

# **Mobile Message Account**

## **API Specification**

Version 2.31

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# 1 LINK Mobility API

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This documentation describes the different Mobile Message Account (MMA) APIs of LINK Mobility. With an MMA messages can be received and sent. Currently SMS is supported.

Depending on needs and infrastructure LINK Mobility supports four different protocols:

- UCP – Protocol for SMS. Designed for high volume. Developed by Logica CMG
- SMPP – Protocol for SMS. Designed for high volume. Developed by Logica CMG
- HTTP – HTTP based protocol for SMS
- SMTP – Simple Mail Transfer Protocol

All protocols have a limitation on concurrent parallel connections and messages per second. Configuration of these values has to be negotiated with the sales partner.

Concurrent parallel connections are the amount of possible connections to our system at the same time. If this value is exceeded the connection or message will be rejected.

If a mobile originated message is not collected within one week or not deliverable it will be trashed and billed separately. Once a message leaves our system because it was successfully delivered or collected at an operator or a customer the content of the message will be immediately deleted from our system permanently. Therefore, it is impossible to recover, redeliver or collect a message after it left our system.

A negative response (NACK) to your request has a delay of at least 5 seconds (when using UCP or SMPP). When waiting for a response a timeout of approximately 6 -10 seconds is recommended.

## 1.1 Information about this document

The sign → means transferred to the server (client to server).

→

The sign ← means received from the server (server to client).

←

LM generates a unique message id for every message. This is a number formatted with 8 bytes unsigned and ranging from 0 to 9,223,372,036,854,775,807. Because of compatibility issues for data types of different programming languages the bit 63 is not used.

## 1.2 General information about SMS Messages

Generally, a SMS Message has an originator and a destination. The destination address should be coded in national format, i.e. 00491723456781. The length of the originator address depends on its

type. If an alphanumeric originator is used the maximum length is 11 characters, while on numeric originators the maximum length is 17 digits. We recommend using originator numbers with 16 or less digits. Otherwise the protocols of the operator or the mobile phone itself might prevent the message from being delivered.

### 1.2.1 SMS Notification

It is possible to request a delivery notification message to get notified about the current state of a SMS you sent to mobile terminal.

For a message sent it is possible to receive more than one notification. You will get a notification SMS each time the state of the SMS you sent changes in the SMSC.

State	Meaning
Buffered	The SMS is stored in the SMSC as long as the mobile terminal is turned off or is not reachable. A message will be stored in the SMSC for not more than 7 days before it will be rejected.
Delivered	The mobile terminal received the SMS successfully.
Rejected	It wasn't possible for the SMSC to deliver the SMS.
Indetermined	No status information available.

For a complete list please see appendix.

Not all operators support notification messages. Therefore, we will generate a D-Notification automatically if a specific operator doesn't support notifications.

### 1.2.2 SMS D-Notification

Instead or additional to a normal notification you can request a LINK Mobility specific notification. The so-called D-Notification only has two states. A message can be acknowledged, or it can be not acknowledged by an operator.

A D-Notification will be created by us as soon as the SMSC provides a submit response message for a submitted SMS.

For an illustration about the difference between Notification and D-Notification see appendix.

### 1.2.3 SMS Billing Notification

Billing notifications don't have to be requested. If you request a SMS Notification (not a D-Notification) for a SMS that has to be billed as premium SMS a billing notification will be generated automatically and sent to your account as soon as the billing was processed by our platform.

A billing notification can have two states:

- billing successful
- billing not successful

If the state of the billing notification is "billing not successful", it contains an error code and/or error text in most protocols.

## 1.3 Concatenated SMS

In some protocols provided by LM it is possible to submit single SMS of a concatenated SMS. Because LM does not change the SMS it is important that the UDH of this SMS is coded correctly. An important rule of every operator is that in case of concatenated SMS the reference number in the Information Element for concatenated SMS is increased by 1 after every complete message. Otherwise it is not possible for the receiving mobile to assemble the single SMS parts of the message to a complete message correctly if multiple concatenated SMS from the same originator arrive at the same time.

Example for an Information Element (IE) of an UDH for a concatenated short messages with 8-bit reference number:

IE = 0003ec0201  
 00 = Information Element Identifier for concatenated short messages, 8-bit reference number  
 03 = Length of Information Element Identifier  
 ec0201 = Information Element Data (ec=8 bit reference number,02=total number of segments,01=segment)

In case you have more than one connection to our messaging platform, regardless of the used protocol, you have to make sure that all parts of a concatenated SMS are sent via the same connection.

### 1.3.1 Receiving concatenated SMS

Depending on the used protocol, it is possible to receive concatenated SMS as a Message or as a SMS. In case of a Message the complete body of all SMS parts are merged and the UDH does not contain any Information Element Identifier for concatenated short message.

Protocol	Receiving type
UCP	SMS

SMPP	SMS
HTTP/MM7	SMS or Message
SMTP	Message

### 1.3.2 Mobile message account features

As mentioned earlier you need a Mobile Message Account (MMA) to send and receive SMS over our platform.

For each MMA we offer some useful features.

Feature	Description
Submit Operator and Provider Information	<p>We are able to determine the operator and if one exists the provider of the originator. The information will be delivered to you as part of MO (mobile originated) SMS. It is available for every protocol we support.</p> <p>The way this information is encoded is protocol specific and described in the chapters of the different protocols in this document.</p> <p>The operator will be identified by its NWC (NetWork Code) and a Provider by its LM internal provider id.</p> <p>NWCs and provider ids of the most significant operators and providers can be found in the appendix of this document.</p> <p>If this feature is activated no destination prefix will be sent in MO messages.</p>
Submit Operator SCTS	<p>If this feature is enabled, you will receive an additional timestamp in SMS we send to you. This feature is available for every protocol we support*.</p> <p>For MO SMS the timestamp denotes the point in time when the operator received the message from a mobile phone.</p> <p>For notifications the timestamp refers to the time when the SMS which requested the notification was submitted to the mobile phone.</p>



	<p>The way this information is encoded is protocol specific and described in the chapters of the different protocols in this document.</p> <p>* For UCP this feature is mandatory</p>
High Availability	<p>LM provides high availability with two geo redundant data centers. If this feature is enabled, you have access to our geo redundant secondary data center for high availability. For further information please get in touch with your sales contact.</p>

## 1.4 IP Whitelist

Each of your mobile message accounts (MMA) will be restricted to one or more IP addresses of your choice. You will receive a protocol specific error code if you are using an MMA from an IP address which is not registered for that account. In addition, we are going to whitelist those IP addresses globally. Therefore, you will only be able to establish a connection when your IP address is whitelisted in our system. Otherwise the connection will be dropped silently without any response.

## 1.5 Transport encryption (TLS)

Encryption is an indispensable preventive measure in communication. Above all, this ensures the integrity and binding nature of documents and messages.

In communication with our services, transport encryption offers good basic protection for the creation of information security. We provide Transport Layer Security (TLS) as an encryption protocol. This hybrid protocol is regularly updated. In order to ensure secure communication between our customers and the LINK Mobility we will update the encryption protocols offered by us without prior notice and deactivate encryption protocols considered weak.

## 2 UCP EMI

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### 2.1 What is UCP EMI?

UCP EMI was developed by CMG, which is a supplier of SMSCs. Many mobile network operators worldwide support the UCP EMI protocol.

LINK Mobility offers this protocol to clients for a standardized connection to their SMSC. LINK Mobility does not support all operation types of UCP EMI 4.0. These limitations are described in this document.

The SMS message is encoded using the GSM 7 bit alphabet. A complete list of the alphabet is listed in chapter [5.12](#).

In UCP numeric originator or recipient must not exceed 16 digits.

### 2.2 The Connection Phase

Connect by TCP/IP and SSL to “HAM.UCP.API.LINKMOBILITY.DE” port 6003. See [5.6](#) for an example. It is required that the user’s IP is enabled in our firewall. Once a connection is established one can continue with the authentication phase (OT 60).

For security reasons connections via UCP EMI are limited to 15 per second.

Please note: If the connection is lost please wait 30 seconds before attempting to reconnect! The connection will be closed automatically after 5 minutes of inactivity. To avoid this OT31 Messages (ping) need to be sent.

#### 2.2.1 UCP Server connection information

LM provides high availability with two geo redundant data centers. The service on the primary data center is accessible under the following URL:

Submission Type	URL (primary data center)
SMS messages via UCP (SSL)	ham.ucp.api.linkmobility.de:6003

The service running on the secondary data center is accessible under the following URL (a specific account is needed to use our secondary datacenter):

Submission Type	URL (secondary data center)
SMS message via UCP (SSL)	fra.ucp.api.linkmobility.de:6003

The user's system can switch to the secondary data center if the primary data center is not reachable and must switch back if the primary data center is available again.

## 2.3 UCP EMI Aberrations

### 2.3.1 Supported operation types

Operation Type	Client → Server	Server → Client
01	-	-
02	-	-
03	-	-
30	-	-
31	X	-
51*	X	-
52	-	X
53	-	X
54	-	-
55	-	-
56	-	-
57	-	-
58	-	-
60*	X	-
61	-	-

\* Please see the following comments on this operation type

### 2.3.2 Aberration on operation type 51

All field types are supported as described in the EMI 4.0 documentation except for the XSER Field. Only the following types are fully supported:

- Service Type 01
- Service Type 02

### 2.3.3 Aberration on operation type 53

All field types are supported as described in the EMI 4.0 documentation. Additionally, there is an “rsn” field for the error number.

The error number 255 denotes an unknown error in the message. This error has been detected by a deeper backend instance. Due to the limitation of 255 error messages in the rsn field it is not possible to explain it more detailed. Please contact the customer support for further information.

For additional information see chapter [6.6.1](#).

A billing notification response can be separated from a normal notification response by reading the “rsn” field.

As default the UCP DST (Deliver Status) field in an UCP delivery notification operation will be set to 1 (buffered). A billing notification with state “billing successful” will have rsn 230 (Billing Ok) and dst 1, a billing notification with state “billing not successful” will also have dst 1 but different rsn code.

Please ask your sales contact if you wish to customize the DST for billing successful and/or billing not successful.

List of delivery notification rsn codes:

Code	Description
0	OK
1	Service temporary not available
2	Service temporary not available
3	Service temporary not available
4	Service temporary not available
5	Service temporary not available

6	Service temporary not available
7	Service temporary not available
8	Service temporary not available
9	Illegal error code
10	Network time-out
100	Facility not supported
101	Unknown subscriber
102	Facility not provided
103	Call barred
104	Operation barred
105	SC congestion
106	Facility not supported
107	Absent subscriber
108	Delivery fail
109	Sc congestion
110	Protocol error
111	MS not equipped
112	Unknown SC
113	SC congestion
114	Illegal MS
115	MS not a subscriber

116	Error in MS
117	SMS lower layer not provisioned
118	System fail
119	PLMN system failure
120	HLR system failure
121	VLR system failure
122	Previous VLR system failure
123	Controlling MSC system failure
124	VMSC system failure
125	EIR system failure
126	System failure
127	Unexpected data value
128	Insufficient credit in a prepaid case
129	Number is blacklisted
200	Error in address service centre
201	Invalid absolute validity period
202	Short message exceeds maximum
203	Unable to unpack GSM message
204	Unable to convert to IA5 ALPHABET
205	Invalid validity period format
206	Invalid destination address

207	Duplicate message submit
208	Invalid message type indicator
220	Message validity period has expired
221	Message has been deleted
222	Message is undeliverable
223	Message is in accepted state
224	Message state is unknown
225	Message was rejected
230	Billing ok
231	Timeout while delivering content
232	MS not enabled for billing
233	Billing Transaction unknown at operator
234	Billing Transaction timed out at operator
235	Operator cannot process billing
236	Configuration problem
237	Billing mode not allowed
238	Missing parameters
255	Error not in possible error number range. Contact support

#### 2.3.4 Aberration on operation type 60

An OadC is needed for logging in with UCP 60. According to the documentation only numerical strings can be used. Our system will also accept an alphanumeric string which is not encoded into IA5 characters.

If your system requires a numerical string please contact our support team.

### 2.3.5 Timestamp formats

If you like to set a timestamp value (as validity period for example) you need to format your timestamp as follows.

Field	Format	Example
DDT	DDMMYYhhmm	211220061600 -> 21.12.2006 16:00
VP	DDMMYYhhmm	211220061600 -> 21.12.2006 16:00
SCTS	DDMMYYhhmmss	21122006160031 -> 21.12.2006 16:00:31
DSCTS	DDMMYYhhmmss	21122006160031 -> 21.12.2006 16:00:31

### 2.3.6 Time zones

If you submit a SMS to us, you need to consider the time zone of your Mobile Message Account (MMA). If your MMA is configured to use the time zone "Europe/Berlin" you have to send us all timestamps in this time zone as well as we will send timestamps in this time zone to you except the SCTS field. The SCTS (Service Center TimeStamp) is always in UTC time because UCP forces the usage of UTC timestamps for the SCTS.

### 2.3.7 Error codes

In case of an error occurring during client to server communication an error code will be returned as specified in the EMI 4.0 documentation.

Because not all specified error codes are used by LINK Mobility a list of possible error codes is shown below.

