

SMS Business Numbers

Third Party Interface Manual

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<p>SMS Business Numbers performs user authentication and provides the phone number (MSISDN) of the end customer to the Third Party. Further it performs authorization checks for credit limit (so called Top Stop) and age (Age Check). For ensuring proper age verification the Third Party must receive or deliver the content via a short ID of range 6xx.3. Technical Concept</p>		
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1 Introduction

1.1 Summary

Swisscom enables end customers to send dedicated service requests to a Third Party via SMS. The Third Party is granted access to the Business Numbers Enabling Platform to deliver the requested service. This allows the Third Party to send and receive SMS and messages to and from Swisscom customers (including partners/MVNOs). Where applicable, the end customer can choose between one-time use (single/pull service) and repeated use (packets and subscriptions/push service) of the service. The service is activated by sending an SMS message with a keyword and, where applicable, additional information to a specified short number (Short ID). The service can also be ordered via the Third Party's internet site. A detailed description of the service logic is provided in this technical manual.

1.2 Scope

SMS Business Numbers offers an interface to Third Parties to the mobile and billing network of Swisscom. This interface is provided by a system called the Enabling Platform.

This document describes the and SMS service types, the billing concept, and the Enabling Platform interface to the Third Party. A common understanding of the service types is essential to provide a consistency to the end customer who might not be aware who offers her or him the service. Billing rules are defined to establish cooperation between the Third Parties and Swisscom customer. Finally, the technical description provides the basis to build up new SMS and services by a Third Party.

1.3 Target Readership

- Third Party product managers
- Third Party technical staff
- Swisscom product managers
- Swisscom technical staff

1.4 Abbreviations

CUC	Customer Care
EMS	Enhanced Message Service
GSM	Global System for Mobile communications
IMEI	International Mobile Equipment Identity
IrDA	Infrared Data Association
ISO	International Standards Organization
MB	Message Broker
MIME	Multipurpose Internet Mail Extensions
MO	Mobile Originating
MSISDN	Mobile Station ISDN number
MT	Mobile Terminating
MVNO	Mobile Virtual Network Operator

PBV	Federal Ordinance on the Disclosure of Prices ("Preisbekanntgabeverordnung")
SIS	Subscriber Information Server
SMPP	Short Message Peer-to-Peer Protocol
SMS	Short Message Service
SMSC	Short Message Service Center
SOAP	Simple Object Access Protocol
TAC	Type Approval Code
TP	Third Party
TPI	Third Party Interface
UCP	Universal Computer Protocol
UDH	User Data Header
WAP	Wireless Application Protocol
WWW	World Wide Web

1.5 Terminology

Third Party	Swisscom business customer, connecting to the Enabling Platform
Short ID	Short code known to the end customer (MSISDN of a SMS service)
Keyword	Trigger element sent by the end customer in the text field of an SMS to a Short ID in order to get the information.

1.6 Additional Documents

- [1] Java documentation <http://java.sun.com/>
- [2] Perl Regular Expression Tutorial: <http://www.english.uga.edu/humcomp/perl/regex2a.html#2>
- [3] Code of conduct: <http://www.swisscom.ch/iservclient>
- [4] Unicode standard: <http://www.unicode.org/>
- [5] SOAP / SMIL standard: <http://www.w3.org/>
- [6] MIME Types: <http://www.iana.org/assignments/media-types/>
- [7] Enabling Platform Package (MB_TPI_x.x-bxx.zip): <http://www.swisscom.ch/iservclient>
- [8] Supported MIME types: see Vertragsanhang
- [9] Java JAXM description: <http://java.sun.com/xml/jaxm/index.jsp>
- [10] Axis 1.4 <http://ws.apache.org/axis/>
- [11] Castor Framework <http://www.castor.org>
- [12] TPI Reference Implementation <http://www.swisscom.ch/iservclient>

1.7 Contact Information

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Mobile Business Solutions
Design & Delivery
Provider Support
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For **technical** documentation:

- Internet: www.swisscom.ch/iservclient

Swisscom Helpline:

- Phone: +41 (0) 800 848 900

1.8 Third Party Interface Manual Release Management

The table summarizes the major differences in this document due to a new document release.

