netsize
a Gemalto company

Netsize Implementation Guide

SMS Messaging 1.0

28/155 19-FGC 101 0169 Uen Rev E

Legal Information

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Change History

This document is updated periodically to maintain consistency with the software releases.

Revision	Changes from previous release
A	New document.
B	Changed to Netsize template, and remove IPX text.
C	Added usage of correlation ID as external identifier. Added OperatorNetworkCode for DR.
D	Changed campaign name length to 50.
E	Changed originatorTON to optional.

Content

1 Introduction

Netsize provides a service for message delivery, micro payments and location based services. The platform acts as a transparent, white-label content acquirer and transaction router between Service Providers and Operators.

The Service Providers connects to the service using an easily implemented API and Netsize handles all integration with the Operators. The interface is independent of the Consumer's device type. The device can amongst others be a PC, mobile phone or PDA.

Scope of document

This document describes how the Service Provider sends SMS messages via Netsize. It is intended for technical architects and designers who implement the services of the Service Provider.

2 Functional overview

The Netsize system provides the following basic functionality for SMS messages:

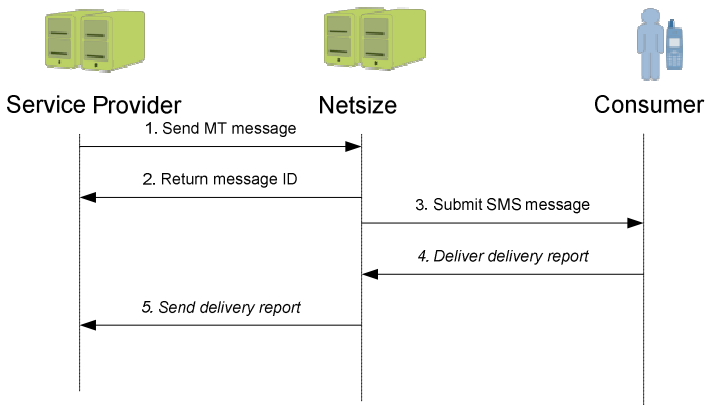
- Sending Mobile Terminated (MT) SMS messages, such as text or binary (e.g. WAP Push) premium and standard rate messages.
- Receiving delivery reports for submitted MT messages.
- Receiving Mobile Originated (MO) SMS messages, premium and standard rate.

The SMS Messaging API is dedicated to sending standard rate MT SMS messages. The API sends all SMS messages asynchronously, enabling features such as:

- "Fire-and-forget" – the Service Provider wants to have more predictable response times and does not want to wait for the result from the Operator.
- Retry functionality – Netsize will resend the message if the Operator has temporary problems.

Further information about receiving MO SMS messages or sending premium MT SMS messages can be found in[i]. A utility SMS API is also available, containing a number of simplified operations for sending SMS messages, e.g. WAP push. More information about these APIs is provided by Netsize support upon request.

2.1 Sending an SMS message



The basic flow for sending SMS messages is described as follows:

1. The Service Provider makes a request to send an SMS message to a recipient via the Netsize system.
2. A message ID is returned to the Service Provider. This ID can be used for e.g. correlate the message with the correct delivery report.
3. Netsize handles routing and delivers the SMS message to the addressed Consumer.

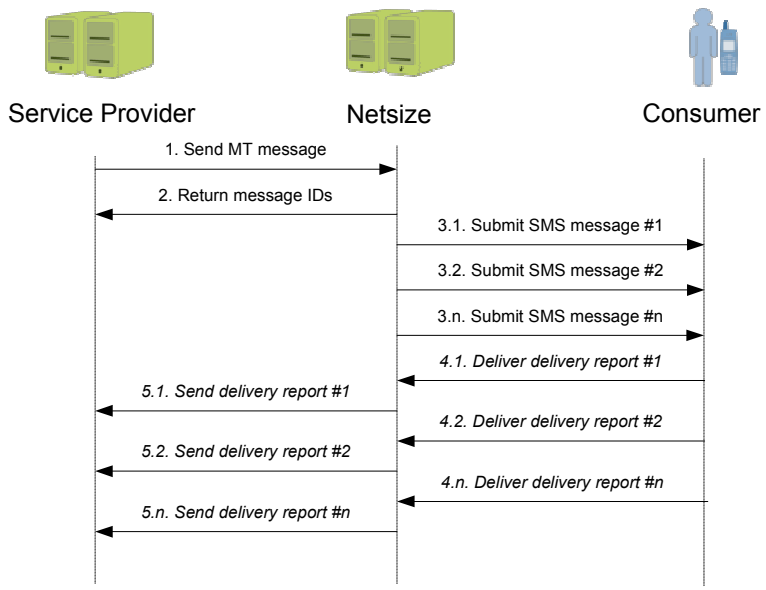
Step 4 and 5 are executed if the Service Provider requested a delivery report in step 1.

4. *A delivery report is triggered, e.g. when the SMS message is delivered to the Consumer's device.*
5. *The delivery report is sent to the Service Provider. The report contains the same message ID as returned in step 2.*

Alternative flow: Invalid request

If the supplied parameters or user credentials in the request (step 1) are invalid an error is returned to the Service Provider. The error indicates the reason for the rejection and the flow ends. No message ID is returned.