Code	Description
01	Checksum error
02	Syntax error
03	Operation not supported by system
04	Billing not successful
07	Authentication failure (General authentication failure occurred, maximum number of sessions has exceeded, or IP is not registered)



## 2.4 Originators Operator and Provider Information

Information about the Network Operator and Provider of an originator can be found in the XSER Fields with Service Type 0xF0 (Operator NWC) and 0xF1 (Provider ID), if this feature is activated for your MMA account. The NWC (NetWork Code) identifies the Operator Network of the originator and consists of two parts, the MCC (Mobile Country Code) and the MNC (Mobile Network Code). The first three digits are the MCC and the following digits are the MNC. If no MNC can be found, only the three digits of the MCC will be submitted. The NWC 000 indicates an unspecified Network.

The XSER field has the following syntax for the Operator NWC:

F0	05	3236323032
TOS	Length of NWC String	NWC encoded in ia5 characters → 26202

The Provider ID is a LM internal identifier for the Mobile Service Provider (e.g. 2 for Mobilcom Germany) of the originator. See appendix for a list of all provider IDs.

The XSER field for the Provider ID has the following syntax:

F1	01	02
TOS	Length of Provider ID	Provider ID → 2

## 3 HTTP

---

It is possible to send and receive several messages types via the LM HTTP protocol. In this documentation it is described how to send SMS. The user can use POST and GET requests for SMS.

The encoding for SMS messages is ISO-8859-15.

Examples can be downloaded at <https://www.linkmobility.de/>.

### 3.1 Security issues

We are protecting our system against different types of attacks. Therefore, your request may get blocked by our server if one the following conditions is met.

Condition	Outcome
-----------	---------

100 HTTP/S requests per second from same IP address	<p>Either the connection will not be accepted by our server or your request is answered with HTTP status code 503. If the connection was not accepted the client will run into a connection timeout.</p> <p>In case of HTTP status code 503 each further request will be blocked the next 30 seconds.</p>
10 erroneous HTTP/S requests within 5 seconds from same IP address	<p>Your request is answered with HTTP status code 503 and all further requests will be blocked the next 30 seconds.</p> <p>A request is erroneous if our server is not able to process the request correctly due to missing fields or invalid syntax et cetera.</p>

### 3.2 Account throughput

If the HTTP requests comes in without taking your MMA limitation, the excess part of the requests will be rejected with error code -7 ("Account has no more connections left").

In this case please check again your MMA limitation (please note your account speed) to ensure message delivery free of errors.

### 3.3 General syntax and fields

All requests can be sent via HTTPS. LM provides high availability with two geo redundant data centers. The service on the primary data center is accessible under the following URLs:

Submission Type	URLs (primary data center)
SMS message via HTTPS	<a href="https://ham.http.api.linkmobility.de:7011/sendsms">https://ham.http.api.linkmobility.de:7011/sendsms</a>
SMS message via HTTPS with certificated MMA	<a href="https://ham.http.api.linkmobility.de/sendsms">https://ham.http.api.linkmobility.de/sendsms</a>

The service running on the secondary data center is accessible under these URLs (a special contract is needed to use our secondary datacenter):

Submission Type	URLs (secondary data center)
SMS message via HTTPS	https://fra.http.api.linkmobility.de:7011/sendsms
SMS message via HTTPS with certificated MMA	https://fra.http.api.linkmobility.de/sendsms

The user's system can switch to the secondary data center if the primary data center is not reachable and must switch back if the primary data center is available again.

All requests require an authentication. Therefore the following fields are mandatory for all requests for SMS, except sending with certificated MMA (in this case the fields are obsolete, certificates will be created by LM and sent to):

Field	Description	Mandatory	Default
user	Username provided by LM	Y	-
password	Password provided by LM	Y	-

The password must be sent via HTTP basic authentication.

### 3.3.1 General information about receiving messages

LINK Mobility uses the HTTP/1.1-standard. When receiving mobile originated messages or notifications please ensure to send "Connection: close" in the HTTP header of your response to close the connection. Otherwise we will keep the connection opened.

### 3.3.2 URI-Encoding

An URI has reserved characters which have special purposes. If you want to use these characters without special purpose you need to encode the URI (RFC3986 Section 2).

Encoding is done by replacing the character with a percent character "%" followed by the two hexadecimal digits assigned to the character in ASCII codepage.

Please make sure to follow the rules denoted in RFC 3986.

#### 3.3.2.1 URI-Encoding Example

The space character in the right example has been encoded and replaced by "%20".

Wrong:

`https://ham.http.api.linkmobility.de:7011/sendsms?user=foo&password=bar&from=12345&to=00491727149812&body=Hello World`

Right:

`https://ham.http.api.linkmobility.de:7011/sendsms?user=foo&password=bar&from=12345&to=00491727149812&body=Hello%20World`

### 3.4 Text and binary messages

#### 3.4.1 Sending SMS messages

The user can send SMS messages without the 160 character limitation. The message should be in the “body” field. The system will divide the message into proper parts.

##### 3.4.1.1 Fields

Field	Description	Mandatory	Default
from	Originator of the SMS, alphanumerical max. 11 characters / numerical max. 17 digits	Y	-
to	Destination of the SMS. In national format. Must start with 00.	Y	-
body	Message Body. If the body contains binary data it has to be converted into IA5 characters. In notifications delivered via HTTP the body parameter contains the deliver status. (For a list of delivery status see: 6.4)	Y	-
udh	UDH in IA5 characters	N	-
dcs	Defines the DCS e.g. for Nokia-Logos this field to F8	N	00
ddt	This is the “delivery time” for the message (if the operator supports this feature) yyyy-mm-dd hh:mm:ss	N	Operator setting

vp	This is the “valid period” for this message (if the operator supports this feature) yyyy-mm-dd hh:mm:ss	N	
from_ton	Originator type of number: 0=unknown 1=international 2=national 3=shortcode 5=alphanumeric	N	Self detect
to_ton	Destination type of number: 0=unknown 1=international 2=national 3=shortcode 5=alphanumeric	N	Self detect
not	Set this field to “1” if a delivery notification is required. WARNING: A configured HTTPS server is needed.	N	0
opnot	Set this field to “1” if an operator delivery notification is required. This means that a notification will be received once the operator acknowledges the SMS. WARNING: A configured HTTPS server is needed.	N	0
cost_center	The cost_center will be added to the accounting information. The statement of account is grouped by this identifier. The length of this field is restricted to a maximum of 64 characters. Make sure to use the same cost_center for all parts of a concatenated SMS. This feature is only available on request.	N	-

### 3.4.1.2 Result Codes

After the submission the user receives a result code. The content holds additional information elements. Each element has the following structure:

```
{field_name}={value}<CR><LF>
```

HTTP Status	Content	Description																				
200	id={numeric}	Message has been accepted successfully. The number is the message ID																				
200	status=Message accepted. Waiting for next part	<p>In case of concatenated SMS GHANDI waits for all parts.</p> <p>After all parts are received, it acknowledges this with the ID.</p>																				
4xx	Errortext={alphanumeric} Errorcode={numeric} <table border="1" data-bbox="408 992 1104 1823"> <thead> <tr> <th data-bbox="408 992 593 1070">errorcode</th> <th data-bbox="593 992 1104 1070">errortext</th> </tr> </thead> <tbody> <tr> <td data-bbox="408 1070 593 1149">-800</td> <td data-bbox="593 1070 1104 1149">Not enough credit on account</td> </tr> <tr> <td data-bbox="408 1149 593 1227">-200</td> <td data-bbox="593 1149 1104 1227">Message cannot be processed *</td> </tr> <tr> <td data-bbox="408 1227 593 1305">-100</td> <td data-bbox="593 1227 1104 1305">Fields are missing</td> </tr> <tr> <td data-bbox="408 1305 593 1384">-101</td> <td data-bbox="593 1305 1104 1384">Field Parameters are wrong</td> </tr> <tr> <td data-bbox="408 1384 593 1462">-1</td> <td data-bbox="593 1384 1104 1462">Authentication failure</td> </tr> <tr> <td data-bbox="408 1462 593 1541">-7</td> <td data-bbox="593 1462 1104 1541">Account has no more connections left</td> </tr> <tr> <td data-bbox="408 1541 593 1619">-10</td> <td data-bbox="593 1541 1104 1619">IP address is not registered</td> </tr> <tr> <td data-bbox="408 1619 593 1697">-11</td> <td data-bbox="593 1619 1104 1697">Account is not allowed to send SMS</td> </tr> <tr> <td data-bbox="408 1697 593 1823">-12</td> <td data-bbox="593 1697 1104 1823">Account is not allowed to use this protocol</td> </tr> </tbody> </table>	errorcode	errortext	-800	Not enough credit on account	-200	Message cannot be processed *	-100	Fields are missing	-101	Field Parameters are wrong	-1	Authentication failure	-7	Account has no more connections left	-10	IP address is not registered	-11	Account is not allowed to send SMS	-12	Account is not allowed to use this protocol	Message has not been accepted.
errorcode	errortext																					
-800	Not enough credit on account																					
-200	Message cannot be processed *																					
-100	Fields are missing																					
-101	Field Parameters are wrong																					
-1	Authentication failure																					
-7	Account has no more connections left																					
-10	IP address is not registered																					
-11	Account is not allowed to send SMS																					
-12	Account is not allowed to use this protocol																					





### 3.4.2.1 Request fields

Field	Description	Mandatory
id	Message ID	Y
from	Originator of the SMS	Y
to	Destination of the SMS. A short number is also possible	Y
body	Message body. If the body contains binary data, it is converted into IA5 characters. For notifications the body looks like described in chapter <a href="#">6.6.1</a>	Y
udh	UDH in IA5 characters	N

dcs	Data Coding Scheme. For example "F5" (binary SMS) or "08" (Unicode SMS)	N
from_ton	Originator type of number: 0=unknown 1=international 2=national 3=short code 5=alphanumeric	N
to_ton	Destination type of number: 0=unknown 1=international 2=national 3=short code 5=alphanumeric	N
not	If this field has the value "1" the received message is a delivery notification	N
original_id	In case of delivery notifications this field shows the related ID of the original message.	N

scts	<p>In case of delivery notifications, this field contains the date when the message was delivered.</p> <p>For non notification messages this field contains the date, the message was send by the mobile phone or, if not available, submitted from the operator to us.</p> <p>The SCTS (Service Center TimeStamp) is in UTC time.</p> <p>yyyy-mm-dd hh:mm:ss</p>	N
org_operator_nwc	<p>Only for non notification messages:</p> <p>Identifies the Operator Network of the originator.</p> <p>The NWC (NetWork Code) consists of two parts, the MCC (Mobile Country Code) and the MNC (Mobile Network Code).</p> <p>The first three digits are the MCC and the following digits are the MNC. If no MNC can be found only the three digits of the MCC will be submitted. The NWC 000 indicates an unspecified Network.</p>	N
org_provider_id	<p>Only for non notification messages:</p> <p>LM internal identifier for the Mobile Service Provider (e.g. 2 for Mobilcom Germany) of the originator.</p> <p>See appendix for a list of all provider IDs.</p>	N
op_rsn	<p>Operator reason code, translated by LM.</p> <p>See appendix for a list of all LM reason codes (chapter “<a href="#">5.4</a>”).</p>	N
op_dst	<p>Operator delivery status.</p> <p>See appendix for a list of all delivery status (chapter “<a href="#">5.5</a>”).</p>	N
sms_block_seq	Current number of concat sms (1/3) → 1	N
sms_block_max	Total number of concat sms (1/3) → 3	N
operator_nwc	<p>Only in case of notifications – this field contains the NWC of the operator that has been used for message submission. This field has to be configured as active in the account.</p>	N

Additional parameter such as “password” or “user” can be added on request as well as most fields can be renamed to field names of the user’s choice.

### 3.4.2.2 Response

LINK Mobility will attempt to send the request until the user’s server responds with the HTTP status code 200. It is possible to define other status codes as well as regular expressions for indicating a successful transmission of the request.

Your server needs to respond within 20 seconds. Otherwise our system will stop the request and will reattempt to send the message after one minute.

### 3.4.2.3 Example for receiving MO SMS as HTTP GET/POST request

If the messaging account to which the message was delivered is configured to send this SMS as GET request to the address: <https://customerserver:8443/mywebapp> the request would look like this:

```
GET /mywebapp?body=This+is+a+test+message&to=123&from=123&id=246124
HTTP/1.1
User-Agent: Jakarta Commons-HttpClient/2.0final
Host: customerserver:8443
Content-Length: 53
Content-Type: application/x-www-form-urlencoded

body=This+is+a+test+message&to=123&from=123&id=246125
```

### 3.4.3 Receiving MO messages by HTTP polling

The user's system can send HTTP GET or POST requests to poll the MO SMS text messages, SMS binary and SMS delivery notifications. The amount of returned messages is limited to 100 per request. The messages are returned in the response body in csv format ([See chapter 3.4.3.3](#)).

Please note: to use this feature it must be enabled for your MMA account! Please contact our support team for activating HTTP polling feature.

All requests require an authentication. You can either use a SSL certificated account ([See chapter 3.5.1.1](#)) or your username and password must be sent via HTTP basic access authentication.