Version	Chapter	Description
2.0	<i>all SMS and MMS</i>	<i>Version based on Message Broker (MB) Version 1.0</i>
2.1	<i>3, 5.2.3.2 and 5.3.2.3</i>	<i>Error Messages updated, Example updated, Chapter 3 updated</i>
2.2	<i>5 SMS and MMS</i>	<i>Examples adapted, small changes over all</i>
2.3	<i>all SMS and MMS</i>	<i>Small changes over all</i>
2.4	<i>all SMS and MMS</i>	<i>New traces and examples, small changes over all</i>
2.5	<i>3.1.1 SMS and MMS</i>	<i>Text in service description added</i>
2.6	<i>5.2.1.1 SMS and MMS 3.6 5.2.3.2.1 5.3.2.3.2</i>	<i>Content definition (SMS Deliver) Updated Billrates Diameter Interface Error codes added</i>
2.7	<i>3.6 SMS and MMS 5.2.4 Delivery Notifications 5.3.3</i>	<i>Updated Billrates TP should analyze Delivery Notifications for proper statistics</i>
2.8	<i>5.2.3 and 5.2.5 SMS</i>	<i>If Nokia Binary Port is used, IsText has also to be set</i>
3.0	<i>All chapters SMS and MMS</i>	<i>General document review and adaptation</i>
3.1	<i>4.3.3 SMS</i>	<i>Error Messages and Reason Codes from SMSC in Delivery Notifications added</i>
3.2	<i>2 SMS and MMS 4.3.3 SMS</i>	<i>Stop sservices via "STOP ALL" and not like until now with "STOP" Error Messages and Reason Codes from SMSC in Delivery Notifications and service billing added</i>
3.3	<i>2.3.3.1 SMS and MMS</i>	<i>Adaptation of chapter "Subscription Service via Internet"</i>
3.4	<i>2.3.3.1 MMS</i>	<i>MMS Bulk phase out</i>
3.5	<i>all SMS and MMS</i>	<i>MWST (Tax Rate) changed from 0.0 / 2.4 / 7.6 to 0.0 / 2.5 / 8.0</i>

3.6	2.1.2 2.1.3 2.2.2.2 2.3.2.2 2.4	SMS and MMS	Changing / adapt service descriptions Adding service description for SMS competitions
3.7	2.2.3.2	SMS and MMS	Subscription via Internet
3.8	1.7	SMS and MMS	New Hotline number
3.9	3.1	SMS and MMS	Using short id for adult content, http 1.1 standard
4.0	2.12 4.3.1.1 4.3.3 4.4.1.1	SMS keyword SMS Deliver SMS Deliver Report MMS Deliver	Advertising text in the error message of invalid keywords are not allowed SMS Deliver Report: Diameter error removed (they are now within Submit Response) TPI parameter balance-check added, Encrypted MSISDN removed New SMS Deliver and Submit Traces added which fits with new MBS
4.1	4.4.2.2	MMS Submit Response	Additional MMSC error message in state-text
5.0	2.2.3.3 2.3.2.3 2.9.2 old 4.3.5		Additional Process b) Additional Process b) Billing text ABO with keyword deprecated and erased
5.1	All		Small adaptations
5.2	1.7		removed Partner Integration mail address
5.3	All		MMS removed
5.4	2.2.3.1 / 2.2.3.2 / 2.2.3.3 2.2.3.3 2.3.2.1 / 2.3.2.3 / 2.3.3.2 2.5.2		Specification of price disclosure in case of MSISDN entry Pre-filled MO SMS are not allowed Specification of price disclosure in case of MSISDN entry & Pre-filled MO SMS are not allowed Specification of price disclosure in case of MSISDN entry & Pre-filled MO SMS are not allowed

2 Service Types

2.1 Introduction

There are two main service types, Deliver (In) and Submit (Out). In case of a deliver service the initiator (end customer) is sending a SMS to a Short ID. In case of a submit service it's the Third Party which sends a SMS towards the end customer. The Third Party has all possibilities to combine Submit and Deliver as well as SMS.

2.1.1 Deliver Service

The Enabling Platform receives a SMS and forwards it via the TPI interface (deliver request) to the Third Party. Afterwards the requested answer is supplied by the Third Party via the TPI interface (submit request).



Figure 1: Deliver Service

2.1.2 Submit Service

Premium content is supplied by a Third Party via the TPI interface (submit request). The Enabling Platform generates a SMS and sends it to the end customer. At the same time a billing record is created so that the premium service can be charged. A Submit service is therefore used in the case the Third Party initiates the process.

For billing reasons the Third Party must send the keyword (service information, e.g. NEWS, PICTURE) in the billing text field of the reply message to the Enabling Platform.

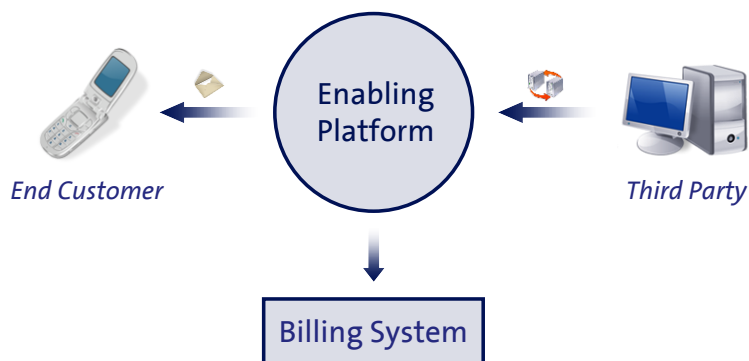


Figure 2: Submit Service



SMS subscription services may only be sent and invoiced by the Short ID in case the end customer has a (double) opt-in. The transfer of an opt-in and with it the MSISDN customer base of a Short ID to another is not permitted.

2.1.3 Services Free of charge


Services advertised as "free" or "at no charge" must also be provided free of charge to the end customer. Merely supplying the first image/video or the first week of service free of charge is not permitted.