2.2 Sending an SMS message to multiple recipients



The Netsize system supports the sending of a standard rate SMS message to multiple recipients in a distribution list. The basic flow is described as follows:

1. The Service Provider makes a request to send a standard rate SMS message to multiple recipients via the Netsize system.
2. The Netsize system validates the SMS message syntax, the recipients and routes each SMS message before returning the message IDs to the Service Provider.
3. Netsize submits one SMS message to each of the addressed Consumers. The Netsize system will try to resend the SMS message when receiving an error response classified as temporary. Netsize will try to resend the SMS message until it has expired or the Netsize maximum retry limit has been reached.

Step 4 and 5 are executed if the Service Provider requested a delivery report in step 1.

4. *A delivery report is triggered, e.g. when the SMS message is delivered to the Consumer's mobile station.*

5. *The delivery report is sent to the Service Provider, containing the same message ID as returned in step* 2*.*

It is highly recommended requesting delivery reports to verify that the Consumers have received their SMS message successfully.

3 Installation

Netsize provides an API exposed as a web service with a SOAP interface[ii]. The SOAP protocol and the Netsize server are independent of the platform used by the Service Provider, although the installation of the SOAP tools could be different. The web service API is described in WSDL[iii].

For those not familiar with web services, Netsize also provides a set of Java classes generated from the web service WSDL description. These classes are provided by Netsize support upon request.

3.1 Interoperability

Even though web services are interoperable across different platforms in theory, it sometimes happens that the server framework and client framework are incompatible. In order to ensure interoperability across platforms, Netsize web services are built and verified according to the recommendations of the Web Services Interoperability Organization, WS-I[iv].

WS-I requires a web service to support UTF-8 and UTF-16 character sets. Netsize supports both, but it is recommended to use UTF-8.

All Netsize web services have been verified on the following platforms:

- Java
- .NET
- PHP
- Perl
- ASP
- Ruby
- Python

3.2 Web service

The web service URL and the location of the WSDL file is provided by Netsize support upon request.

3.3 Security

Sending messages

For authentication, the user ID and password of the Service Provider are submitted in every web service invocation. It is the responsibility of the Service Provider to keep this user ID and password protected.

For connection security, Netsize recommends the usage of HTTPS when accessing the Netsize web services. The Netsize server certificate is signed by Thawte Server CA.

Additionally, it is recommended to use the Netsize firewall for blocking unknown IP addresses from accessing the account of the Service Provider. Contact Netsize support for further information.

Receiving delivery reports

For authentication, it is recommended that the Service Provider uses:

- HTTP basic authentication for access towards their web server.
- A firewall, ensuring that only requests from Netsize are allowed.

For connection security, it is recommended that the Service Provider uses:

- HTTPS for access towards their web server.

HTTPS on the Service Provider premises can be used seamlessly, providing that the certificate of the web server is signed by a root CA certificate included in the list of trusted CA certificates[v].

4 SMS message integration with Netsize

4.1 Sending SMS messages

The Service Provider can send SMS messages to their Consumers via Netsize, using the SMS web service API as described in this chapter.

Implementation examples on how to integrate with Netsize in various programming languages can be found in chapter 5.

4.1.1 Operation comparison

The SMS Messaging API defines two different operations; a send request and a send text request. This subsection gives an overview of the functionality provided by the two operations and high-lights important differences.

The send request is targeted towards more advanced use cases where the Service Provider have total control of the message formatting including the user data header. It supports GSM Default, Unicode and binary Data Coding Schemes. The Service Provider can send concatenated messages but the preparation of the user data and user data header must be made by the Service Provider and the message must be sent by means of multiple send requests towards Netsize.

The send text request assumes that the message text contains characters from the GSM default alphabet including the extension table or Unicode alphabet. The Data Coding Scheme is automatically detected by Netsize by examining the contents of the message text. Automatic concatenation of a message into multiple messages is supported up to a by the Service Provider specified maximum limit. Concatenation might be necessary if the message text length exceeds the max length supported by the Data Coding Scheme used by the message text.

