined in [SMSSPEC]. The purposes of this document is to gather together the information needed when sending content to Nokia phones over GSM SMS. This document was originally produced as a technical report during an internal Nokia smart messaging project, and is now made available to help fellow smart messaging developers

1.2 References

- [SMSSPEC] Smart Messaging Specification
Revision 3.0.0 (2000-12-18)
Nokia Mobile Phones Ltd

- [GSM0340] ETSI TS 100 901 V7.2.0 (1999-07)
Digital cellular telecommunications system (Phase 2+);
Technical realisation of the Short Message Service (SMS)
Point-to-Point (PP)
(GSM 03.40 version 7.2.0 Release 1998)
European Telecommunications Standards Institute

- [GSM0338] ETSI TS 100 900 V7.2.0 (1999-07)
Digital cellular telecommunications system (Phase 2+);
Alphabets and language-specific information
(GSM 03.38 version 7.2.0 Release 1998)
European Telecommunications Standards Institute

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2. TYPES OF CONTENT

2.1 Note on Character Sets

Nokia phones use 3 different character sets when handling various types of content in SMS messages.

2.1.1 GSM Default Alphabet (7-bit)

This is defined in [GSM0338]. It contains all the characters needed for English, Finnish, and most other Western European languages. It also contains all the characters needed for upper case Greek, but not for lower-case Greek. It does not contain all the characters needed for e.g. Russian.

2.1.2 ISO 8859-1 (ISO Latin-1) (8-bit)

This holds all the characters needed for English, Finnish and most other Western European languages: all the characters in the GSM Default Alphabet (except the Greek capital letters) and many more. It does not hold characters needed for e.g. Greek or Russian.

2.1.3 Unicode UCS-2 (16-bit)

This holds all the characters needed for all known 'living' languages (and some dead languages, and even e.g. Star Trek's Klingon language).

2.2 Note on GSM SMS Messages

GSM SMS messages contain 140 bytes of 'user data'. Typically, this is used to hold up to 160 GSM 7-bit characters. Alternatively, it can be used to hold up to 70 Unicode characters. Or it can be used to hold 140 bytes of data, for instance for sending ringing tones.

GSM SMS messages can be 'concatenated', so that a longer message can be sent as several SMS messages. In this case, there is an extra 6 bytes of header, and only 134 bytes of 'user data' (153 GSM 7-bit characters, 67 Unicode 16-bit characters, or 134 bytes of data) per SMS message.

2.3 Note on Narrow Band Sockets (NBS)

NBS is the protocol used to send non-text content over SMS. It's similar to (and a precursor to) WAP's WDP protocol. The most important thing to know is that NBS uses concatenated GSM SMS messages (up to 3 concatenated messages in most Nokia phones) and that NBS includes a 'port number' which is really a content type identifier, by which the phone can recognise which kind of content is being sent to it. The SMS user data header contains the NBS port number.

The user data header takes up the first 7 bytes of user data in an SMS message, leaving 133 bytes for content, or 128 bytes for content in each of a group of concatenated SMS messages. The following table shows how much content can be sent per number of concatenated SMS messages:

Content length	Number of concatenated SMS messages
1..133	1
134..256	2
257..384	3
385..512	4

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SMS message concatenation requires support in the GSM network for 8-bit SMS messages. Not all operators' networks yet support this. Networks which do not support 8-bit SMS messages cannot be used to send ringing tones, picture messages, etc. SMS messages containing NBS port number in the user data header are called Smart Messages in this document.

2.4 Text Messages

These are the normal text messages that are familiar to users of GSM phones. All Nokia's GSM, TDMA, CDMA & GSM 1900 phones can receive text messages, but only the GSM, GSM 1900 and newer TDMA models can send text messages.

In GSM, a single text message can hold up to 160 GSM 7-bit characters or up to 70 Unicode characters. However for example Nokia 3310 supports using up to 3 concatenated SMS messages for text (459 GSM 7-bit characters, or 201 Unicode characters).

2.5 Ringing Tones

Ringing tones are sent to the phones as Smart Messages with port number 1581 hex. The syntax for ringing tones specified in [SMSSPEC] allows ringing tones to be made as long as you like, but phones have limits on the lengths of ringing tones they accept, and anyway there's the 3-concatenated-message limit.

In GSM, a ringing tone message fits in one SMS message if the ringing tone's length is up to 133 bytes. It fits in two SMS messages if its length is 134..256 bytes. It fits in three SMS messages if its length is 257..384 bytes.