2.2 Individual Order

2.2.1 Individual Order via SMS

2.2.1.1 General

An end customer sends a SMS to a defined short ID. The text field of the SMS contains the keyword (e.g. NEWS) related to the service and defined by the Third Party. The Enabling Platform receives the SMS and forwards it via the TPI interface (Deliver Request) to the Third Party. Afterwards the requested content is supplied by the Third Party via the TPI interface (Submit Request). The Submit Request includes the content as well as the charging information equal to the advertised price.



Should the price of an individual order exceed CHF 10, the end customer may only be charged for this service if, subsequently to placing the initial order, he has expressly stated by a confirmation MO SMS that he accepts the offering (this is also known as a “double opt-in”, in accordance with Art. 11a PBV)

Each request from an end customer must receive an appropriate response from the Third Party. This applies to both, invalid and valid keywords (This rule counts for all service types described in this manual).

2.2.1.2 Process

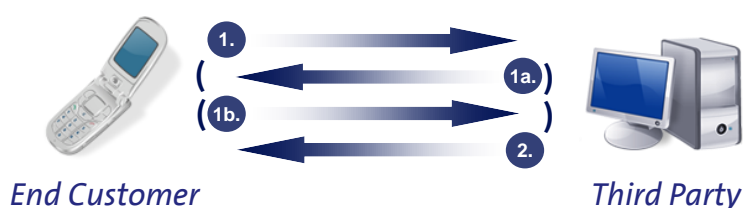


Figure 3: Process Individual Order via SMS

1. End customer is triggering an order via SMS (e.g. GAME A)
- 1a. End customer receives a request for confirmation with additional indication of price and/or age query required for erotic content via SMS. This step is absolutely necessary if the price is higher than CHF 10 and/or confirmation of age must be given for erotic services. Communication must be clear and the price must always be given first, then an additional confirmation of age request may be made. The confirmation of age request must not be misused in any way to conceal the price.
- 1b. End customer confirms acceptance of the price and/or gives confirmation of age via SMS (e.g. YES)

2. Delivery of content and charging (If the download is provided by WAP Push in an intermediate stage, the charge SMS can only be triggered once the download has been successfully completed).

2.2.2 Individual Order via Mobile Internet

2.2.2.1 General

An end customer sends a SMS to a defined short ID. The text field of the SMS contains the keyword (e.g. NEWS) related to the service and defined by the Third Party. The Enabling Platform receives the SMS and forwards it via the TPI interface (Deliver Request) to the Third Party. Afterwards the requested answer is supplied by the Third Party via the TPI interface (Submit Request). The Submit Request includes the link to a mobile portal, where the end customer can download the requested information. The Third Party sends a SMS including the charging information equal to the advertised price after download.

2.2.2.2 Process

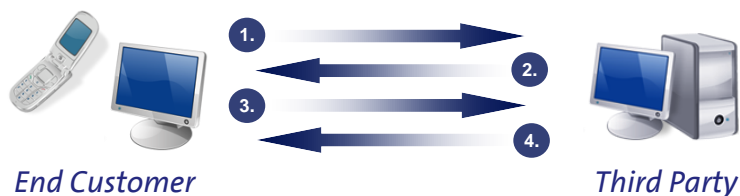


Figure 4: Process Individual Order via Mobile Internet

1. End customer is triggering an order via SMS (e.g. GAME A)
2. The end customer receives a SMS with a link on a mobile portal.
3. Charges may only be made after the end customer has received the information in accordance with point 2. and expressly confirmed (e.g. YES) acceptance of the offer **on his or her mobile terminal**. (PBV Art. 11a & 11a^{bis})
4. Third Party sends a SMS including the charging information after confirmation and successful download.

2.2.3 Individual Order via Internet

2.2.3.1 General

It is possible to initiate the order of a service via the internet and to bill and/or deliver the content with SMS Business Numbers. In this case, it is necessary to clearly indicate the details of the offering (e.g the price).

If the order starts by entering the MSISDN on the website, the price must be indicated in the same font size and in the immediate proximity of the input field for the MSISDN.

The Third Party sends a SMS including the charging information equal to the advertised price after the end customer has downloaded the content.

In case the end customer is barred (please see chapter 3) from using such services by Swisscom, the Third Party must inform the user either via internet or SMS.

2.2.3.2 Process a)

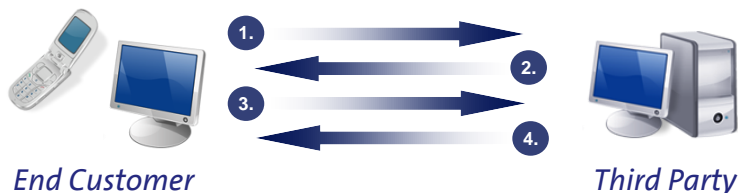


Figure 5: Process Individual Order via Internet

1. End customer makes an order on the internet **using his MSISDN for identification** (valid as first order/confirmation). At the same time an age query may be made on the internet for erotic services. If the order starts by entering the MSISDN on the website, the price must be indicated in the same font size and in the immediate proximity of the input field for the MSISDN.
2. End Customer receives a SMS with request for confirmation (e.g. "OK"). With erotic services, the Third Party must use SMS Business Numbers (delivery with a short ID of range 6xx) for this purpose for ensuring proper age verification.
3. Charges may only be made, after the end customer has received the information in accordance with point 2. The acceptance of the offer must be made with MO-SMS ("OK") on his or her mobile terminal. (PBV Art. 11.a & 11a^{bis}).
4. Afterwards the delivery and charging via SMS takes place (If the content is provided by WAP Push in an intermediate stage, the charge SMS can only be sent once the download has been successfully completed).