The username and password must be encoded as a sequence of base-64 characters. For example, the username and password must be combined of username:password - which is equivalent to dXNlcm5hbWU6cGFzc3dvcmQ= when encoded in base-64.

Alternatively, the user can deliver his username and password parameters in the request URL (deprecated):

Field	Description	Mandatory	Default
username	Username provided by LM	conditional*	-
password	Password provided by LM	conditional*	-

\* Only for non SSL certificated accounts

The timeouts for the connection should be configured at least with 120 seconds.

LM provides high availability with two geo redundant data centers. The service on the primary data center is accessible under the following URLs:

Transmission type	URLs (primary data center)
Receive SMS messages via HTTPS	<a href="https://ham.http.api.linkmobility.de:7011/pollOperation">https://ham.http.api.linkmobility.de:7011/pollOperation</a>
Receive SMS messages via HTTPS with SSL certificated account	<a href="https://ham.http.api.linkmobility.de/pollOperation">https://ham.http.api.linkmobility.de/pollOperation</a>

The service running on the secondary data center is accessible under these URLs (accessing the secondary datacenter requires a special account):

Transmission type	URLs (secondary data center)
Receive SMS messages via HTTPS	<a href="https://fra.http.api.linkmobility.de:7011/pollOperation">https://fra.http.api.linkmobility.de:7011/pollOperation</a>
Receive SMS messages via HTTPS with SSL certificated account	<a href="https://fra.http.api.linkmobility.de/pollOperation">https://fra.http.api.linkmobility.de/pollOperation</a>

The user's system can switch to the secondary data center if the primary data center is not reachable and must switch back if the primary data center is available again.

If the user has a high availability MMA contract the pollOperation request returns messages from both data centers. Otherwise a request returns only messages from the requested data center.

### 3.4.3.1 Request fields

Field	Description	Mandatory
Operation	Fixed String getSMS	Y

### 3.4.3.2 Response codes

After sending the request the user receives a response code. If the request was successfully processed, the status code 200 or 201 will be returned. In this case the response body contains the messages in csv format ([see chapter 3.4.3.3](#)).

HTTP Status	Description
200	Request ok. No more messages existing. It is recommend waiting at least 2 minutes before sending again a new polling request.
201	Request ok. More messages existing. Another polling request can be sent immediately.
208	Request partially ok. Insufficient credit available. The response body may contain messages. Please contact LM and charge your account.
209	Request partially ok. Checkout failed. The response body may contain messages. It is recommended to wait at least 2 minutes before sending again a new polling request.
400	Bad request. Missing parameters / unknown operation. Further information in the response body.
401	Unauthorized. Further information in the response body.
503	Service unavailable. Try again later. Further information may be placed in the response body
500	Internal Server error occurred.

### 3.4.3.3 Messages in the response body

The response body holds the messages in csv format. The response body is encoded in ISO 8859-15. The response body is empty if no messages exists.

Every message is separated by <CR><LF>. Every data field of one message is enclosed by a quotation mark (") and separated by a semicolon (;).

A message is represented by the following fields (respect the order):

```
"<id>";"<form>";"<to>";"<body>";"<udh>";"<dcs>";"<from_ton>";"<to_ton>";"<not>";"<original_id>"
;"<org_operator_nwc>";"<org_provider_id>";"<scts>";"<billing_mode>";"<billing_transaction_id>"
```

If a value is not available, the data field is empty.

Column	Data field	Description	Mandatory
1	id	Message ID	Y
2	from	Originator of the SMS	Y
3	to	Destination of the SMS. A short number is also possible	Y
4	body	Message body. If the body contains binary data, it is converted into IA5 characters. For notifications the body looks like described in chapter 6.6.1	Y
5	udh	UDH in IA5 characters	N
6	dcs	Data Coding Scheme. For example "F5" (binary SMS) or "08" (Unicode SMS)	N
7	from_ton	Originator type of number: 0=unknown 1=international 2=national 3=short code 5=alphanumeric	N
8	to_ton	Destination type of number: 0=unknown 1=international 2=national 3=short code 5=alphanumeric	N
9	not	If this field has the value "1" the received message is a delivery notification	N
10	original_id	In case of delivery notifications this field shows the related ID of the original message.	N
11	org_operator_nwc	Only for non notification messages: Identifies the Operator Network of the originator.	N

		<p>The NWC (Network Code) consists of two parts, the MCC (Mobile Country Code) and the MNC (Mobile Network Code).</p> <p>The first three digits are the MCC and the following digits are the MNC. If no MNC can be found, only the three digits of the MCC will be submitted. The NWC 000 indicates an unspecified Network.</p>	
12	org_provider_id	<p>Only for non notification messages:</p> <p>LM internal identifier for the Mobile Service Provider (e.g. 2 for Mobilcom Germany) of the originator.</p> <p>See appendix for a list of all provider IDs.</p>	N
13	scts	<p>In case of delivery notifications, this field contains the date when the message was delivered.</p> <p>For non notification messages, this field contains the date, when the message was sent by the mobile phone or, if not available, submitted from the operator to us.</p> <p>The SCTS (Service Center TimeStamp) is in UTC time.</p> <p>yyyy-mm-dd hh:mm:ss</p>	N

### 3.4.3.4 Request examples

Get request:

```
GET /pollOperation?operation=getSMS HTTP/1.1
Authorization: Basic dXNlcm5hbWU6cGFzc3dvcmQ=
Host: https://ham.http.api.linkmobility.de:7011
```

Post request:

```
POST /pollOperation HTTP/1.1
Authorization: Basic dXNlcm5hbWU6cGFzc3dvcmQ=
Host: https://ham.http.api.linkmobility.de:7011
Content-Type: application/X-www-form-urlencoded
Content-Length: 18
```

```
operation=getSMS
HTTP/1.1 200 OK
Content-Type: text/plain; charset=ISO-8859-15
Content-Length: 173
```

```
"246127";"00491727149812";"12345";"This is the message text";",,,"
"246174";"00491714728564";"12345";"Hello World";",,,"
"246225";"00491533426583";"12345";"Msg Text";",,,"
```



## 3.5 SSL Authentication

LINK Mobility supports client and server SSL authentication for HTTPS.

### 3.5.1 Server authentication

The purpose of server authentication is to avoid that the client is working with a wrong and maybe harmful host. During the process of accepting a connection the server is sending his SSL certificate to the client the client must trust the certificate to build up the connection. If the certificate is rejected the connection cannot be established.

Server authentication is default when using our HTTPS Server for sending SMS.

The URL to be used for submitting messages via HTTPS is denoted in [chapter 3.3](#).

#### 3.5.1.1 Client authentication - certificated MMA

In order to use client ssl authentication both client and server need information about the certificate used by the client. While connecting, the client will submit his certificate and the server will evaluate it against the client certificates it is aware of. Only if the certificate submitted by the client is known by the server the connection will be accepted. With a certificated MMA it is not possible to login with username and password anymore.

If you intend to use SSL client authentication you need to provide at least one public key certificate (.cer, .pem, .crt) which has to be valid. You can provide more than one certificate to make sure that it is possible to continue sending messages even if one of your certificates expires.

Please note that in case of sending SMS via certificated MMA the fields user and password are obsolete.

Should you wish to use this feature for with more than one MMA it is necessary to provide different certificates for each MMA.

The URL to be used for submitting messages with a certificated account is denoted in [chapter 3.3](#).

## 4 SMTP

---

The LINK Mobility messaging platform provides SMTP (Simple Mail Transport Protocol) for sending and receiving SMS. It is possible to use this interface with any mail client compliant with RFC 821 like MS Outlook or Java Mail API based email clients.

#### 4.1.1 Connecting to the LINK Mobility SMTP Server

##### 4.1.2 SMTP Server connection information

Connect by TCP/IP and SSL to “HAM.SMTP..API.LINKMOBILITY.DE” port 8002. It is required that the user’s IP is enabled in our firewall.

The email client needs to be configured to connect to the following host and port:

Submission Type	URL
SMS messages via SMTP (SSL)	ham.smtp.api.linkmobility.de:8002

For security reasons it is only possible to establish 10 connections per second via SMTP.

##### 4.1.3 Authentication

In order to send emails to our SMTP server the username and password provided by LINK Mobility are required. Users can authenticate themselves by using the “mail from” element of the SMTP envelope or by using SMTP Auth.

As LINK Mobility validates the sender of a message by the IP of the connection to our server a specific IP address has been used to get authenticated.

###### 4.1.3.1 Authentication via “mail from” element

Users have to send an email from an email address consisting of their password and username. The password is the local part (prefix) of the email address and the email address domain part is the username:

password@username

Some email clients force the user to define an email address that contains a top-level domain (e.g.: .com). Therefore any top-level domain can be added to the username in the email address (the top-level domain will be ignored):

password@username.com

###### 4.1.3.2 Authentication with SMTP Auth

If the email client supports SMTP authentication with PLAIN, LOGIN and CRAM-MD5 as login mechanisms, it can also be used for authentication. For more details on SMTP Auth see RFC 2554.

PLAIN

If the client sends AUTH PLAIN the server will reply with the response code 334. The server is waiting for a Base64 encoded string containing the username and password. The syntax for this is:

```
← 220 LINK Mobility SMTP Server on ham.smtp.api.linkmobility.de
→ helo company.de
← 250 ham.smtp.api.linkmobility.de
→ AUTH PLAIN
← 334 Ok
→ dXNlcm5hbWUAcGFzc3dvcmQA
← 235 Authentication successful
```

<NUL> means the NUL character (0x00)

#### LOGIN

If the client sends AUTH LOGIN the server will reply “334 VXNlcm5hbWU6” (334 Username: [in Base64]). The server is waiting for a Base64 encoded string containing the Base64 encoded username. If a username is given the server replies with 334 UGFzc3dvcmQ6 (334 Password: [in Base64]) and waits for the Base64 encoded password.

```
← 220 LINK Mobility SMTP Server on ham.smtp.api.linkmobility.de
→ helo company.de
← 250 ham.smtp.api.linkmobility.de
→ AUTH LOGIN
← 334 VXNlcm5hbWU6
→ dXNlcm5hbWU=
← 334 UGFzc3dvcmQ6
→ cGFzc3dvcmQ=
← 235 Authentication successful
```

#### CRAM-MD5

If the client sends AUTH CRAM-MD5 the server will reply with status 334 and a Base64 encoded timestamp that must be used by the client to build the necessary answer consisting of the username and a MD5 hash of the password. Both need to be in a Base64 encoded string. The hash algorithm for the password is defined in RFC 2104 as: MD5 (( password XOR opad ), MD5 ((password XOR ipad ), timestamp))

The password is the password for the messaging account and the server replies the timestamp after sending the AUTH CRAM-MD5 command. IPAD and OPAD are described in RFC 2104.

```
→ helo company.de
← 250 ham.smtp.api.linkmobility.de
→ AUTH CRAM-MD5
← 334 MTYxNC4xMTM2Nzk2MjlxNjAwQHdtZGV2Mg==
→ dXNlcm5hbWUgMGNkNWJkNzMyOTUzYzliNDM2MGQxZWQyZWVhOWNhY2E=
← 235 Authentication successful
```

If the authentication with the “mail from” is used, the username and password will be checked after the message is completely submitted and not immediately after the “mail from” command. Therefore

the examples below are truncated. If an SMTP Auth is used to get authenticated, username and password will be checked immediately. Responding to unsuccessful logins will be delayed.

Successful login using "mail from" element to authenticate:

```
← 220 LINK Mobility SMTP Server on ham.smtp.api.linkmobility.de
→ helo company.de
← 250 ham.smtp.api.linkmobility.de
→ mail from: password@username
← 250 Ok
... (truncated)
← 250 SMS processed. Message ID: 246196
```

Unsuccessful login using "mail from" element to authenticate:

```
← 220 LINK Mobility SMTP Server on ham.smtp.api.linkmobility.de
→ helo company.de
← 250 ham.smtp.api.linkmobility.de
→ mail from: password@username_wrong
... (truncated)
← 571 Delivery not authorized, username/password is wrong
```

Successful login using SMTP Auth to authenticate:

```
← 220 LINK Mobility SMTP Server on ham.smtp.api.linkmobility.de
→ helo company.de
← 250 ham.smtp.api.linkmobility.de
→ AUTH PLAIN
← 334 Ok
→ dXNlcm5hbWUAcGFzc3dvcmlQA
← 235 Authentication successful
```

Unsuccessful login using SMTP Auth to authenticate:

```
← 220 LINK Mobility SMTP Server on ham.smtp.api.linkmobility.de
→ helo company.de
← 250 ham.smtp.api.linkmobility.de
→ AUTH PLAIN
← 334 Ok
→ dXNlcm5hbWUAcGFzc3dvcmlQ
← 535 Cannot authenticate client, retry AUTH
```

In general an email can be divided into an SMTP envelope and the email data. The envelope contains the sender and recipient addresses while the email data contains all headers and the content of the message. A usual email client like MS Outlook builds the SMTP envelope from the data defined by the user including the headers in the data element of the SMTP envelope. It is not possible to set headers manually, when MS Outlook or similar is used.