2.6 Operator Logos

Operator logos are sent to the phones as Smart Messages with port number 1582 hex. The syntax for operator logos specified in [SMSSPEC], using the 'OTA bitmap', allows the bitmap to be of any dimensions (and even animated). However, current phones do not support animated bitmaps, palettes or bitmaps with more than 1 bit per pixel.

The first byte of the bitmap may be 00h or 01h, accommodating two different understandings of the 'number of animated icons' OTA bitmap header field – in both cases, there is no animation, just a single static image.

Operator logo bitmaps are usually 72 pixels wide by 14 pixels high, as this is a suitable size for the phone's display. However, other sizes (at least, smaller ones) are also supported by the phones.

In GSM, an operator logo message always requires two SMS messages (assuming the usual 72x14 bitmap). An operator logo message with e.g. a 64x14 bitmap can be sent in one SMS message.

2.7 CLI icons

CLI (Caller Line Identification) icons (also called 'Caller group graphics') are sent to the phones as Smart Messages with port number 1583 hex. The syntax for CLI icons specified in [SMSSPEC], using the 'OTA bitmap', allows the bitmap to be of any dimensions (and even animated). However, current phones do not support animated bitmaps, palettes or bitmaps with more than 1 bit per pixel.

The first byte of the bitmap may be 00h or 01h, accommodating two different understandings of the 'number of animated icons' OTA bitmap header field – in both cases, there is no animation, just a single static image.

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CLI icon bitmaps are usually 72 pixels wide by 14 pixels high, as this is a suitable size for the phone's display. However, other sizes (at least, smaller ones) are also supported by the phones.

In GSM, a CLI icon message requires only one SMS message (assuming the usual 72x14 bitmap).

2.8 Picture Messages

Picture messages are sent to the phone as 'Multipart Message' messages [SMSSPEC]. Multipart Message messages are sent to the phone as Smart Messages with port number 158A hex. The message is multi-part, with the parts concatenated into a single Smart Message.

Picture messages consist of a picture (Item "02", "<OTA bitmap>") and a text part (Item "00", "<ISO-8859-1-char>*", or Item "01", "<Unicode-char>*"). The text and the picture may be in either order (i.e. text part first, or picture first). Both parts are mandatory.

The syntax for picture messages [SMSSPEC] allows the bitmap to be of any dimensions (and even animated). However, current phones do not support animated bitmaps, palettes or bitmaps with more than 1 bit per pixel.

The first byte of the bitmap must be 00h; i.e. OTA bitmap header field 'number of animated icons' must hold 0, indicating that there is no animation, just a single static image.

Picture message bitmaps are usually 72 pixels wide by 28 pixels high, as this is a suitable size for the phone's display. However, other sizes (at least, smaller ones) are also supported by the phones.

In GSM, a picture message requires at least 3 SMS messages (assuming the usual 72x28 bitmap). In 3 SMS messages, a picture message with a 72x28 bitmap can include a text part up to 121 ISO 8859-1 characters, or up to 60 Unicode characters.

2.9 Downloadable Profiles

Downloadable profiles are sent to the phone as 'Multipart Message' messages [SMSSPEC]. Multipart Message messages are sent to the phone as Smart Messages with port number 158A hex. The message is multi-part, with the parts concatenated into a single Smart Message.

A downloadable profile consists of a name (Item "04", "<Profile-name>"), a 'screen saver' (Item "06", "<Screen-saver>") and a ringing tone (Item "03", "<Ringing-tone-programming-language>"). The three parts may be in any order, and all parts are optional.

The name can be up to 10 Unicode characters. The ringing tone can be a maximum of 300 bytes.

The syntax for screen savers specified [SMSSPEC] allows the bitmap to be of any dimensions (and even animated). However, current phones do not support animated bitmaps, palettes or bitmaps with more than 1 bit per pixel.

The first byte of the bitmap must be 00h; i.e. OTA bitmap header field 'number of animated icons' must hold 0, indicating that there is no animation, just a single static image.

Screen saver bitmaps are usually 72 pixels wide by 28 pixels high, as this is a suitable size for the phone's display. However, other sizes (at least, smaller ones) are also supported by the phones.

Downloadable profile requires at least 3 SMS messages (assuming the usual 72x28 bitmap). In 3 SMS messages, a profile with a 72x28 bitmap and a 10-character name can include a ringing tone up to 98

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bytes long. If the ringing tone is longer, the Downloadable profile will require at least 4 SMS messages. In 4 SMS messages, a profile with a 72x28 bitmap and a 10-character name can include a ringing tone up to 226 bytes long.