2.2.3.3 Process b)

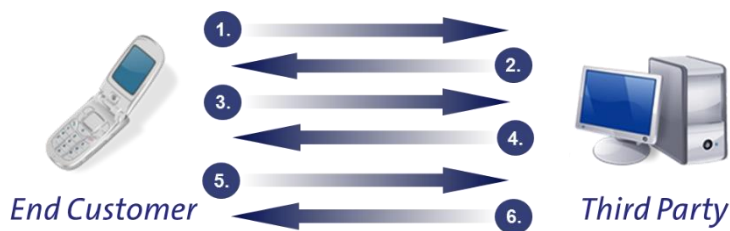


Figure 6: Process Individual Order via Internet

1. The order process is triggered via dedicated button on the Third Party Internet Shop where the end customer may click "BUY" (Kaufen, Acheter). Pricing information must be visible near the button! If the order starts by entering the MSISDN on the website, the price must be indicated in the same font size and in the immediate proximity of the input field for the MSISDN.

2. The SMS client on end customer handset receives prefilled MO SMS with the following information provided clearly: pricing information; Third Party's hotline number; Information on possible download charges (in accordance with Art. 11b PBV) plus confirmation of age request with erotic services.
3. The customer sends a "manually" completed MO SMS with the purchase command/keyword to the ShortID. Prefilled MO SMS directly in the customer's SMS client are not permitted.
4. End Customer receives a SMS with request for confirmation (e.g. OK"). With erotic services, the Third Party must use SMS Business Numbers (delivery with a short ID of range 6xx) for this purpose for ensuring proper age verification.
5. Charges may only be made, after the end customer has received the information in accordance with point 2. The acceptance of the offer must be made with MO-SMS ("OK") on his or her mobile terminal. (PBV Art. 11a & 11a^{bis}).
6. Afterwards the delivery and charging via SMS takes place (If the content is provided by WAP Push in an intermediate stage, the charge SMS can only be sent once the download has been successfully completed).

2.3 Subscription Service

2.3.1 Subscription Service via SMS

2.3.1.1 How to subscribe to a service via SMS

End customers may also be interested in getting a service on a regular basis. With SMS Business Numbers it is possible to subscribe to SMS subscription services.

An end customer sends a SMS to a defined short ID. The text field of the SMS must contain the command "START ABO" followed by the keyword related to the service and defined by the Third Party (e.g. ABO NEWS). After receipt the Third Party makes an entry in its subscription database and sends a confirmation SMS to the end customer. This SMS must be free of charge (Billrate 81) and must contain the string START keyword in the billing text field of the reply message to the Enabling Platform (e.g. START NEWS.)



Subscription services may only be charged if, subsequently to placing the initial order, the end customer has expressly stated that he accepts the offering by sending a MO SMS containing the words "START ABO" (this is also known as a "double opt-in", in accordance with Art. 11b PBV).

Apart from the billing text and the billrate (charge), the confirmation SMS must also include the original MO text from end customer in double brackets (<< >>) at the beginning of the message (e.g. <<START NEWS>> was registered). This behavior must be performed for cancelling transport fee.



The Third Party will pay transport fee (Billrate 89) if:

- Billrate 81 is not set

- MO message does not contain START keyword
- MT message does not contain << START keyword>> (must match with the MO message) in brackets at the beginning of the message

Additionally, the confirmation SMS must contain information regarding frequency, Third Party's hotline number, any basic fee and clear instructions on how to cancel the service.

Whenever a subscribed service is due, the Third Party sends a SMS to the customer. This SMS includes the charging information equal to the advertised price (assumed download was successful) and must contain the string **ABO keyword** in the billing text field of the reply message to the Enabling Platform (e.g. ABO NEWS).

The Third Party is free to define how the content delivery will be triggered. Most subscription services use event triggered content delivery. Time and date can also be a criterion to send an SMS out to an end customer.



In case of receiving the message from the Enabling Platform that an MSISDN does not belong to a Swisscom (Switzerland) customer (NO_SCMN No Swisscom Subscriber) or is invalid (Inv. Cust), the Third Party must stop delivering all subscriptions for this MSISDN immediately. If the system shows that the MSISDN has been temporarily blocked (TMP_REJ Temporarily rejected customer), all subscriptions on this short ID must be cancelled if the content can still not be delivered **after 4 weeks**. During this period, no more than 1 delivery attempt may be made per week (This rule counts for all service types described in this manual).