#### 4.1.4 The SMTP envelope

An SMTP envelope contains three elements:

#### MAIL FROM

Defines the originator of the email. Has to exist once per mail. The “mail from” element of the SMTP envelope MUST contain the data necessary to authorize the delivery of messages, if SMTP Auth is not used for authentication. Therefore, the sender’s email address needs to match the following pattern:

password@username.

To avoid showing the “mail from” value as originator on the receiver terminal, set the “from” email header (see headers in [chapter 4.2.2](#)) to the value wanted to be shown as originator of the message on the receiver’s terminal. This behavior is the same for all authentication mechanisms.

If SMTP Auth is used for authentication the “mail from” element is shown as sender of the message on the receiving terminal.

#### RCPT TO

Defines one recipient of the email. Must exist once but can exist up to hundred times but is limited to the maximum recipients defined in the messaging account. The “rcpt to” element of the SMTP envelope defines the receiver of the message. A receiver of an SMS is usually an MSISDN like: 00491735857100. Messages with one or more invalid recipient(s) will be declined. If an account is restricted to a maximum number of recipients, it is advisable to contact the sales contact involved for multiple recipient restrictions. Please note: if e.g. MS Outlook is used as email client the user will be forced to add an @ symbol to the recipient address. Therefore, the LINK Mobility SMTP server will ignore any trailing including the @ symbol after the MSISDN of a recipient: 00491735857100@any\_text.de will be interpreted as 00491735857100.

#### DATA

Defines the email body of the mail. Must exist once per email. The “data” element of the SMTP envelope contains all headers and the content of the message itself.

### 4.1.5 Email headers

The email format including the description of email headers is part of the RFC 821, 822 and 2387 (the MIME multipart/related content-type).

If you need to code non ASCII chars like the euro sign or umlauts into an email header you have to use MIME encoding to be able to specify the right charset for decoding your data. See appendix for details.

Header	Mandatory	Spec.	Description	Example
--------	-----------	-------	-------------	---------

FROM	Yes*	RFC 821	SMS sender address with max. 17 decimal or 11 alphanumeric characters.	00491735857100
TO	No	RFC 821	Will be ignored	Defined by the SMTP envelope (RCPT TO")
CC, BCC	No	RFC 821	Will be ignored	-
CONTENT-TYPE	Yes	RFC 822/2387	Type of the content of this mail.	Multipart/related
SUBJECT	No	RFC 822	Subject of the mail. If the subject contains non-ASCII characters, it needs to be encoded following RFC 2047 (MIME).	Any text
MESSAGE-ID	No	RFC 822	Message identifier. In notification messages this field contains the ID of the original message.	223564

\* FROM field is not mandatory in case of using SMTP Auth

#### 4.1.6 SMS headers in emails

To make use of all SMS features special SMS headers need to be specified in the email. The following list of headers is not defined in any public specification, only by LINK Mobility.

Header	Mandatory	Spec.	Description	Example
X-SMS-PID	No	LM	Numeric identifier for the protocol	1
X-SMS-MC	No	LM	Sets the numeric message class for text messages	1

X-SMS-VP	No	LM	This is the "validity period" for this message (if the operator supports this feature) yyyy-mm-dd hh:mm:ss	2005-06-13 12:22:44
X-SMS-DDT	No	LM	This is the "delivery time" for the message (if the operator supports this feature) yyyy-mm-dd hh:mm:ss	2005-06-13 12:22:44
X-SMS-NOTIFICATION	No	LM	Defines whether the SMSC should send a notification if the SMS was delivered: yes or no (default)	Yes
X-SMS-DNOTIFICATION	No	LM	Defines whether LINK Mobility should generate a delivery notification if the SMS was delivered successfully to the SMSC: yes or no (default)	No
Following Headers will be set automatically by LINK Mobility:				
X-SMS-TO	No	LM	The destination of the SMS in emails created from MO SMS.	004917286000
X-SMS-STATUS	No	LM	Status in notifications: - Delivered - Buffered - Not delivered - Acknowledged by operator - Not acknowledged by operator - No status - Billing ok - Billing not ok	Delivered

X-SMS-SCTS	No	LM	<p>The date the message was submitted to the operator or, if not available, submitted from the operator to us.</p> <p>If the SMS is a notification the SCTS denotes the point in time when the original SMS was submitted to the mobile phone.</p>	2006-08-29 13:25:09
X-SMS-ORG-OPERATOR-NWC	No	LM	<p>Identifies the Operator Network of the originator. The NWC (NetWork Code) consists of two parts, the MCC (Mobile Country Code) and the MNC (Mobile Network Code).</p> <p>The first three digits are the MCC and the following digits are the MNC. If no MNC can be found, only the three digits of the MCC will be submitted. The NWC 000 indicates an unspecified Network.</p>	26202
X-SMS-ORG-PROVIDER-ID	No	LM	<p>LM internal identifier for the Mobile Service Provider (e.g. 2 for Mobilcom Germany) of the originator.</p> <p>See appendix for a list of all provider IDs.</p>	2
X-SMS-DCS	No	LM	<p>SMS Data Coding Scheme in emails created from MO SMS.</p>	0



## 4.2 Sending SMS

To make sure that an email is interpreted as SMS the sender adds the word sms to the beginning of the domain part of the recipients email address (directly after the @ symbol). The first recipient address determines the generated message type; it is not possible to send SMS in the same email:

With the recipient address

00491735857100@sms.smtp.secure.api.whatevermobile.com

the email will be interpreted as SMS.

### 4.2.1 Email processing rules

This chapter describes the allowed compositions of emails. If the email shall be converted into a SMS, you have to take care about the following processing rules.

If a subject is set, the subject will be used as SMS text no matter what kind of attachments are in the email. Empty subjects or subjects containing only whitespaces will be ignored.

If no subject is given in the email, one and only one attachment with content-type text/plain must exist and will be used as SMS text. If no attachment or more than one attachment with content-type text/plain is given but no subject, the email will be rejected. The following table shows the valid combinations of subjects and attachments for the email to SMS service.

Subject	Attachments	OK	Body
Yes	No	Yes	Subject
Yes	A single image	Yes	Subject
Yes	A single text	Yes	Subject
Yes	Several images, single text	Yes	Subject
Yes	Several texts	Yes	Subject
Yes	Several images, Several texts	Yes	Subject
No	No	No	-
No	A single image	No	-

No	A single text	Yes	Text Attachment
No	Several images, single text	Yes	Text Attachment
No	Several texts	No	-
No	Several images, Several texts	No	-

#### 4.2.2 Limitations

##### Maximum recipients

The number of recipients in an email is restricted to an absolute limit of 100. Please be patient when sending emails with more than one recipient as processing such emails can take some time depending on the speed of the message account. A message will be generated for each recipient. Each message as well as the corresponding notification requests counts towards the number of maximum recipients. It is not possible to send the same message to identical recipients.

\* Please ask your sales contact if you like to use this feature.

##### HTML Email

Some email clients formatting the text of the email body with HTML by default, even if the email body is empty. HTML formatted emails cannot be processed. Make sure that neither the content nor one of the attachments within your email has content type text/html.

##### Maximum size of SMS

Size of SMS is limited to a maximum of 1120 bits for each single SMS. The maximum size measured by characters depends on the encoding used. A 7 bit encoding (e.g. GSM) allows 160 characters per SMS, an 8 bit encoding (e.g. binary) allows 140 bytes per SMS, while a Unicode encoded SMS can only have 70 characters. If email messages to be converted to SMS are sent with more than 1120 bits content length the message will be divided into multiple SMS. A message consisting of multiple SMS is called concatenated SMS. The maximum size of concatenated text SMS is 273105 bits (255 SMS \* 1071 Bits) or 39015 characters (255 SMS \* 153 7 bit encoded characters).

##### Character set Support

Not all characters supported by the GSM (7Bit) Default Alphabet can be submitted via SMTP. Only characters from ISO-8859-1 and the Euro sign are supported by LM. E.g. it is not possible to use characters from the Greek alphabet.

#### 4.2.3 SMS examples

An SMS including a notification request:

← 220 LINK Mobility SMTP Server on ham.smtp.api.linkmobility.de

```
→ helo company.de
← 250 ham.smtp.api.linkmobility.de
→ mail from: password@username
← 250 Ok
→ rcpt to: 00491735857100@sms.smtp.secure.api.whatevermobile.com
← 250 Ok
→ data
← 354 End data with <CR><LF>.<CR><LF>
→ from: 004916094839610
→ X-SMS-Notification: yes
→ subject: This SMS will be send with a notification request
→ .
← 250 SMS processed. Message ID: 246211
```

An SMS using the email subject as SMS body and setting the delivery time:

```
← 220 LINK Mobility SMTP Server on ham.smtp.api.linkmobility.de
→ helo company.de
← 250 ham.smtp.api.linkmobility.de
→ mail from: password@username
← 250 Ok
→ rcpt to: 00491735857100@sms.smtp.secure.api.whatevermobile.com
← 250 Ok
→ data
← 354 End data with <CR><LF>.<CR><LF>
→ from: 004916094839610
→ x-sms-ddt: 2005-11-09 22:30:45
→ subject: This SMS has an absolute delivery time
→ .
← 250 SMS processed. Message ID: 246212
```

A NOKIA® – Picture message send as binary SMS:

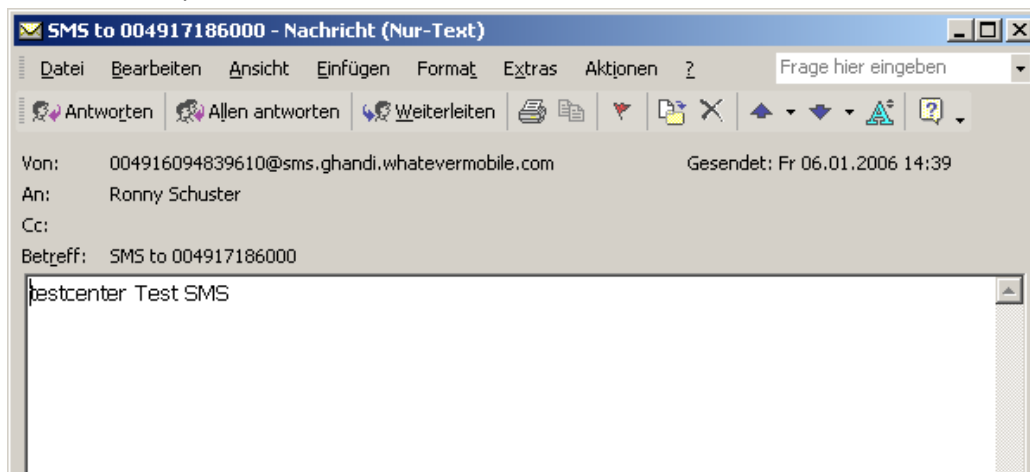


#### 4.2.5 SMS MO messages and notifications

An SMS MO message will be transformed into an email setting the SMS text as body and setting the subject to the sender of the SMS e.g. SMS to 004917786000. All SMS headers described in [chapter 4.2.3](#) are also available as headers in the email received if they were present in the SMS.

The text of an SMS notification message is placed in the subject of the email, while the email body stays blank.

MO SMS example:



Email headers example:

```

Message-ID: <24421909.1136554752962.JavaMail.java@ham.smtp.api.linkmobility.de>
Date: Fri, 6 Jan 2006 14:39:12 +0100 (CET)
From: 004916094839610@sms.smtp.secure.api.whatevermobile.com
To: testcenter@whatevermobile.com
Subject: SMS to 004917186000
MIME-Version: 1.0
Content-Type: multipart/alternative;
boundary="-----=_Part_7_19013701.1136554752807"
X-SMS-TRANSACTIONID: 184611794
X-SMS-TO: 004917186000
Return-Path: 004916094839610@sms.smtp.secure.api.whatevermobile.com
X-OriginalArrivalTime: 06 Jan 2006 13:39:13.0804 (UTC) FILETIME=[94ED44C0:01C612C6]

-----=_Part_7_19013701.1136554752807
MIME-Version: 1.0
Content-Type: text/plain; charset=us-ascii
Content-Transfer-Encoding: 7bit

-----=_Part_7_19013701.1136554752807--