4.1.2 Handling of optional element values

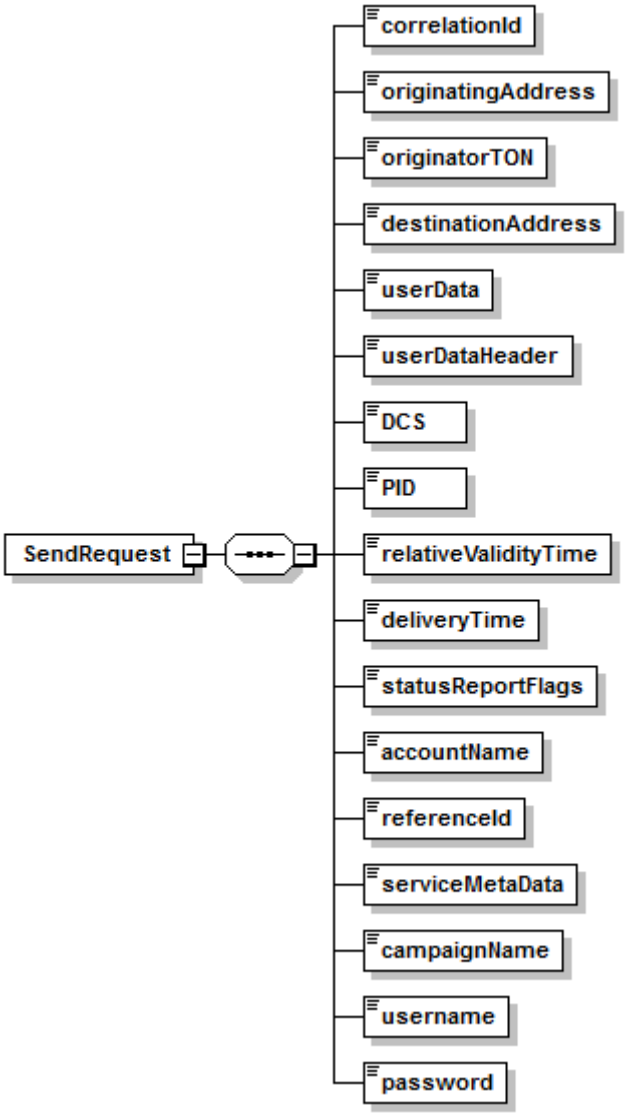
Kindly observe that for interoperability purposes, all XML elements in the requests and responses are mandatory according to the XML definition, i.e. needs to be present. The notation for specifying an optional value is:

- For integer values: *-1*
- For string values: *#NULL#*

It is important to note that values of ignored elements must be set to the values stated in the corresponding comment until the element is supported. This is in order to ensure forward compatibility towards Netsize.

4.2 Send request

The send request element is formatted as follows:



The send request child elements are handled by Netsize as follows:

Element	Type	M/O/I*	Default Value^	Max length	Description
correlationId	String	O	–	100	Correlation ID to keep track of SOAP requests and responses, according to WS-I recommendation. The server echoes the provided value. Additionally, the correlation ID can be used as an external ID since it will be included in DR and stored with the transaction data. Note that restriction regarding allowed characters may apply.
originatingAddress	String	O	System will set	16	The originating address for the

			value if configured and supported.		outgoing SMS message. Type of originating address is defined by the orginatorTON parameter. Short number max length is 16. Alpha numeric sender is limited to GSM default Alphabet with max length 11 characters. MSISDN sender max length is 15 (using same format as the destinationAddress element). Can be set to #NULL# when originatingAddress and originatingTON is selected by the system. This function is market and configuration dependant. For further information, please contact Netsize support. Behaviour may vary with Operator integrations.
originatorTON	Integer	O	System will set value if configured and supported.	1	The originating address' type of number (TON): 0 – Short number 1 – Alpha numeric (max length 11) 2 – MSISDN Can be set to -1 when originatingAddress and originatingTON will be selected by the system. This function is market and configuration dependant. For further information, please contact Netsize support. Behaviour may vary with Operator integrations.
destinationAddress	String	M	–	40(*)	The MSISDN that the SMS message should be sent to, starting with country code. Example: 46762050312. For some markets (where the Consumer MSISDN must be obfuscated) this value can also be an alphanumeric alias, prefixed with"#". Sending SMS message to multiple recipients is supported by providing a distribution list of semi-colon separated MSISDNs (e.g. 46762050312;46762050313). The recipients must be unique within a list and the distribution list is limited