2.3.1.2 Process

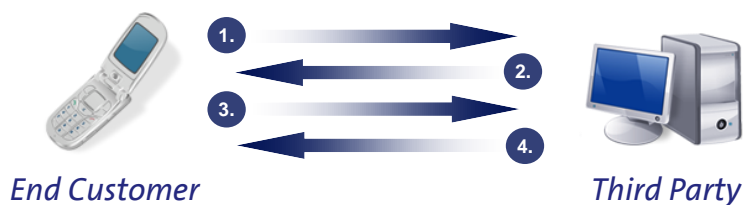


Figure 7: Process Subscription Order via SMS

1. The order process is triggered via SMS using "ABO + keyword"
2. End Customer receives a SMS with request for confirmation with "START ABO" and the following information: pricing information; information on how to cancel the subscription; Third Party's hotline number; Information on possible download charges; information on expected number of SMS (in accordance with Art. 11b PBV) plus confirmation of age request with erotic services
3. Upon receipt of this information, the end customer must expressly confirm his order of the service (a so called second stage access or double opt-in) by sending a MO SMS containing "START ABO". The MO SMS with the "START ABO" confirmation must be "manually" completed by the customer; pre-filled MO SMS directly in the customer's SMS client are not permitted.

4. Afterwards the delivery and charging via SMS takes place (If the content is provided by WAP Push in an intermediate stage, the charge SMS can only be sent once the download has been successfully completed). It is forbidden by law to exceed the charging limit of CHF 5.- per minute.

2.3.1.3 How to unsubscribe a service via SMS

To cancel an existing service, the command "STOP" or "STOPP" followed by the service keyword must be sent to the short ID of the Third Party. On receipt the Third Party deletes the related entry in its subscription database and sends a confirmation SMS to the customer. This SMS must be free of charge (Billrate 83) and must contain the string STOP keyword (e.g. STOP NEWS) in the billing text field of the reply message to the Enabling Platform.

Apart from the billing text and the billrate (charge), the confirmation SMS must also include the original MO text from end customer in double brackets (<< >>) at the beginning of the message (e.g. <<STOP NEWS>> was registered and the subscription will be stopped immediately). This behavior must be performed for cancelling transport fee.



The Third Party will pay transport fee (Billrate 89) if:

- Billrate 83 is not set
- MO message does not contain STOP keyword
- MT message does not contain << STOP keyword>> (must match with the MO message) in brackets at the beginning of the message

2.3.1.4 How to unsubscribe all services via SMS (of one Short ID)

To unsubscribe all existing services of a single short ID the command "STOP ALL" or "STOPP ALL" without a following keyword must be sent to the Third Party's short ID. In this case the Third Party must delete all entries in its subscription database.

After receipt the Third Party deletes all entries of this MSISDN in its subscription database and sends a confirmation SMS to the customer. This SMS must be free of charge (Billrate 83) and must contain the string STOP ALL in the billing text field of the reply message to the Enabling Platform.

Since it can occur that end customers send STOP or STOPP, the Third Party is free to either delete all entries in its subscription database or to send back a SMS containing the information on all services to which an end customer has subscribed (see also keyword VIEW) as well as how to cancel the subscription.

2.3.1.5 Summary Subscription Keywords

Case	Command	Description	Text of Reply SMS	Billing Text	Billrate/Charge
Subscribe a service via SMS (End customer sends keyword)	Keyword eg: ABO NEWS	Initiates a subscription of a service defined by the keyword	Request for confirmation with START ABO and further necessary information	keyword eg: NEWS	Billrate 81

Subscribe a service via SMS (End customer sends START keyword)	START ABO keyword eg: START ABO NEWS	Initiates a subscription of a service defined by the keyword	Text of MO SMS in double brackets at the beginning (e.g. <<START ABO NEWS>>) and further necessary information	START ABO keyword eg: START ABO NEWS	Billrate 81
Send the subscribed information		Sends out the subscribed information	Subscribed content/ information	ABO keyword eg: ABO NEWS	Defined by TP
Unsubscribe a particular service via SMS	STOP keyword or STOPP keyword	Cancels the subscription of a service defined by the keyword	Text of MO SMS in double brackets at the beginning (e.g. <<STOP NEWS>>) as well as confirmation	STOP keyword eg: STOP NEWS	Billrate 83
Unsubscribe all services via SMS	STOP ALL or STOPP ALL	Cancels all subscriptions started under related Short ID immediately	Text of MO SMS in double brackets at the beginning (e.g. <<STOP ALL>>) as well as confirmation	STOP ALL	Billrate 83
Unsubscribe all services via SMS (Option 1)	STOP / STOPP	Cancels all subscriptions started under related Short ID immediately	Text of MO SMS in double brackets at the beginning (e.g. <<STOP>>) as well as confirmation	STOP ALL	Billrate 83
Unsubscribe all services via SMS (Option 2)	STOP / STOPP	Information on all services to which an end customer has subscribed and how to cancel them	Information on all services and how to cancel them	STOP Info	Billrate 83

Table 1: Summary Subscription

2.3.2 Subscription Service via Mobile Internet

2.3.2.1 How to subscribe to a service via Mobile Internet

An end customer enters his MSISDN into a web form - the price must be indicated in the same font size and in the immediate proximity of the input field for the MSISDN - and gets an information SMS containing the confirmation request, price, amount of SMS per period, information on how to unsubscribe and the customer support contact. End customer then sends a confirmation SMS to the defined short ID. The text field of the SMS must contain the command "START ABO" followed by the keyword related to the service and defined by the Third Party (e.g. ABO NEWS). After receipt the Third Party makes an entry in its subscription database and sends a confirmation SMS to the end customer. This SMS must be free of charge (Billrate 81) and must contain the string START keyword in the billing text field of the reply message to the Enabling Platform (e.g. START NEWS.)