```

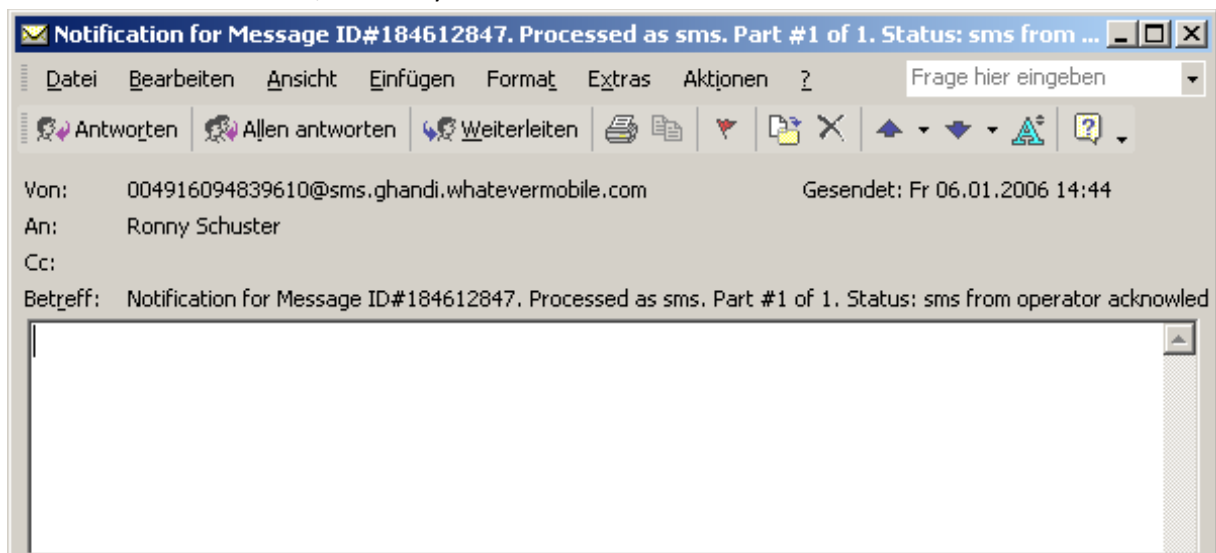
MT SMS with a notification example:

```

← 220 LINK Mobility SMTP Server on ham.smtp.api.linkmobility.de
→ helo company.de
← 250 ham.smtp.api.linkmobility.de
→ mail from: password@username
← 250 Ok
→ rcpt: 004916094839610@sms.smtp.secure.api.whatevermobile.com
← 250 Ok
→ data
← 354 End data with <CR><LF>.<CR><LF>
→ From: 86000
→ x-sms-notification:yes
→
→ Subject: Test-SMS
→ .
← 250 SMS processed. Message ID: 184612847

```

After the SMS is delivered, a delivery notification is received:



Email headers example:

```

Message-ID: <24421909.1136554752962.JavaMail.java@ham.smtp.api.linkmobility.de>
Date: Fri, 6 Jan 2006 14:39:12 +0100 (CET)
From: 004916094839610@sms.smtp.secure.api.whatevermobile.com
To: testcenter@whatevermobile.com
Subject: Notification for Message ID#184612847. Processed as sms. Part #1 of 1. Status: sms from operator acknowledged. Status text: .
MIME-Version: 1.0
Content-Type: multipart/alternative;

```

```

boundary="-----_Part_7_19013701.1136554752807"
X-SMS-TRANSACTIONID: 184611794
X-SMS-TO: 004917186000
X-SMS-TRANSACTIONID: 491131
X-SMS-STATUS: Acknowledged by operator
X-SMS-DST-TON: 5
X-SMS-ORG-TON: 2
Return-Path: 004916094839610@sms.smtp.secure.api.whatevermobile.com
X-OriginalArrivalTime: 06 Jan 2006 13:39:13.0804 (UTC) FILETIME=[94ED44C0:01C612C6]

-----_Part_7_19013701.1136554752807
MIME-Version: 1.0
Content-Type: text/plain; charset=us-ascii
Content-Transfer-Encoding: 7bit

-----_Part_7_19013701.1136554752807--

```

#### 4.2.6 Billing Notification for SMS

A billing notification looks like any other notification submitted as email. The difference to an x-notification or d-notification will be found in the X-SMS-STATUS header field:

- Billing ok – Billing was successful
- Billing not ok – Billing wasn't successful

#### 4.3 SMTP commands

Command	Description	Usage
HELO	Sent by the client to open the transaction. Can be understood as: "HELLO I am host xxx"	→ HELO my_host_name ← 250 ham.smtp.api.linkmobility.de
EHLO	Same as HELO, but also lists all supported SMTP extensions.	→ EHLO my_host_name ← 250-ham.smtp.api.linkmobility.de ← 250-AUTH LOGIN CRAM-MD5 PLAIN ← 250 AUTH=LOGIN CRAM-MD5 PLAIN
MAIL FROM	Defines the email sender.	→ MAIL FROM: password@username

	As mentioned above the username and password must be used here.	← 250 Ok
AUTH	SMTP extension AUTH command. Used to get authenticated for sending messages. See 4.1.2.2 for further information.	→ AUTH LOGIN ← 334 VXNlcm5hbWU6
RCPT TO	Defines one of the recipients of the message. Can be used more than once. See 4.3.1 for further information.	→ RCPT TO: 0049123987654 ← 250 Ok → RCPT TO: 0049123456789 ← 250 Ok
DATA	Starts the data input sequence. After the data command all email data including headers and attachments should be entered. End the data input sequence with a carriage return line feed followed by a dot followed by another carriage return line feed.	→ DATA ← 354 End data with <CR><LF>.<CR><LF> → from: 0049123987654 → subject: my sms text → . ← 250 SMS processed. Message ID: 246212
HELP	Shows the command that is expected next, or if a command was denoted as parameter the syntax for that command and a description will be shown. This command does not work in the data input sequence.	→ MAIL FROM: password@username ← 250 Ok → HELP ← 211 next expected command: RCPT TO: <address> ----- → HELP NOOP ← 211 NOOP (Sends a ping signal. Does not work in data input sequence)



RSET	Resets entered "mail from" and "rcpt to's". This command does not work in the data input sequence.	→ MAIL FROM: password@username_wrong ← 250 Ok → RSET ← 250 Ok → MAIL FROM: password@username ← 250 Ok
NOOP	The NOOP command is the same as a usual ping. This command does not work in the data input sequence.	→ NOOP ← 250 Ok
QUIT	Quits the connection to the SMTP server. This command does not work in the data input sequence.	→ QUIT ← 221 Bye

The sequence of commands to be used to communicate with an SMTP server is also defined in RFC 821. On each command the server sends a response that indicates if the command was processed successfully or the kind of error that occurred during processing the command.

The command was successfully processed:

← 250 Ok

The command is known but the parameter is wrong:

← 501 Syntax: Use 'HELO <domain>'

← 501 Syntax: MAIL FROM: <address>

← 501 Syntax: RCPT TO: <address>

The command is unknown:

← 502 Error: command not implemented

The commando sequence is wrong:

← 503 Need HELO command

← 503 Need MAIL FROM or AUTH command

← 503 Need RCPT TO command

Auth command is wrong:

← 504 Unrecognized authentication type

#### 4.4 SMTP response codes

The response codes and messages will be returned after each executed command. If an email client like MS Outlook is used, one will never be faced with these response codes.

Code	Message	Description
211	<i>"various"</i>	The command was executed successfully.
220	<i>"various"</i>	The service is ready to execute commands.
221	Bye	The connection was closed.
235	Authentication successful	The client is successfully authenticated via AUTH SMTP.
250	<i>"various"</i>	The command was executed successfully.
334	<i>"various"</i>	Reply on AUTH command, server waits for username and password.
354	End data with <CR><LF>.<CR><LF>	The server waits for data. The data input sequence can be sent with a carriage return line feed followed by a dot and another carriage return line feed.
421	<i>"various"</i>	The mail cannot be processed because the service is unavailable or an unknown command was given.
430	Error	An internal server error occurred.

445	Delivery not authorized, account has no more connections left	There are no more connections available to send a message. Open connections need to be closed before attempting to reconnect.
451	<i>"various"</i>	A timeout occurred, the client cannot be identified, there is no sender address at all or too many errors occurred while processing.
452	<i>"various"</i>	An error occurred during processing the mail.
500	<i>"various"</i>	The mail cannot be processed, because the syntax of the mail is not correct.
501	<i>"various"</i>	The syntax of a command or its parameters is not correct.
502	Error: command not implemented	The SMTP server does not know the command.
503	<i>"various"</i>	The command was not expected at this time. The sequence of commands is wrong.
534	<i>"various"</i>	The message size is bigger than the allowed maximum. Or "Authentication mechanism is too weak" if 534 is replied after an AUTH command. Meaning a stronger login mechanism (such as CRAM-MD5) is needed.
535	<i>"various"</i>	The authentication with AUTH SMTP was not possible. The login was rejected.
549	<i>"various"</i>	The account does not have enough credit to send the message or message is partly processed.
550	Error: the mail was rejected for policy reasons (no bounce mails accepted)	The mail was detected as Delivery Status Notification message (DSN, bounce mail) and cannot be processed.
553	Too many recipients	The mail contains too many recipients.

554	Error: the mail can not be processed	The mail cannot be processed because the transaction was aborted.
571	Delivery not authorized, "reason"	<p>The delivery was not authorized.</p> <p>Reasons:</p> <ul style="list-style-type: none"> <li>- username/password is wrong</li> <li>- IP address is not registered</li> <li>- account has no more connections left</li> <li>- user is not allowed to send &lt;message type&gt; messages</li> <li>- user is not allowed to send messages via SMTP</li> </ul>

#### 4.4.1 Successfully processed

If the message was processed successfully, the SMTP response code 250 and a text message will be returned. The text message contains the ID or IDs of the messages:

For a single recipient (e.g. SMS message):

← 250 SMS processed. Message ID: 245335

For multiple recipients (e.g. SMS messages):

← 250 SMS processed. Message ID's: 00491735857100:245335, 00491797317508:245336, 00491776727543:245337

#### 4.4.2 Partially successfully processed

If the account runs out of credit while processing an email with more than one recipient the SMTP response code 459 and a text message will be returned. The text message contains the recipients of the mails that cannot be processed and the message ID's of the messages that were successfully processed.

← 549 SMS partly processed. Not enough credit. Missing recipients: 00491735857100, 00491776727543. Message ID's: 00491797317508:245338, 0049016094839610:245339

#### 4.4.3 Unsuccessfully processed

If the message cannot be processed, the SMTP response code 452 and a text message will be returned.

← 452 SMS cannot be processed

This can also happen if the account is out of credit:

← 549 SMS cannot be processed. Not enough credit.

## 5 SMPP

---

### 5.1 What is SMPP?

SMPP was developed by Logica which is a supplier of SMSCs. Many mobile network operators worldwide support the SMPP protocol.

LINK Mobility offers this protocol to clients for a standardized connection to their SMSC. LINK Mobility does not support all operation types of SMPP. These limitations are described in this document.

The SMS message is encoded using the GSM 7 bit alphabet.

The Connection Phase

Connect by TCP/IP and SSL to "HAM.SMPP.API.LINKMOBILITY.DE" port 4002. See [5.6](#) for an example. It is required that the users IP is enabled in our firewall. Once a connection is established, you can continue with the Bind Request.

For security reasons, connections via SMPP are limited to 15 per second.

Please note: If the connection is lost, please wait 30 seconds before attempting to reconnect! The connection will be closed automatically after 5 minutes of inactivity. To avoid this enquire link requests need to be sent.

#### 5.1.1 SMPP Server connection information

LM provides high availability with two geo redundant data centers. The service on the primary data center is accessible under the following URL:

Submission Type	URL (primary data center)
SMS messages via SMPP (SSL)	ham.smpp.api.linkmobility.de:4002

The service running on the secondary data center is accessible under the following URL (to use the secondary datacenter a specific account is needed):

Submission Type	URL (secondary data center)
SMS message via SMPP (SSL)	fra.smpp.api.linkmobility.de:4002

The user's system can switch to the secondary data center if the primary data center is not reachable and must switch back if the primary data center is available again.

## 5.2 SMPP EMI Aberrations

Our SMPP Server is SMPP Version 3.4 compliant. Just a few aberrations are described below.

### 5.2.1 Supported operation types

- BIND
- UNBIND
- GENERIC\_NACK
- SUBMIT\_SM
- DELIVER\_SM
- ENQUIRE\_LINK

### 5.2.2 Aberration on Deliver SM Operations

A deliver SM Operation is initialized by us to send you a SMS we received from an operator (MO).

Information about the Network Operator and Provider of an originator as well as a SMSC Timestamp (SCTS) will be delivered as optional parameters (TLV format – Tag-Length-Value format) if the corresponding feature is activated in your MMA account.

Note that only those Tag-Length-Value fields listed below are supported:

Field	Tag	Description
NWC	0x1403	Identifies the Operator Network of the originator. The NWC (NetWork Code) is hex encoded and consists of two parts, the MCC (Mobile Country Code) and the MNC (Mobile Network Code). The first three hex encoded digits are the MCC followed by the MNC. If no MNC can be found, only MCC will be submitted. The NWC 000 indicates an unspecified Network.

Provider ID	0x1404	LM internal identifier for the Mobile Service Provider (e.g. 2 for Mobilcom Germany) of the originator. See appendix for a list of all provider IDs.
SCTS	0x1405	The date, when the MO SMS was submitted to the operator or, if not available, submitted from the operator to us. For notifications it denotes the time when the original SMS arrived on the mobile phone.

Example PDU (excerpt): 1403000532363230311404000102

1403 = NWC Tag  
 0005 = Value Length  
 3236323031 = Hex encoded NWC (3236323031 -> 26201)  
 1404 = Provider ID Tag  
 0001 = Value Length  
 02 = Provider ID

SMPP provides the possibility of requesting delivery notifications via the deliver\_sm PDU. The delivery notification indicates the delivery status of the message which requested the notification. The status information is denoted in the short\_message parameter of the deliver\_sm operation.

Depending on how a Mobile Messaging Account has been configured, delivery notifications might be formatted differently.