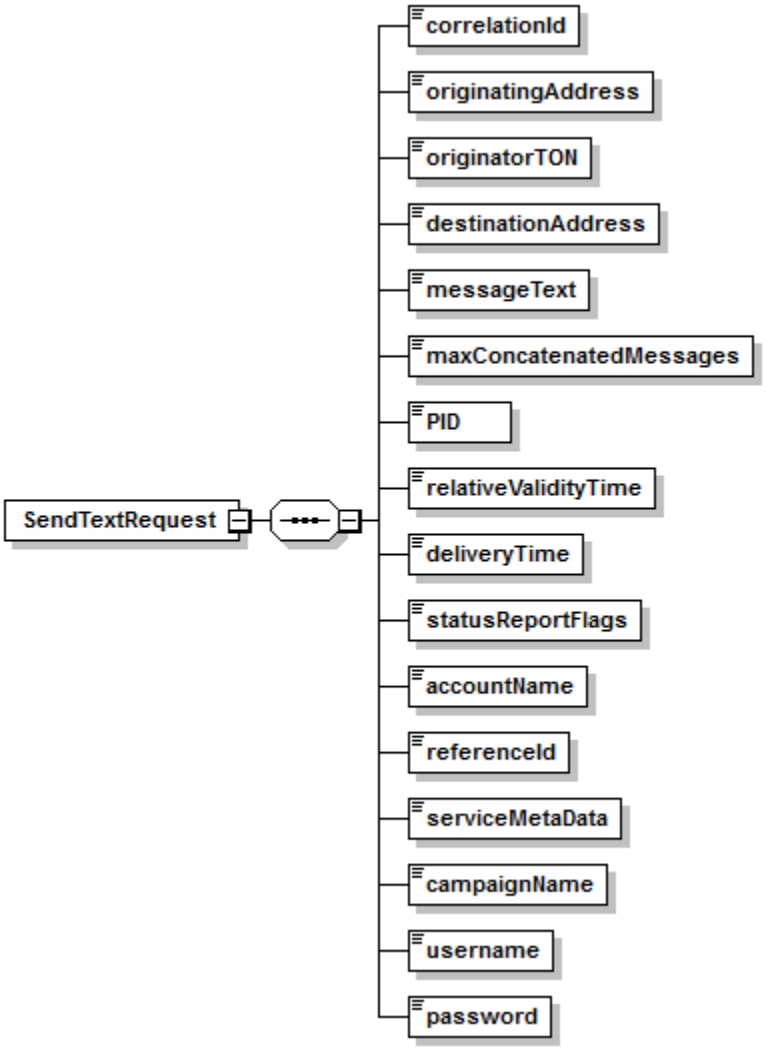
					to 1000 entries. (*) Max length value does not apply for distribution lists.
userData	String	O	Empty message	280	The SMS message content.
userDataHeader	String	O	No user data header	280	User Data Header together with the User Data can contain up to 140, i.e. 280 when hex-encoded, octets. This parameter is always hex-encoded.
DCS	integer	O	17	3	Data coding scheme. Behaviour may vary with Operator integrations.
PID	integer	O	0	3	Protocol ID. Behaviour may vary with Operator integrations.
relativeValidityTime	integer	O	172800 (48 hours)	9	Relative validity time in seconds (relative to the time for the submission to Netsize). Behaviour may vary with Operator integrations.
deliveryTime	String	O	Immediately	25	The SMS message can be delivered with delayed delivery time. Format: yyyy-MM-dd HH:mm:ss Z, example: 2000-01-01 01:01:01 – 0000. Behaviour may vary with Operator integrations.
statusReportFlags	integer	O	0	1	Deliver report request: 0 – No delivery report 1 – Delivery report requested 9 – Server delivery report requested (Netsize do not forward the report to the Service Provider but makes it available in reports etc.)
accountName	String	O	According to account configuration	50	This field allows Netsize to route SMS messages in a flexible manner, which may or may not be Service Provider specific. For normal usage, #NULL# should be supplied. Note: Usage of this field must be provisioned by Netsize.
referenceId	String	O	–	150	For this API usually a message ID of a web opt-in ordering MO SMS message.
serviceMetaData	String	O	No value set	1000	The service meta data. Set to #NULL# if not used or not supported by the

					market. This is market specific information. For further information, please contact Netsize support.
campaignName	String	O	–	50	The Netsize transactions are tagged with this name. It is used to group transactions in Netsize reports. Set to #NULL# if not used.
username	String	M	–	64	The username of the Service Provider, provided by Netsize.
password	String	M	–	64	The password of the Service Provider, provided by Netsize.

* M = Mandatory, O = Optional, I = Ignored.
^ The default value is used if an element value is set to null.

4.3 Send text request

The send request element is formatted as follows:



The Send text request child elements are handled by Netsize as follows:

Element	Type	M/O/I*	Default Value^	Max length	Description
correlationId	String	O	–	100	Correlation ID to keep track of SOAP requests and responses, according to WS-I recommendation. The server echoes the provided value. Additionally, the correlation ID can be used as an external ID since it will be included in DR and stored with the transaction data. Note that restriction regarding allowed characters may apply.

originatingAddress	String	O	System will set value if configured and supported.	16	The originating address for the outgoing SMS message. Type of originating address is defined by the orginatorTON parameter. Short number max length is 16. Alpha numeric sender is limited to GSM default Alphabet with max length 11 characters. MSISDN sender max length is 15 (using same format as the destinationAddress element). Can be set to #NULL# when originatingAddress and originatingTON is selected by the system. This function is market and configuration dependant. For further information, please contact Netsize support. Behaviour may vary with Operator integrations.
originatorTON	Integer	O	System will set value if configured and supported.	1	The originating address' type of number (TON): 0 – Short number 1 – Alpha numeric (max length 11) 2 – MSISDN Can be set to -1 when originatingAddress and originatingTON will be selected by the system. This function is market and configuration dependant. For further information, please contact Netsize support. Behaviour may vary with Operator integrations.
destinationAddress	String	M	–	40(*)	The MSISDN that the SMS message should be sent to, starting with country code. Example: 46762050312. For some markets (where the Consumer MSISDN must be obfuscated) this value can also be an alphanumeric alias, prefixed with"#". Sending SMS message to multiple recipients is supported by providing a distribution list of semi-colon separated MSISDNs (e.g. 46762050312;46762050313). The recipients must be unique within a