2.3.2.2 Process a)

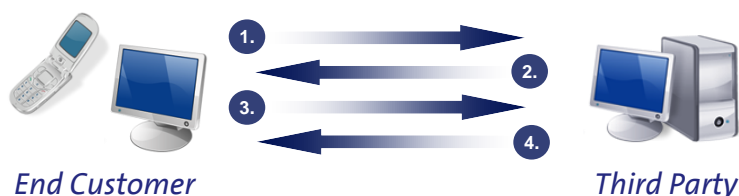


Figure 8: Process Subscription Order via Mobile Internet

1. The order process is triggered via SMS using ABO + keyword.
2. The end customer receives a SMS with a link on a mobile portal with a clearly explained order procedure as well as the following information provided clearly: pricing information; information on how to cancel the subscription; Third Party's hotline number; Information on possible download charges; information on expected number of SMS (in accordance with Art. 11b PBV) plus confirmation of age request with erotic services. Upon receipt of this information, the end customer must expressly confirm his order (a so called second stage access or double opt-in).
3. Charges may only be made after the end customer has received the information in accordance with point 2 and expressly confirmed acceptance of the offer ("START ABO") **on his or her mobile terminal. A confirmation just by entering the PIN is not accepted by law as order.**
4. Afterwards the delivery and charging (Billrate 81) via SMS takes place. If the content is provided by WAP Push in an intermediate stage, the charge SMS can only be sent once the download has been successfully completed. It is forbidden by law to exceed the charging limit of CHF 5.- per minute.

2.3.2.3 Process b)

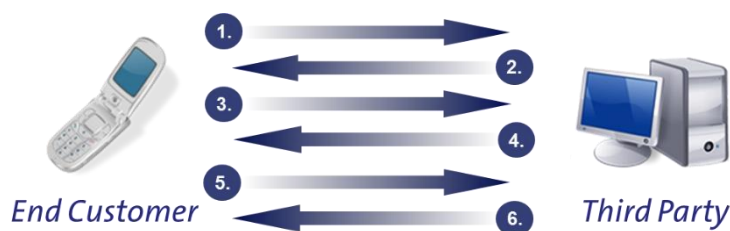


Figure 9: Process Subscription Order via Mobile Internet

1. The order process is triggered via dedicated button on the Third Party Internet Shop where the end customer may click "Subscribe" (Abonnieren, Abonner, Abbonare).
2. Pricing information, information on expected number of SMS, periodicity and more must be visible near the button! If the order starts by entering the MSISDN on the website, the price must be indicated in the same font size and in immediate proximity of the input field for the MSISDN.
3. The customer sends a "manually" completed MO SMS with the purchase command/keyword to the ShortID.
4. End Customer receives a SMS with request for confirmation with "START ABO" and the following information: pricing information; information on how to cancel the subscription; Third Party's hotline

- number; Information on possible download charges; information on expected number of SMS (in accordance with Art. 11b PBV) plus confirmation of age request with erotic services.
5. Charges may only be made after the end customer has received the information in accordance with point 4 and expressly confirmed acceptance of the offer ("START ABO") **on his or her mobile terminal. A confirmation just by entering the PIN is not accepted by law as order.** The MO SMS with the "START ABO" confirmation must be "manually" completed by the customer; prefilled MO SMS directly in the customer's SMS client are not permitted.
 6. Afterwards the delivery and charging (Billrate 82) via SMS takes place. If the content is provided by WAP Push in an intermediate stage, the charge SMS can only be sent once the download has been successfully completed. It is forbidden by law to exceed the charging limit of CHF 5.- per minute.

2.3.2.4 How to unsubscribe via Mobile Internet

To unsubscribe existing services the command STOP or STOPP with a following keyword must be sent to the Third Party's short ID.

A Third Party can also offer cancellation possibilities of one or all services over the mobile internet.

After a successful cancellation, the Third Party must inform the end customer about the canceled subscription in any case by sending a confirmation SMS. This SMS has to be free of charge (Billrate 84) and must contain the string STOP in the billing text field of the reply message to the Enabling Platform.

2.3.3 Subscription Service via Internet

2.3.3.1 How to subscribe to a service via Internet

It is possible to initiate the order of a subscription service via the internet and to bill and/or deliver the content with SMS Business Numbers.

In case the end consumer is barred from this service by Swisscom (please see message-state in chapter 3.3.2.2), the Third Party has to inform the user either via internet or SMS.