The default formatting is as follows:

```
id:I sub:S dlvrD:D submit date:YYMMDDhhmmss done date:YYMMDDhhmmss stat:D err:E
text:
```

An alternative formatting omits the seconds in both the submit date and the done date:

```
id:I sub:S dlvrD:D submit date:YYMMDDhhmm done date:YYMMDDhhmm stat:D err:E
text:
```

The fields in the short\_message parameter of the delivery notification are explained in the following:

Field	Type	Description
Id	Alphanumeric	The message ID allocated to the message by the SMSC when originally submitted.
Sub	Numeric	Number of short messages originally submitted. This is only relevant when the original message was submitted to a distribution list. The value is padded with leading zeros if necessary.
Dlvrd	Numeric	Number of short messages delivered. This is only relevant where the original message was submitted to a distribution list. The value is padded with leading zeros if necessary.
Submit date	Numeric	This field contains the point in time when the message was submitted. The format is as follows: YYMMDDhhmm where: YY = last two digits of the year (00-99) MM = month (01-12) DD = day (01-31) hh = hour (00-23) mm = minute (00-59) Alternatively, the format is YYMMDDhhmmss where: ss = second (00-59)
done date	Numeric	The time and date when the short message reached its final state. The format is the same as for the submit date.
Stat	Alphanumeric	The final status of the message. Values are described under 5.3.3.2.

Err	Numeric	In case of a non delivery, the error field gives more information about the reason.
Text	Alphanumeric	This field is always empty.



To request a delivery notification, the SMPP specification describes the registered\_delivery parameter. In contrast to the SMPP specification LINK Mobility only supports the following values for this parameter:

Value	Description
0x00	No notification requested
0x01, 0x02 or 0x03	Requesting an SMSC Delivery Receipt (Notification)
0x10	Requesting an Intermediate notification (D-Notification)

### 5.2.2.1 Example

This is a typical delivery Notification Message:

id:00491785432124:051206150305 sub:001 dlvr:001 submit date:061205160323 done date:061205160325 stat:DELIVRD err:000 text:

Message State	Stat-Field Value	Description
DELIVERED	DELIVRD	Message is delivered to Destination
EXPIRED	EXPIRED	Message validity period has expired.
DELETED	DELETED	Message has been deleted.
UNDELIVERABLE	UNDELIV	Message is undeliverable
ACCEPTED	ACCEPTD	Message is in accepted state (i.e. has been manually read on behalf of the subscriber by customer service)
UNKNOWN	UNKNOWN	Message is in invalid state

REJECTED	REJECTD	Message is in a rejected state
IS BILLED	ISBILLD	Billing was successful
BILLING NOT OK	BILLNOK	Billing was not successful

### 5.2.3 Aberration on Submit SM Operations

A submit SM Operation is initialized by you to send a SMS via LM to an operator (MT).

#### 5.2.3.1 SMPP Submit Response Errorcodes

SMPP submit response error codes are equal to error codes in protocol specification SMPP 3.4, except the throttled error (ESME\_RTHROTTLED).

If your account does not have enough credit for processing your request, the throttled error will be returned.

## 6 Appendix

---

### 6.1 Operator NWC's

NWC	Operator
262 01	Germany - Telekom
262 02	Germany - Vodafone
262 03	Germany - E-Plus
262 07	Germany - O2
232 01	Austria - Mobilkom A1
232 03	Austria - T-Mobile
232 05	Austria - Orange
232 09	Austria - Tele2 Mobil (One)
232 10	Austria - Hutchison 3 G
228 01	Switzerland - Swisscom/Natel
228 02	Switzerland - PDC Switzerland AG (Sunrise)
228 03	Switzerland - Orange

The following page contains all well known NWC's (Combination of MCC + MNC): <http://mcc-mnc.com/>

## 6.2 Provider ID's

ID	Provider
2	Germany - Mobilcom
3	Germany - Debitel
4	Germany - Talkline
5	Germany - Phone House
6	Germany - Victorvox

## 6.3 SMS error codes

The following table contains all kinds of error codes generated by the Mobile Messaging Platform when processing SMS messages.

Code	Error Message
0	OK
1	Service temporary not available
9	Illegal error code
10	Network timeout
11	No further information available
100	Facility not supported
101	Unknown subscriber
102	Facility not provided
103	Call barred
104	Operation barred

105	SC congestion
107	Absent subscriber
108	Delivery fail
110	Protocol error
111	MS not equipped
112	Unknown SC
114	Illegal MS
115	MS not a subscriber
116	Error in MS
117	SMS lower layer not provisioned
118	System fail
119	PLMN system failure
120	HLR system failure
121	VLR system failure
122	Previous VLR system failure
123	Controlling MSC system failure
124	VMSC system failure
125	EIR system failure
126	System failure
127	Unexpected data value
128	Insufficient credit in a prepaid case

129	Number is blacklisted
130	SMS channel delivery
131	USSD channel delivery
132	THREEMA channel delivery
133	SIMSME channel delivery
136	SMS was rejected (Landline number)
137	SMS was rejected (SPAM)
200	Error in address service center
201	Invalid absolute validity period
202	Short Message exceeds maximum
203	Unable to unpack GSM message
204	Unable to convert to IA5 ALPHABET
205	Invalid validity period format
206	Invalid destination address
207	Duplicate message submit
208	Invalid message type indicator
220	Message validity period has expired
221	Message has been deleted
222	Message is undeliverable
223	Message is in accepted state
224	Message state is unknown

225	SMS was rejected
226	Message buffered
230	Billing ok
231	Timeout while delivering content
232	MS not enabled for billing
233	Billing Transaction unknown
234	Billing Transaction timeouted
235	Operator can not process billing
236	Configuration problem
237	Billing mode not allowed
238	Missing parameters
239	IMSI not checked: unknown operator
240	IMSI not checked: system error
241	IMSI not checked: first request
242	IMSI changed: SIM or provider changed
243	IMSI changed: SIM, APD or provider changed
244	IMSI changed: network changed
245	IMSI changed: single to multi SIM
246	IMSI not changed
247	IMSI not changed: multiSIM, possible APDC
248	IMSI not changed: APD change possible

249	IMSI not checked: call forward active
250	IMSI not checked: not requested
252	Message encoding wrong
253	Billing_transaction_id not found
254	Internal server error
255	Unknown error
901	Checksum error
902	Syntax error
903	Operation not supported by system
904	Operation not allowed
905	Call barring active
906	AdC invalid
907	Authentication failure
908	Legitimization code fails for call
909	GA not valid
910	Repetition not allowed
911	Legit. code fails for repetition
912	Priority call not allowed
913	Legit. code fails for priority call
914	Urgent message not allowed
915	Legit. code fails for urgent message



916	Reverse charging not allowed
917	Legit. code fails for rev. charging
918	Deferred delivery not allowed
919	New AC not valid
920	New legitimization code not valid
921	Standard text not valid
922	Time period not valid
923	Message type not supported by system
924	Message length invalid
925	Requested standard text not valid
926	Invalid Message type for pager type
927	Message not found in SMSC
930	Subscriber hang-up
931	Fax group not supported
932	Fax message type not supported
933	Address already in list (60 series)
934	Address not in list (60 series)
935	List full, cannot add address
936	RPID already in use
937	Delivery in progress
938	Message forwarded

939	Invalid source address
940	Replace SM failed
941	Invalid esm_class field data
942	submit_sm or submit_multi failed
943	Invalid source address TON
944	Invalid source address NPI
945	Invalid destination address TON
946	Invalid destination address NPI
947	Invalid schedule delivery time
948	Invalid message validity period
949	Exceeded allowed message limit
998	Timeout on waiting for concat parts
999	Internal billing not successful

## 6.4 Operator Delivery Status

### 6.4.1 no status (-1)

The SMS has not yet received a delivery-status.

### 6.4.2 delivered (0)

The operator delivered the SMS. This is a final status.

### 6.4.3 buffered (1)

The operator received the SMS but cannot deliver it right now. This might be the case if e.g. the end customer has currently switched off his mobile phone or is outside the range of the operators network. The SMS is stored by the operator and will be delivered as soon as possible. This is a temporary status. Another notification will be sent to inform about the final status of the SMS.

#### 6.4.4 **not delivered (2)**

The operator was not able to deliver the SMS. This might be the case if e.g. the destination MSISDN is not part of the operator's network or the end customer has kept his mobile phone switched off so that the operator finally has discarded a buffered SMS. This is a final status.

#### 6.4.5 **billing successful (10)**

Billing was successfully processed. This is a final payment status.

#### 6.4.6 **billing not successful (11)**

Billing was not successfully processed. This is a final payment status.

#### 6.4.7 **sms from operator acknowledged (4)**

The operator has acknowledged receipt of the SMS. The SMS is now processed within the operator's network.. This is a temporary status.

#### 6.4.8 **sms from operator not acknowledged (5)**

The operator has refused to accept the SMS. This might be the case if e.g. the destination MSISDN is not part of the operator's network. This is a final status.

## 6.5 SSL connection

### 6.5.1 Java example

```
import java.io.DataInputStream;
import java.io.DataOutputStream;
import java.io.IOException;
import javax.net.*;
import javax.net.ssl.*;

public class SSL_Client_Thread {

    SocketFactory          sf          = null;
    SSLSocket             socket      = null;
    DataInputStream       in          = null;
    DataOutputStream      out         = null;

    /** Creates a new instance of SSL_Client_Thread */
    public SSL_Client_Thread(String hostname, int port) {

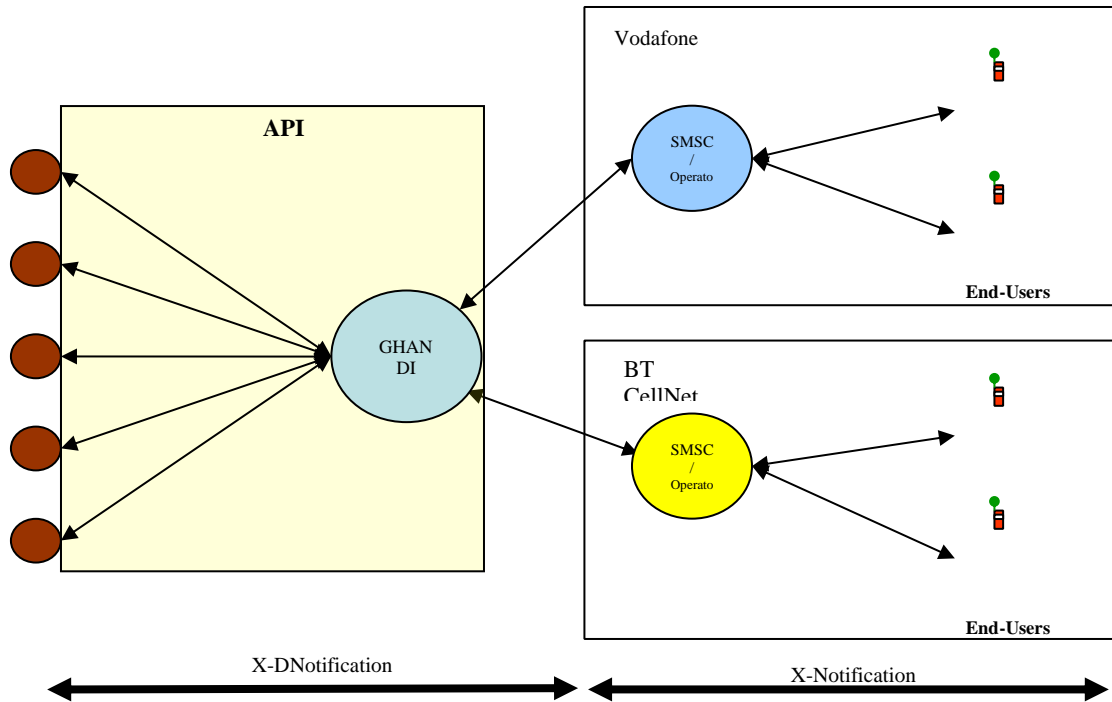
        sf = SSLSocketFactory.getDefault();

        try {
            // Open Connection to given host and port
            socket = (SSLSocket) sf.createSocket(hostname, port);
            // Enable all suites
            String[] suites = socket.getSupportedCipherSuites();
            socket.setEnabledCipherSuites(suites);

            // Get the Input and Output Streams
            in = new DataInputStream(socket.getInputStream());
            out = new DataOutputStream(socket.getOutputStream());

            // Work with the connection ..
        } catch (IOException e) {
            e.printStackTrace();
            System.exit(0);
        }
    }
}
```

## 6.6 Difference between X-Notification and X-Dnotification



### 6.6.1 Appearance of Notifications and Dnotifications

If the protocol did not force other syntax (like SMPP for example) a notification looks the same for each protocol.

Notification for Message ID#<MSG-ID>. Processed as <SMS>. Part #<CURRENT PART NUMBER> of <no. of PARTS>.

Status: <STATUS>. Status text: <STATUS TEXT>.

SMS examples:

Notification for Message ID#317512354. Processed as SMS. Part #1 of 2. Status: delivered. Status text:.

Notification for Message ID#317512459. Processed as SMS. Part #1 of 1. Status: not delivered. Status text: Syntax error.