					list and the distribution list is limited to 1000 entries. (*) Max length value does not apply for distribution lists.
messageText	String	M	Empty message	39015	The SMS message content. The Data Coding Scheme is auto detected. Supported schemes are GSM 7-bit, or UCS-2.
maxConcatenated Messages	integer	O	3	3	A value between 1 and 255 where the value defines how many concatenated messages that are acceptable. If the number of concatenated messages exceeds this value the request fails.
PID	integer	O	0	3	Protocol ID. Behaviour may vary with Operator integrations.
relativeValidityTime	integer	O	172800 (48 hours)	9	Relative validity time in seconds (relative to the time for the submission to Netsize). Behaviour may vary with Operator integrations.
deliveryTime	String	O	Immediately	25	The SMS message can be delivered with delayed delivery time. Format: yyyy-MM-dd HH:mm:ss Z, example: 2000-01-01 01:01:01 – 0000. Behaviour may vary with Operator integrations.
statusReportFlags	Integer	O	0	1	Deliver report request: 0 – No delivery report 1 – Delivery report requested 9 – Server delivery report requested (Netsize do not forward the report to the Service Provider but makes it available in reports etc.)
accountName	String	O	According to account configuration	50	This field allows Netsize to route SMS messages in a flexible manner, which may or may not be Service Provider specific. For normal usage, #NULL# should be supplied. Note: Usage of this field must be provisioned by Netsize.
referenceId	String	O	–	150	For this API usually a message ID of a web opt-in ordering MO SMS message.

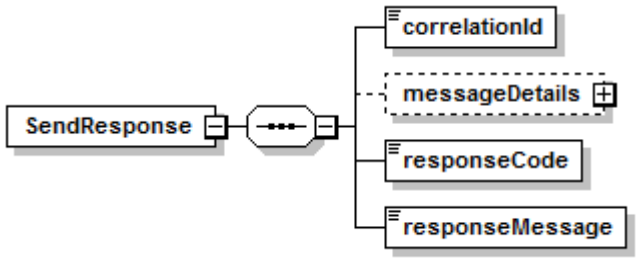
serviceMetaData	String	O	No value set	1000	The service meta data. Set to #NULL# if not used or not supported by the market. This is market specific information. For further information, please contact Netsize support.
campaignName	String	O	–	50	The Netsize transactions are tagged with this name. It is used to group transactions in Netsize reports. Set to #NULL# if not used.
username	String	M	–	64	The username of the Service Provider, provided by Netsize.
password	String	M	–	64	The password of the Service Provider, provided by Netsize.

* M = Mandatory, O = Optional, I = Ignored.

^ The default value is used if an element value is set to null.

4.4 Send response

The send response element is formatted as follows:



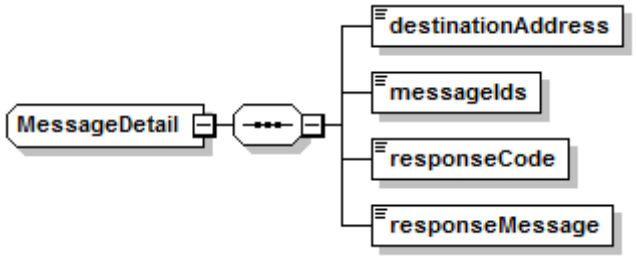
The send response is used for both send request and send text request.

The send response child elements are handled by Netsize as follows:

Element	Type	M/O/I*	Default Value^	Max length	Description
correlationId	string	O	–	100	Echoed request correlation ID.
messageDetails	list of messageDetail	M	–	1000 elements	List of Netsize unique message IDs and response code for successful or partial successful transaction, empty list on failure.
responseCode	integer	M	–	5	Netsize response code 0 indicates successful transaction. Response code 50 indicates partly successful transaction; at least one message was sent to a recipient, see messageDetails for individual response codes per recipient. Any other error code indicates complete failure to send. See separate table for complete list of response codes.
responseMessage	string	M	–	200	Response textual description, e.g. error text.

* M = Mandatory, O = Optional, I = Ignored.

^ The default value is used if an element value is set to null.



The messageDetail child elements are handled by Netsize as follows:

Element	Type	M/O/I*	Default Value^	Max length	Description
destinationAddress	string	M	–	40	Echoed request destinationAddress.
messageIds	string	M	–	5864	Netsize unique message ID for successful transaction, empty string on failure. Several message IDs are returned if the message is concatenated. The message IDs are semi-colon separated. For certain error conditions an empty list is returned.
responseCode	integer	M	–	5	Netsize response code 0 indicates successful transaction. See separate table for complete list of response codes. NOTE: The response code 0 indicates that the message is scheduled for delivery, not that successful delivery has been made.
responseMessage	String	M	–	200	Response textual description, e.g. error text.

* M = Mandatory, O = Optional, I = Ignored.

^ The default value is used if an element value is set to null.

4.5 Response codes

The following response codes can be returned in the send response:

Code	Text	Description
0	Success	Successfully executed.
1	Invalid login or un-authorized API usage	Incorrect username or password or Service Provider is barred by Netsize.
2	Consumer is blocked by Netsize	The Consumer is blocked by Netsize.
3	Operation is not provisioned by Netsize	The operation is blocked for the Service Provider.