2.3.3.2 Process

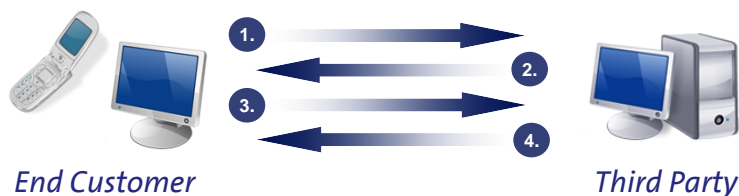


Figure 10: Process Subscription Order via Internet

1. End customer makes an order on the internet **using his MSISDN for identification** (valid as first order/confirmation). For erotic services, the Third Party must set up an information page to notify end users about the content, in particular, about the erotic and/or pornographic nature of the content provided by the service. End customers may only access the content page once they have been informed in this way. The advance notification page must also contain an appropriate age check. Content previews may not contain any pornographic images. If the order starts by entering the MSISDN

- on the website, the price must be indicated in the same font size and in immediate proximity of the input field for the MSISDN.
2. With erotic services, it's a must to use SMS Business Numbers (delivery with a short ID of range 6xx) for this purpose for ensuring proper age verification. Furthermore, the SMS contains as well as the following information provided clearly: pricing information; information on how to cancel the subscription; Third Party's hotline number; Information on possible download charges; information on expected number of SMS (in accordance with Art. 11b PBV). This information must be notified clearly and free of charge **on the mobile terminal of the end customer** before the activation of the service.
 3. Charges may only be made after the consumer has received the information in accordance with point 2 and expressly confirmed acceptance of the offer ("START ABO") **on his or her mobile terminal. A confirmation just by entering the PIN is not accepted by law as order confirmation.** The MO SMS with the "START ABO" confirmation must be "manually" completed by the customer; prefilled MO SMS directly in the customer's SMS client are not permitted.
 4. Afterwards the delivery and charging (Billrate 83) via SMS takes place. If the content is provided by WAP Push in an intermediate stage, the charge SMS can only be sent once the download has been successfully completed. But be aware that the limit of CHF 5 per minute may not be exceeded.

2.3.3.3 How to unsubscribe via Internet

To unsubscribe a dedicated, service the command STOP keyword or STOPP keyword must be sent to the Third Party's short ID. To unsubscribe all existing services the command STOP ALL or STOPP ALL without a following keyword must be sent to the Third Party's short ID.

A Third Party can also offer cancellation possibilities of one or all services over the internet.

After a successful cancellation, the Third Party must inform the end customer about the canceled subscription by sending a confirmation SMS. This SMS must be free of charge (Billrate 83). For further information please see Table 1: Summary Subscription.

2.4 SMS Competitions

SMS/WAP/WEB-based competitions allow end customers to participate in games of chance via SMS. The VAS provider undertakes to comply with the relevant laws, in particular, the Swiss Federal Lotteries Act and the Unfair Competition Act.



"Chat-style" competitions, whereby end customers must answer a series of questions via a number of chargeable MT (Mobile Terminated) SMS, are not allowed. A maximum of one (1) chargeable MT SMS is permitted per competition entry. End customers are free to enter a competition several times if they so wish. To do so, they must automatically activate each additional entry in a conscious and unambiguous manner with an MO (Mobile Originated) SMS to the relevant short ID.

2.5 Chat Services

2.5.1 General

Chat services based on SMS allow end customers to exchange messages via a central user list, for which the sharing of telephone numbers (MSISDN) is not necessary. The end customer can therefore use a pseudonym and remain anonymous to others.

A maximum of one hour after the end customer sends the final SMS, no other SMS message, for which the end customer is required to pay, may be sent. The Third Party is required to inform the end customer about the deactivation of the chat service by sending a free SMS. In case the end customer wishes to continue the chat, he is required to activate the service by sending a keyword to the appropriate short number.

2.5.2 Process

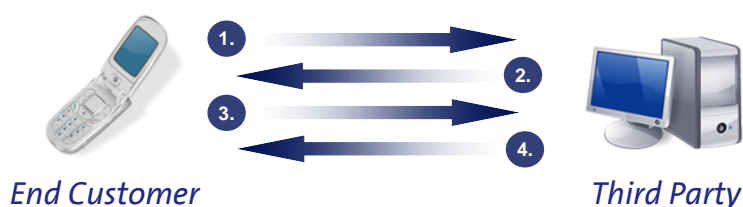


Figure 11: Process Chat Order

1. A chat service is activated when the end customer sends a keyword to the appropriate short number (The illustration shows access via SMS. However, the same procedure must also be used if activating a chat service via (mobile) internet). If the order starts by entering the MSISDN on the (mobile) internet, the price must be indicated in the same font size and in immediate proximity of the input field for the MSISDN.
2. End Customer receives a SMS with request for confirmation with "START" containing the following information provided clearly: pricing information including the charges thereby incurred per SMS; information on how to cancel the chat service; Third Party's hotline number; Information on possible download charges; information on expected number of SMS (in accordance with Art. 11b PBV) plus confirmation of age request with erotic services. Upon receipt of this information, the end customer must expressly confirm his order (a so called second stage access or double opt-in).
3. Upon receipt of this information, the end customer must expressly confirm his order of the service (a so called second stage access or double opt-in) by sending a SMS containing "START". The MO SMS with the "START ABO" confirmation must be "manually" completed by the customer; prefilled MO SMS directly in the customer's SMS client are not permitted.
4. Afterwards the delivery and charging via SMS takes place (If the content is provided by WAP Push in an intermediate stage, the charge SMS can only be sent once the download has been successfully completed). It is forbidden by law to exceed the charging limit of CHF 5.- per minute.