## 6.7 About the UTC time

Since radio signals can cross multiple time zones and the International Date Line a worldwide standard for time and date was needed. This standard is called coordinated universal time, abbreviated as UTC,

formerly known as Greenwich Mean Time (GMT). Other terms used to refer to it are “Zulu” time (after the “Z” often used after UTC times), “universal time” and “world time.”

UTC is used by international shortwave broadcasters in their broadcast and program schedules. Ham radio operators, shortwave listeners, the military, and utility radio services also use UTC. [...]

Greenwich Mean Time was based upon the time at the zero degree meridian that crossed through Greenwich, England. GMT became the world time and date standard because it was used by Britain’s Royal Navy and merchant fleet during the nineteenth century. Today, UTC uses precise atomic clocks, shortwave time signals and satellites to ensure that UTC remains a reliable, accurate standard for scientific and navigational purposes. Despite the improvements in accuracy, however, the same principles used in GMT have been carried over into UTC.

UTC uses a 24-hour system of time notation. “1:00 a.m.” in UTC is expressed as 0100, pronounced “zero one hundred.” Fifteen minutes after 0100 is expressed as 0115, thirty-eight minutes after 0100 is 0138 (usually pronounced “zero one thirty-eight”). The time one minute after 0159 is 0200. The time one minute after 1259 is 1300 (pronounced “thirteen hundred”). This continues until 2359. One minute later is 0000 (“zero hundred”), and the start of a new UTC day.

Source: <http://www.dxing.com/utcgmt.htm> (29.01.2007)

## 6.8 Character sets and character encoding

Every text displayed on a PC screen is in fact encoded in bytes. To be able to convert bytes to text and vice versa you must know which byte represents which character. This is done by character sets. A character set maps a specific byte (represented as hexadecimal or decimal values) to a specific character.

E.g.: The character set ISO-8859-15 (aka latin9) defines that the euro sign is represented by the hexadecimal value 0xA4 (decimal 164). The older character set ISO-8859-1 (aka latin1) didn’t know the euro because it was invented before the euro. In this character set the same hexadecimal value (0xA4) is a currency symbol (₣).

The first character set introduced was the ASCII charset. It defines only characters used in the english language and most of the commonly used signs like plus, minus, parentheses or the like. The ASCII codes between 0x00 (0) and 0x7F (127) can be found in nearly every character set for latin writings, like the ISO-8859 or windows characters sets.

The unicode character set works different than other character sets even if the first 127 bytes are the same as in ASCII. In unicode character sets like in UTF-8 a character is represented by more than a single byte (different to others like ASCII or ISO character sets where each character is a byte). Thus unicode makes it possible to map nearly every existing character (even asiatic or arabic signs and pictograms) with a specific byte or multiple bytes. Thats also why the same text is possibly bigger (more bytes) when using a unicode character set than in a standard 8-bit character set.



In our platform MIME encoding can be used for SMTP and in some cases for MM7 protocol headers.

## 6.10 ISO/IEC 8859-15:1998 Latin alphabet No. 9

Hex	Dec	Chr	Code	ISO/IEC 10646-1:2000 Character Name
20	32		32	SPACE
21	33	!	33	EXCLAMATION MARK
22	34	"	34	QUOTATION MARK
23	35	#	35	NUMBER SIGN
24	36	\$	36	DOLLAR SIGN
25	37	%	37	PERCENT SIGN
26	38	&	38	AMPERSAND
27	39	'	39	APOSTROPHE
28	40	(	40	LEFT PARENTHESIS
29	41	)	41	RIGHT PARENTHESIS
2A	42	*	42	ASTERISK
2B	43	+	43	PLUS SIGN
2C	44	,	44	COMMA
2D	45	-	45	HYPHEN-MINUS
2E	46	.	46	FULL STOP
2F	47	/	47	SOLIDUS
30	48	0	48	DIGIT ZERO



31	49	1	49	DIGIT ONE
32	50	2	50	DIGIT TWO
33	51	3	51	DIGIT THREE
34	52	4	52	DIGIT FOUR
35	53	5	53	DIGIT FIVE
36	54	6	54	DIGIT SIX
37	55	7	55	DIGIT SEVEN
38	56	8	56	DIGIT EIGHT
39	57	9	57	DIGIT NINE
3A	58	:	58	COLON
3B	59	;	59	SEMICOLON
3C	60	<	60	LESS-THAN SIGN
3D	61	=	61	EQUALS SIGN
3E	62	>	62	GREATER-THAN SIGN
3F	63	?	63	QUESTION MARK
40	64	@	64	COMMERCIAL AT
41	65	A	65	LATIN CAPITAL LETTER A
42	66	B	66	LATIN CAPITAL LETTER B
43	67	C	67	LATIN CAPITAL LETTER C
44	68	D	68	LATIN CAPITAL LETTER D
45	69	E	69	LATIN CAPITAL LETTER E

46	70	F	70	LATIN CAPITAL LETTER F
47	71	G	71	LATIN CAPITAL LETTER G
48	72	H	72	LATIN CAPITAL LETTER H
49	73	I	73	LATIN CAPITAL LETTER I
4A	74	J	74	LATIN CAPITAL LETTER J
4B	75	K	75	LATIN CAPITAL LETTER K
4C	76	L	76	LATIN CAPITAL LETTER L
4D	77	M	77	LATIN CAPITAL LETTER M
4E	78	N	78	LATIN CAPITAL LETTER N
4F	79	O	79	LATIN CAPITAL LETTER O
50	80	P	80	LATIN CAPITAL LETTER P
51	81	Q	81	LATIN CAPITAL LETTER Q
52	82	R	82	LATIN CAPITAL LETTER R
53	83	S	83	LATIN CAPITAL LETTER S
54	84	T	84	LATIN CAPITAL LETTER T
55	85	U	85	LATIN CAPITAL LETTER U
56	86	V	86	LATIN CAPITAL LETTER V
57	87	W	87	LATIN CAPITAL LETTER W
58	88	X	88	LATIN CAPITAL LETTER X
59	89	Y	89	LATIN CAPITAL LETTER Y
5A	90	Z	90	LATIN CAPITAL LETTER Z

5B	91	[	91	LEFT SQUARE BRACKET
5C	92	\	92	REVERSE SOLIDUS
5D	93	]	93	RIGHT SQUARE BRACKET
5E	94	^	94	CIRCUMFLEX ACCENT
5F	95	_	95	LOW LINE
60	96	`	96	GRAVE ACCENT
61	97	a	97	LATIN SMALL LETTER A
62	98	b	98	LATIN SMALL LETTER B
63	99	c	99	LATIN SMALL LETTER C
64	100	d	100	LATIN SMALL LETTER D
65	101	e	101	LATIN SMALL LETTER E
66	102	f	102	LATIN SMALL LETTER F
67	103	g	103	LATIN SMALL LETTER G
68	104	h	104	LATIN SMALL LETTER H
69	105	i	105	LATIN SMALL LETTER I
6A	106	j	106	LATIN SMALL LETTER J
6B	107	k	107	LATIN SMALL LETTER K

6C	10 8	l	108	LATIN SMALL LETTER L
6D	10 9	m	109	LATIN SMALL LETTER M
6E	11 0	n	110	LATIN SMALL LETTER N
6F	11 1	o	111	LATIN SMALL LETTER O
70	11 2	p	112	LATIN SMALL LETTER P
71	11 3	q	113	LATIN SMALL LETTER Q
72	11 4	r	114	LATIN SMALL LETTER R
73	11 5	s	115	LATIN SMALL LETTER S
74	11 6	t	116	LATIN SMALL LETTER T
75	11 7	u	117	LATIN SMALL LETTER U
76	11 8	v	118	LATIN SMALL LETTER V
77	11 9	w	119	LATIN SMALL LETTER W
78	12 0	x	120	LATIN SMALL LETTER X
79	12 1	y	121	LATIN SMALL LETTER Y

7A	12 2	z	122	LATIN SMALL LETTER Z
7B	12 3	{	123	LEFT CURLY BRACKET
7C	12 4		124	VERTICAL LINE
7D	12 5	}	125	RIGHT CURLY BRACKET
7E	12 6	~	126	TILDE
A0	16 0		160	NO-BREAK SPACE
A1	16 1	¡	161	INVERTED EXCLAMATION MARK
A2	16 2	¢	162	CENT SIGN
A3	16 3	£	163	POUND SIGN
A4	16 4	€	164	EURO SIGN
A5	16 5	¥	165	YEN SIGN
A6	16 6	Š	166	LATIN CAPITAL LETTER S WITH CARON
A7	16 7	§	167	SECTION SIGN
A8	16 8	š	168	LATIN SMALL LETTER S WITH CARON

A9	16 9	©	169	COPYRIGHT SIGN
AA	17 0	ª	170	FEMININE ORDINAL INDICATOR
AB	17 1	«	171	LEFT-POINTING DOUBLE ANGLE QUOTATION MARK
AC	17 2	¬	172	NOT SIGN
AD	17 3		173	SOFT HYPHEN
AE	17 4	®	174	REGISTERED SIGN
AF	17 5	ˉ	175	MACRON
B0	17 6	°	176	DEGREE SIGN
B1	17 7	±	177	PLUS-MINUS SIGN
B2	17 8	²	178	SUPERSCRIPIT TWO
B3	17 9	³	179	SUPERSCRIPIT THREE
B4	18 0	Ž	180	LATIN CAPITAL LETTER Z WITH CARON
B5	18 1	µ	181	MICRO SIGN
B6	18 2	¶	182	PILCROW SIGN

B7	18 3	·	183	MIDDLE DOT
B8	18 4	ž	184	LATIN SMALL LETTER Z WITH CARON
B9	18 5	<sup>1</sup>	185	SUPERSCRIPT ONE
BA	18 6	º	186	MASCULINE ORDINAL INDICATOR
BB	18 7	»	187	RIGHT-POINTING DOUBLE ANGLE QUOTATION MARK
BC	18 8	Œ	188	LATIN CAPITAL LIGATURE OE
BD	18 9	œ	189	LATIN SMALL LIGATURE OE
BE	19 0	ÿ	190	LATIN CAPITAL LETTER Y WITH DIAERESIS
BF	19 1	¿	191	INVERTED QUESTION MARK
C0	19 2	À	192	LATIN CAPITAL LETTER A WITH GRAVE
C1	19 3	Á	193	LATIN CAPITAL LETTER A WITH ACUTE
C2	19 4	Â	194	LATIN CAPITAL LETTER A WITH CIRCUMFLEX
C3	19 5	Ã	195	LATIN CAPITAL LETTER A WITH TILDE
C4	19 6	Ä	196	LATIN CAPITAL LETTER A WITH DIAERESIS

C5	19 7	Å	197	LATIN CAPITAL LETTER A WITH RING ABOVE
C6	19 8	Æ	198	LATIN CAPITAL LETTER AE
C7	19 9	Ç	199	LATIN CAPITAL LETTER C WITH CEDILLA
C8	20 0	È	200	LATIN CAPITAL LETTER E WITH GRAVE
C9	20 1	É	201	LATIN CAPITAL LETTER E WITH ACUTE
CA	20 2	Ê	202	LATIN CAPITAL LETTER E WITH CIRCUMFLEX
CB	20 3	Ë	203	LATIN CAPITAL LETTER E WITH DIAERESIS
CC	20 4	Ì	204	LATIN CAPITAL LETTER I WITH GRAVE
CD	20 5	Í	205	LATIN CAPITAL LETTER I WITH ACUTE
CE	20 6	Î	206	LATIN CAPITAL LETTER I WITH CIRCUMFLEX
CF	20 7	Ï	207	LATIN CAPITAL LETTER I WITH DIAERESIS
D0	20 8	Ð	208	LATIN CAPITAL LETTER ETH
D1	20 9	Ñ	209	LATIN CAPITAL LETTER N WITH TILDE
D2	21 0	Ò	210	LATIN CAPITAL LETTER O WITH GRAVE



D3	21 1	Ó	211	LATIN CAPITAL LETTER O WITH ACUTE
D4	21 2	Ô	212	LATIN CAPITAL LETTER O WITH CIRCUMFLEX
D5	21 3	Õ	213	LATIN CAPITAL LETTER O WITH TILDE
D6	21 4	Ö	214	LATIN CAPITAL LETTER O WITH DIAERESIS
D7	21 5	×	215	MULTIPLICATION SIGN
D8	21 6	Ø	216	LATIN CAPITAL LETTER O WITH STROKE
D9	21 7	Ù	217	LATIN CAPITAL LETTER U WITH GRAVE
DA	21 8	Ú	218	LATIN CAPITAL LETTER U WITH ACUTE
DB	21 9	Û	219	LATIN CAPITAL LETTER U WITH CIRCUMFLEX
DC	22 0	Ü	220	LATIN CAPITAL LETTER U WITH DIAERESIS
DD	22 1	Ý	221	LATIN CAPITAL LETTER Y WITH ACUTE
DE	22 2	Þ	222	LATIN CAPITAL LETTER THORN
DF	22 3	ß	223	LATIN SMALL LETTER SHARP S
E0	22 4	à	224	LATIN SMALL LETTER A WITH GRAVE