4	The consumer is unknown to Netsize	The Consumer is unknown to Netsize. Or if alias was used in the request; alias not found.
5	Consumer has blocked this service in Netsize	The Consumer has blocked this service in Netsize.
6	The originating address is not supported	The originating address is not supported.
7	Alpha originating address not supported by account	The alpha originating address is not supported by account.
8	MSISDN originating address not supported	The MSISDN originating address not supported.
9	GSM extended not supported	GSM extended not supported.
10	Unicode not supported	Unicode not supported.
11	Status report not supported	Status report not supported.
12	Required capability not supported	The required capability (other than the above) for sending the message is not supported.
13	The content provider max throttling rate is exceeded	The Service Provider is sending the SMS messages to Netsize too fast.
14	Protocol ID not supported by account	Protocol ID not supported.
15	Message concatenation limit exceeded	The number of concatenated messages exceeds the max number requested.
16	Unable to route message.	Netsize was unable to route the message.
50	Partial success	Partial success when sending an SMS message to multiple recipients.
99	Internal server error	Other Netsize error, contact Netsize support for more information.
100	Invalid destination address	The destination address (MSISDN, or alias) is invalid.
102	Invalid referenced (linked) ID	The reference ID is invalid, maybe the reference ID is already used, too old or unknown.
103	Invalid account name	The account name is invalid.
105	Invalid service meta data	The service meta data is invalid.
106	Invalid originating address	The originating address is invalid.
107	Invalid alphanumeric originating address	The alphanumeric originating address is invalid.
108	Invalid validity time	The validity time is invalid.
109	Invalid delivery time	The delivery time is invalid.
110	Invalid message content/user data	The user data, i.e. the SMS message, is invalid.

111	Invalid message length	The SMS message length is invalid.
112	Invalid user data header	The user data header is invalid.
113	Invalid data coding scheme	The DCS is invalid.
114	Invalid protocol ID	The PID is invalid.
115	Invalid status report flags	The status report flags are invalid.
116	Invalid TON	The originator TON is invalid.
117	Invalid campaign name	The campaign name is invalid.
120	Invalid limit for maximum number of concatenated messages	The maximum number of concatenated messages is invalid.
121	Invalid msisdn originating address	The MSISDN originating address is invalid.

4.6 Read timeout

Since invocations on the Netsize APIs normally results in Netsize invoking other external systems, such as Operator payment systems and SMSCs, it is recommend that the Service Provider uses a rather high read timeout. A read timeout of 10 minutes for HTTP requests is advised. Using this timeout will handle even the most extensive read time out cases.

4.7 Receiving delivery report

The Service Provider can, if provisioned, request SMS message delivery reports or delivery notifications for the MT messages sent. These reports are triggered in the Operator SMSC when the MT message is either delivered to the targeted Consumer or deleted, e.g. expired or, for some reason, not routable.

Only final status of the SMS message is reported to the Service Provider, i.e. delivered or deleted. Only one report per MT message is generated. With the deleted status, a reason code may apply. This reason code specifies the reason for the SMS message not being delivered.

The reports are routed through Netsize and sent to the Service Provider using the HTTP protocol.

To receive reports, the Service Provider needs to implement for example a Java Servlet or an ASP.NET page. Both of these receive HTTP GET or POST requests.

Parameters

The request includes the following parameters:

Parameter	Type	M/O/I*	Default Value	Max length	Description
MessageId	string	M	–	22	The message ID of the MT message that this report corresponds to.
DestinationAddress	string	M	–	40	The Consumer's MSISDN, i.e. the destination address of the original MT message.
StatusCode	integer	M		1	Status code indicates the status of the MT message.

					Applicable status codes are: 0 – Delivered 2 - Deleted (reason code applies)
TimeStamp	string	M	–	20	Time indicating when the delivery report was received by Netsize. The time zone of the timestamp is CET or CEST (with summer time as defined for the EU). Format: yyyyMMdd HH:mm:ss.
Operator	string	M	–	100	The name of the Operator used when sending the SMS message or the account name used when sending the SMS message. A list of available Operators is provided by Netsize support.
ReasonCode	integer	O	–	3	Reason code indicates why the message ended up in the status deleted. Applicable reason codes are: 100 – Expired 101 – Rejected 102 – Format error 103 – Other error 110 – Subscriber unknown 111 – Subscriber barred 112 – Subscriber not provisioned 113 – Subscriber unavailable 120 – SMSC failure 121 – SMSC congestion 122 – SMSC roaming 130 – Handset error 131 – Handset memory exceeded Behavior may vary with Operator integrations.
OperatorTimeStamp	string	O	–	20	Time indicating when the report was triggered in the SMSC of the Operator (if provided by the Operator). The time zone of the timestamp is CET or CEST (with summer time as defined for the EU). Format: yyyyMMdd HH:mm:ss.

StatusText	string	O	–	255	Placeholder for additional information from the Operator, e.g. clear text description of the status/reason. Behavior may vary with Operator integrations.
CorrelationId	string	O	–	100	The correlation ID provided in the SendRequest or SendTextRequest.
OperatorNetworkCode	integer	O	–	6	The Mobile Network Code (MCC + MNC) of the Operator.

* M = Mandatory, O = Optional, I = Ignored.

The Service Provider has to provide Netsize with the target URL for delivery reports (optionally including credentials for HTTP basic authentication). The Service Provider can choose which preferred HTTP method to use:

- HTTP POST (recommended)
- HTTP GET.

Example using HTTP GET (successfully delivered):

https://user:password@www.serviceprovider.com/receivereport?MessageId=122&DestinationAddress=46762050312&Operator=Vodafone&TimeStamp=20100401%2007%3A47%3A44&StatusCode=0

Example using HTTP GET (not delivered, the Operator has supplied timestamp for the event):

https://user:password@www.serviceprovider.com/receivereport?MessageId=123&DestinationAddress=46762050312&Operator=Vodafone&OperatorTimeStamp=20100401%2007%3A47%3A59&TimeStamp=20100401%2007%3A47%3A51&StatusCode=2&StatusText=Delivery%20failed&ReasonCode=10

The parameters are URL encoded[vi].

Character encoding:

The Service Provider can choose which preferred character encoding to use:

- UTF-8 (recommended)
- ISO-8859-1.

4.8 Service Provider acknowledgement

The Service Provider should acknowledge each delivery report. The acknowledgement can be positive, i.e. delivery report successfully received, or negative, i.e. failure.

Please note: Netsize has a read timeout for acknowledgments of 30 seconds for delivery reports. A timeout will trigger a delivery retry (if retry enabled) or a cancellation of the delivery (if retry disabled). This means that the Service Provider application must ensure quick response times, especially during high load.

It is highly recommended to acknowledge the delivery report towards Netsize before processing it.

The rule for positive and negative acknowledgement is described as follows:

Positive acknowledgement, ACK, delivery report delivered:

HTTP 200 range response code in combination with the following XML formatted content:
<DeliveryResponse ack="true"/>

Negative acknowledgement, NAK, delivery report not delivered:

Any reply other than positive acknowledgement, for example, a negative acknowledgement is triggered by any HTTP error code or the following XML content: *<DeliveryResponse ack="false"/>*

The XML content can be used for controlling the Netsize retry mechanism. A NAK will cause retry attempt, if enabled. For Service Providers not configured for the retry mechanism, the XML content is optional.

Below is an HTTP POST request and response example of a delivery report delivered to a Service Provider:

HTTP Request:

```
POST /context/app HTTP/1.1
Content-Type: application/x-www-form-urlencoded;charset=utf-8
Host: server:port
Content-Length: xx

MessageId=213123213&DestinationAddress=46762050312&Operator=Telia&
OperatorTimeStamp=20130607%2010%3A45%3A00&TimeStamp=20130607%2010%
3A45%3A02&StatusCode=0
```

HTTP Response:

```
HTTP/1.1 200 OK
Content-Type: text/plain

<DeliveryResponse ack="true"/>
```

4.9 Retry

The Netsize system can perform retry attempts for failed, i.e. not acknowledged, delivery report deliveries. The Service Provider can choose the preferred retry behavior:

- **No retry** (default) - the message will be discarded if connection attempt fails, read time-out or for any HTTP error code.
- **Retry** - the message will be resent for every type of connection problem, read time-out, or negative acknowledgement.

When retry for NAK is enabled, it is important to understand which scenarios that will generate a retry attempt from Netsize and how the retry works. Each Service Provider has its own retry queue, where messages are ordered according to the message timestamp. Netsize always tries to deliver older messages first, even though the individual order of messages delivered to the Service Provider is not guaranteed. The main reason for messages being discarded from the retry queue is one of two reasons: either the message TTL expires or (theoretically) the retry queue becomes full. The TTL is Operator and account dependent, i.e. can vary depending on Operator and or message type, e.g. premium SMS or standard rate SMS message.

A Service Providers with retry enabled must check the unique ID of the MT message to secure that the message has not already been received.

It is important for the Service Provider to comply with these simple rules when an error occurs during the processing of a delivery report if the reason for the error is:

1. Temporary, e.g. database not available, an NAK should be returned. Netsize will resend the message.
2. Permanent and a retry attempt are likely to cause the same kind of problem, an ACK should be returned. For example, when the message could not be parsed correctly or caused an unexpected runtime error.

Acting accordingly will ensure that no blocking or throughput degradation is caused due to a delivery report being resent over and over again.

4.10 A comment on SMS message contents

The SMS message content, i.e. the user data parameter, is represented in different alphabets depending on the DCS value. The basics are described in the table below. More information about SMS alphabets can be found in the ETSI specification for SMS[vii].

Alphabet	Example (DCS / User data)	Max length	Description
GSM default alphabet	17 / abc@()/	160	Normal text message using the GSM default alphabet, see chapter 6.1.
GSM extended alphabet	17 / €{}[]\	<160	Text message using the GSM default alphabet and extension table, see chapter 6.2. Since every character from the extension table is represented by two characters the actual maximum length is dynamically calculated as: 160 – k, where k is the number of extended characters used in the message.
UCS2	25 / ©¼ë®	70	Unicode (16 bit), ISO/IEC 10646 character table.
Binary	21 / 42696e61727921	280	8-bit data binary message. Each byte is represented as a hex value using two characters per byte. The maximum message length is 140 bytes, i.e. 280 characters when hex-encoded.