E1	22 5	á	225	LATIN SMALL LETTER A WITH ACUTE
E2	22 6	â	226	LATIN SMALL LETTER A WITH CIRCUMFLEX
E3	22 7	ã	227	LATIN SMALL LETTER A WITH TILDE
E4	22 8	ä	228	LATIN SMALL LETTER A WITH DIAERESIS
E5	22 9	å	229	LATIN SMALL LETTER A WITH RING ABOVE
E6	23 0	æ	230	LATIN SMALL LETTER AE
E7	23 1	ç	231	LATIN SMALL LETTER C WITH CEDILLA
E8	23 2	è	232	LATIN SMALL LETTER E WITH GRAVE
E9	23 3	é	233	LATIN SMALL LETTER E WITH ACUTE
EA	23 4	ê	234	LATIN SMALL LETTER E WITH CIRCUMFLEX
EB	23 5	ë	235	LATIN SMALL LETTER E WITH DIAERESIS
EC	23 6	ì	236	LATIN SMALL LETTER I WITH GRAVE
ED	23 7	í	237	LATIN SMALL LETTER I WITH ACUTE
EE	23 8	î	238	LATIN SMALL LETTER I WITH CIRCUMFLEX

EF	23 9	ï	239	LATIN SMALL LETTER I WITH DIAERESIS
F0	24 0	ð	240	LATIN SMALL LETTER ETH
F1	24 1	ñ	241	LATIN SMALL LETTER N WITH TILDE
F2	24 2	ò	242	LATIN SMALL LETTER O WITH GRAVE
F3	24 3	ó	243	LATIN SMALL LETTER O WITH ACUTE
F4	24 4	ô	244	LATIN SMALL LETTER O WITH CIRCUMFLEX
F5	24 5	õ	245	LATIN SMALL LETTER O WITH TILDE
F6	24 6	ö	246	LATIN SMALL LETTER O WITH DIAERESIS
F7	24 7	÷	247	DIVISION SIGN
F8	24 8	ø	248	LATIN SMALL LETTER O WITH STROKE
F9	24 9	ù	249	LATIN SMALL LETTER U WITH GRAVE
FA	25 0	ú	250	LATIN SMALL LETTER U WITH ACUTE
FB	25 1	û	251	LATIN SMALL LETTER U WITH CIRCUMFLEX
FC	25 2	ü	252	LATIN SMALL LETTER U WITH DIAERESIS

FD	253	ý	253	LATIN SMALL LETTER Y WITH ACUTE
FE	254	þ	254	LATIN SMALL LETTER THORN
FF	255	ÿ	255	LATIN SMALL LETTER Y WITH DIAERESIS

### 6.11 7 bit default alphabet

This is the 7 bit default alphabet as specified by GSM 03.38. The corresponding ISO-8859-1 and ISO-8859-15 decimal codes are shown in the rightmost column.

Hex	Dec	Character name	Character	ISO-8859-1	ISO-8859-15
0x00	0	COMMERCIAL AT	@	64	64
0x01	1	POUND SIGN	£	163	163
0x02	2	DOLLAR SIGN	\$	36	36
0x03	3	YEN SIGN	¥	165	165
0x04	4	LATIN SMALL LETTER E WITH GRAVE	è	232	232
0x05	5	LATIN SMALL LETTER E WITH ACUTE	é	233	233
0x06	6	LATIN SMALL LETTER U WITH GRAVE	ù	249	249
0x07	7	LATIN SMALL LETTER I WITH GRAVE	ì	236	236
0x08	8	LATIN SMALL LETTER O WITH GRAVE	ò	242	242
0x09	9	LATIN CAPITAL LETTER C WITH CEDILLA	Ç	199	199
0x0A	10	LINE FEED		10	10

0x0B	11	LATIN CAPITAL LETTER O WITH STROKE	Ø	216	216
0x0C	12	LATIN SMALL LETTER O WITH STROKE	ø	248	248
0x0D	13	CARRIAGE RETURN		13	13
0x0E	14	LATIN CAPITAL LETTER A WITH RING ABOVE	Å	197	197
0x0F	15	LATIN SMALL LETTER A WITH RING ABOVE	å	229	229
0x10	16	GREEK CAPITAL LETTER DELTA	Δ		
0x11	17	LOW LINE	_	95	95
0x12	18	GREEK CAPITAL LETTER PHI	Φ		
0x13	19	GREEK CAPITAL LETTER GAMMA	Γ		
0x14	20	GREEK CAPITAL LETTER LAMBDA	Λ		
0x15	21	GREEK CAPITAL LETTER OMEGA	Ω		
0x16	22	GREEK CAPITAL LETTER PI	Π		
0x17	23	GREEK CAPITAL LETTER PSI	Ψ		
0x18	24	GREEK CAPITAL LETTER SIGMA	Σ		
0x19	25	GREEK CAPITAL LETTER THETA	Θ		
0x1A	26	GREEK CAPITAL LETTER XI	Ξ		
0x1B	27	ESCAPE TO EXTENSION TABLE			
0x1B0A	27 10	FORM FEED		12	12
0x1B14	27 20	CIRCUMFLEX ACCENT	^	94	94
0x1B28	27 40	LEFT CURLY BRACKET	{	123	123
0x1B29	27 41	RIGHT CURLY BRACKET	}	125	125
0x1B2F	27 47	REVERSE SOLIDUS (BACKSLASH)	\	92	92
0x1B3C	27 60	LEFT SQUARE BRACKET	[	91	91

0x1B3D	27 61	TILDE	~	126	126
0x1B3E	27 62	RIGHT SQUARE BRACKET	]	93	93
0x1B40	27 64	VERTICAL BAR		124	124
0x1B65	27 101	EURO SIGN	€		164
0x1C	28	LATIN CAPITAL LETTER AE	Æ	198	198
0x1D	29	LATIN SMALL LETTER AE	æ	189	230
0x1E	30	LATIN SMALL LETTER SHARP S (German)	ß	223	223
0x1F	31	LATIN CAPITAL LETTER E WITH ACUTE	É	201	201
0x20	32	SPACE		32	32
0x21	33	EXCLAMATION MARK	!	33	33
0x22	34	QUOTATION MARK	"	34	34
0x23	35	NUMBER SIGN	#	35	35
0x24	36	CURRENCY SIGN	¤	164	
0x25	37	PERCENT SIGN	%	37	37
0x26	38	AMPERSAND	&	38	38
0x27	39	APOSTROPHE	'	39	39
0x28	40	LEFT PARENTHESIS	(	40	40
0x29	41	RIGHT PARENTHESIS	)	41	41
0x2A	42	ASTERISK	*	42	42
0x2B	43	PLUS SIGN	+	43	43
0x2C	44	COMMA	,	44	44
0x2D	45	HYPHEN-MINUS	-	45	45
0x2E	46	FULL STOP	.	46	46

0x2F	47	SOLIDUS (SLASH)	/	47	47
0x30	48	DIGIT ZERO	0	48	48
0x31	49	DIGIT ONE	1	49	49
0x32	50	DIGIT TWO	2	50	50
0x33	51	DIGIT THREE	3	51	51
0x34	52	DIGIT FOUR	4	52	52
0x35	53	DIGIT FIVE	5	53	53
0x36	54	DIGIT SIX	6	54	54
0x37	55	DIGIT SEVEN	7	55	55
0x38	56	DIGIT EIGHT	8	56	56
0x39	57	DIGIT NINE	9	57	57
0x3A	58	COLON	:	58	58
0x3B	59	SEMICOLON	;	59	59
0x3C	60	LESS-THAN SIGN	<	60	60
0x3D	61	EQUALS SIGN	=	61	61
0x3E	62	GREATER-THAN SIGN	>	62	62
0x3F	63	QUESTION MARK	?	63	63
0x40	64	INVERTED EXCLAMATION MARK	!	161	161
0x41	65	LATIN CAPITAL LETTER A	A	65	65
0x42	66	LATIN CAPITAL LETTER B	B	66	66
0x43	67	LATIN CAPITAL LETTER C	C	67	67
0x44	68	LATIN CAPITAL LETTER D	D	68	68
0x45	69	LATIN CAPITAL LETTER E	E	69	69

0x46	70	LATIN CAPITAL LETTER F	F	70	70
0x47	71	LATIN CAPITAL LETTER G	G	71	71
0x48	72	LATIN CAPITAL LETTER H	H	72	72
0x49	73	LATIN CAPITAL LETTER I	I	73	73
0x4A	74	LATIN CAPITAL LETTER J	J	74	74
0x4B	75	LATIN CAPITAL LETTER K	K	75	75
0x4C	76	LATIN CAPITAL LETTER L	L	76	76
0x4D	77	LATIN CAPITAL LETTER M	M	77	77
0x4E	78	LATIN CAPITAL LETTER N	N	78	78
0x4F	79	LATIN CAPITAL LETTER O	O	79	79
0x50	80	LATIN CAPITAL LETTER P	P	80	80
0x51	81	LATIN CAPITAL LETTER Q	Q	81	81
0x52	82	LATIN CAPITAL LETTER R	R	82	82
0x53	83	LATIN CAPITAL LETTER S	S	83	83
0x54	84	LATIN CAPITAL LETTER T	T	84	84
0x55	85	LATIN CAPITAL LETTER U	U	85	85
0x56	86	LATIN CAPITAL LETTER V	V	86	86
0x57	87	LATIN CAPITAL LETTER W	W	87	87
0x58	88	LATIN CAPITAL LETTER X	X	88	88
0x59	89	LATIN CAPITAL LETTER Y	Y	89	89
0x5A	90	LATIN CAPITAL LETTER Z	Z	90	90
0x5B	91	LATIN CAPITAL LETTER A WITH DIAERESIS	Ä	196	196
0x5C	92	LATIN CAPITAL LETTER O WITH DIAERESIS	Ö	214	214



0x5D	93	LATIN CAPITAL LETTER N WITH TILDE	Ñ	209	209
0x5E	94	LATIN CAPITAL LETTER U WITH DIAERESIS	Ü	220	220
0x5F	95	SECTION SIGN	§	167	167
0x60	96	INVERTED QUESTION MARK	¿	191	191
0x61	97	LATIN SMALL LETTER A	a	97	97
0x62	98	LATIN SMALL LETTER B	b	98	98
0x63	99	LATIN SMALL LETTER C	c	99	99
0x64	100	LATIN SMALL LETTER D	d	100	100
0x65	101	LATIN SMALL LETTER E	e	101	101
0x66	102	LATIN SMALL LETTER F	f	102	102
0x67	103	LATIN SMALL LETTER G	g	103	103
0x68	104	LATIN SMALL LETTER H	h	104	104
0x69	105	LATIN SMALL LETTER I	i	105	105
0x6A	106	LATIN SMALL LETTER J	j	106	106
0x6B	107	LATIN SMALL LETTER K	k	107	107
0x6C	108	LATIN SMALL LETTER L	l	108	108
0x6D	109	LATIN SMALL LETTER M	m	109	109
0x6E	110	LATIN SMALL LETTER N	n	110	110
0x6F	111	LATIN SMALL LETTER O	o	111	111
0x70	112	LATIN SMALL LETTER P	p	112	112
0x71	113	LATIN SMALL LETTER Q	q	113	113
0x72	114	LATIN SMALL LETTER R	r	114	114
0x73	115	LATIN SMALL LETTER S	s	115	115

0x74	116	LATIN SMALL LETTER T	t	116	116
0x75	117	LATIN SMALL LETTER U	u	117	117
0x76	118	LATIN SMALL LETTER V	v	118	118
0x77	119	LATIN SMALL LETTER W	w	119	119
0x78	120	LATIN SMALL LETTER X	x	120	120
0x79	121	LATIN SMALL LETTER Y	y	121	121
0x7A	122	LATIN SMALL LETTER Z	z	122	122
0x7B	123	LATIN SMALL LETTER A WITH DIAERESIS	ä	228	228
0x7C	124	LATIN SMALL LETTER O WITH DIAERESIS	ö	246	246
0x7D	125	LATIN SMALL LETTER N WITH TILDE	ñ	241	241
0x7E	126	LATIN SMALL LETTER U WITH DIAERESIS	ü	252	252
0x7F	127	LATIN SMALL LETTER A WITH GRAVE	à	224	224

## 7 Glossary

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MSISDN	Is the mobile number of the end user, i.e. 00491721234567
MO	Mobile Originated – A message sent from a mobile to our platform
MT	Mobile Terminated – A message sent to mobile terminal
SMSC	Short Message Service Center – An operators platform for sending and receiving SMS
MIME	Multipurpose Internet Extension
Charset	Shortform of character set
LM	Abbreviation for LINK Mobility
MMA	MMA stands for Mobile Message Account. A MMA is needed to be able to send or receive messages via the LINK Mobility platform

## 8 History

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Version	Date	Description
2.24	09.02.2018	Removed MMS
2.25	09.02.2018	Changed to link mobility branding
2.26	26.09.2018	Added new SMS error codes
2.27	22.10.2018	Changed branding, adapted design and added internal links.
2.28	05.03.2019	Update encryption information and removed deprecated parts of the documentation.
2.29	18.10.2019	Added new URL's
2.30	05.03.2020	Added new parameter for HTTP notifications
2.31	29.05.2020	Corrected false chapter references