The maximum length of the SMS message decreases as the header length increases when sending SMS messages with user data header specified.

Support for different alphabets may vary with Operator integrations.

Please, note that some characters in the C0 range (control characters in the 0x0000-0x001F interval) cannot be represented in XML due to a limitation in XML 1.0. One of these unsupported characters is <FORM FEED>, which is included in the GSM alphabet extension table. In order to make it possible to send message contents including such characters, e.g. vCards, Netsize supports Unicode escape syntax.

The Netsize Unicode escape syntax is identical to the escape syntax used by the Java Language Specification[viii]. Following the escape characters `\u` with followed by four hexadecimal digits representing the UTF-16 value of the character, `\uxxxx`. Some escape examples:

- \u000a - Line feed
- \u000c - Form feed
- \u000d - Carriage return
- \u2603 – Snowman ☃

5 Implementation examples

SOAP makes the solution independent of the programming language used at the Service Provider client side.

The web service for the SMS Messaging API is very similar to the web service used in the SMS API. The code examples found in the SMS API guide[i] can easily be modified for usage with this API.

6 GSM character tables

6.1 GSM default alphabet table (7-bit)

This table shows the characters that can be displayed on **all** GSM mobile phones.

					b7	0	0	0	0	1	1	1	1
	Binary				b6	0	0	1	1	0	0	1	1
					b5	0	1	0	1	0	1	0	1
				Dec		0	16	32	48	64	80	96	112
b4	b3	b2	b1		Hex	0	10	20	30	40	50	60	70
0	0	0	0	0	0	@	Δ	SP	0	¡	P	¿	p
0	0	0	1	1	1	£	_	!	1	A	Q	a	q
0	0	1	0	2	2	$	Φ	"	2	B	R	b	r
0	0	1	1	3	3	¥	Γ	#	3	C	S	c	s
0	1	0	0	4	4	è	Λ	¤	4	D	T	d	t
0	1	0	1	5	5	é	Ω	%	5	E	U	e	u
0	1	1	0	6	6	ù	Π	&	6	F	V	f	v
0	1	1	1	7	7	ì	Ψ	'	7	G	W	g	w
1	0	0	0	8	8	ò	Σ	(	8	H	X	h	x
1	0	0	1	9	9	Ç	Θ	)	9	I	Y	i	y
1	0	1	0	10	A	LF	Ξ	*	:	J	Z	j	z
1	0	1	1	11	B	Ø	1)	+	;	K	Ä	k	ä
1	1	0	0	12	C	ø	Æ	,	<	L	Ö	l	ö
1	1	0	1	13	D	CR	æ	-	=	M	Ñ	m	ñ
1	1	1	0	14	E	Å	ß	.	>	N	Ü	n	ü
1	1	1	1	15	F	å	É	/	?	O	§	o	à

For example, the letter "A" has the following values:

Number base	Calculation	Value
Decimal	64 + 1	65
Hexadecimal	40 + 1	41
Binary	b1--b7	1000001

1) This code is an escape to an extension of the 7-bit default alphabet.

6.2 GSM default alphabet extension table (7-bit)

This table shows the extended characters to the GSM default alphabet.

					b7	0	0	0	0	1	1	1	1
	Binary				b6	0	0	1	1	0	0	1	1
					b5	0	1	0	1	0	1	0	1
				Dec		0	16	32	48	64	80	96	112
b4	b3	b2	b1		Hex	0	10	20	30	40	50	60	70
0	0	0	0	0	0					|			
0	0	0	1	1	1								
0	0	1	0	2	2								
0	0	1	1	3	3								
0	1	0	0	4	4		^						
0	1	0	1	5	5							€	
0	1	1	0	6	6								
0	1	1	1	7	7								
1	0	0	0	8	8			{					
1	0	0	1	9	9			}					
1	0	1	0	10	A	FF							
1	0	1	1	11	B								
1	1	0	0	12	C				[				
1	1	0	1	13	D				~				
1	1	1	0	14	E				]				
1	1	1	1	15	F			\					

7 Acronyms and abbreviations

All acronyms and abbreviations are listed in the Glossary[ix].

8 References

[i] Netsize Implementation Guide, SMS 5.2, 22/155 19- FGC 101 0169 Uen

[ii] SOAP, http://www.w3.org/TR/SOAP/

[iii] WSDL, http://www.w3.org/TR/wsdl

[iv] WS-I, http://www.ws-i.org/

[v] Netsize Netsize Implementation Guide, Trusted CA Certificates, 11/155 19-FGC 101 0169 Uen

[vi] Uniform Resource Identifiers, http://www.ietf.org/rfc/rfc2396.txt

[vii] ETSI TS 100 900 V7.2.0 (GSM 03.38 version 7.2.0), Alphabets and language-specific information

[viii] Netsize Netsize Implementation Guide Appendix, Charging Notification, 10/155 19-FGC 101 0169 Uen

[ix] Netsize Implementation Guide Appendix, Glossary, 36/155 19-FGC 101 0169 Uen