2.6 Packages/Bundles

If the end customer ordered a package (bundle), the Third Party must send a confirmation message. This confirmation message must contain the keyword for the service ordered, its frequency, the Third Party's hotline number and, if applicable, clear instructions on how and where the individual items of content may be acquired.

With the first SMS the whole price is charged to the end customer (in accordance with Art. 11a PBV). Thereafter the content of the package (bundle) can be sent to the end customer (or alternatively the end customer is able to obtain the content). If the content is sent, then the following SMS must be free of charge for the end customer.

2.7 Service Billing

The Third Party can freely choose the end customer price for services sent by SMS within the contract rules. Billing is only possible via the SMS submit interface. Within the submit message, the Third Party must send a billrate (charge) or amount and the corresponding billtext.

For a Deliver Service, there is no content billing. Only Submit Services can send the content together with the billing information.

2.8 Wap Push Services and SMS with URL

The following requirements apply if the Third Party wants to deliver the content ordered by the end customer via Wap Push or via an SMS containing an URL:



Link and service billing cannot be sent together in one SMS but must be sent to the end customer in a separate message.

The Third Party may only bill the content once it has been successfully downloaded by the end customer.

The link must remain active for the end customer for 24 hours after being sent by the Third Party. This enables the end customer to access the link several times to fully download the content in the event of download problems.

2.9 Itemized Bill and Billing Text

2.9.1 Itemized Bill

The itemized bill is a supplementary service offered by Swisscom to its mobile customers. In addition to the regular bill, on which all charges are listed under the position "Services of other providers" (or similar text in other languages), the detailed SMS service charges are listed as well.

Services of other providers				
Date/Time	Short ID	Service	Posted	Amount in CHF
03.04.2017 21:12:21	9248	SMS MT: funInfo GAMES	1	4.90
04.04.2017 18:24:25	9225	SMS MT: eInfo NEWS	1	0.30
05.04.2017 16:15:03	939	SMS MT: funChannel PICTURE	1	0.50
13.04.2017 09:45:67	96345	SMS MT: InfoService WEATHER	1	0.70
			Total	6.40

Figure 12: Abridgement of the Itemized Bill

2.9.2 Billing Text

The main part of the itemized/detailed bill is the service text. This text consists of a predefined text set by the Swisscom billing system and the service details set by the Third Party (see highlighted text in Figure 12).



Due to a limitation of the Enabling Platform we demand the use of content classes (e.g. ringtone instead of ringtone57, picture instead of picture_sunset, START Chat instead of START Chat eve22, but ABO eve22 instead of ABO or ABO shortID). In case of standard keywords HELP, INFO, INDEX and VIEW we demand the use of exactly these keywords in the billing text field.

The maximum length of the definable billing text may not exceed 31 characters.

For billing texts relating to services with erotic and pornographic content, we wish to point out that it is in the interests of the end customer to use a neutral description. Under no circumstances should obvious keywords or text passages from chat sessions be used as billing texts for such sensitive services.

2.10 Service Info

2.10.1 Summary Service Information

An end customer has the possibility to order various service information. The Third Party must provide reply SMS on the standard keywords (HELP, INFO, INDEX and VIEW) under every Short ID



The keywords must function for both upper and lower case letters.

Case	Command	Description	Text of Reply SMS	Billing Text	Billrate (Charge)
Get support	HELP	Information on how to use the services	e.g. hotline number or internet address	HELP	Billrate 80
Receive contact information	INFO	Contact information of the Third Party providing this service	Company name, address, phone/fax number in Switzerland and e-mail address	INFO	Billrate 80

<i>Receive information on how to use the service</i>	<i>INDEX</i>	<i>Information on how to use the service together with details of where and how to find further information</i>	<i>Information on how to use the service</i>	<i>INDEX</i>	<i>Billrate 80</i>
<i>View all subscribed services</i>	<i>VIEW</i>	<i>Information on all services to which an end customer has subscribed</i>	<i>All keywords of subscribed services from the corresponding Third Party</i>	<i>VIEW</i>	<i>Billrate 80</i>

Table 2: Summary Service Information

Further information regarding keywords can be found in the Contract Annex 1 and in the document Code of Conduct [3].

2.11 Enabling Platform Generated Info

In certain cases, the Enabling Platform generates an error message for the end customers. An aggregation of these messages is listed in the monthly statistics.

Case	Command	Description	Text of Reply SMS	Billing Text	Billrate (Charge)
<i>Third Party is not available</i>		<i>If MO message can not be delivered towards Third Party, the enabling platform generates an auto response message</i>	<i>MBS generates text which informs end customer that Third Party is not available</i>		<i>Billrate 40</i>
<i>SIS is not available or end customer is blocked</i>		<i>If MO message can not be delivered towards Third Party because end customer is blocked, the enabling platform generates an auto response message</i>	<i>MBS generates text which informs end customer that he is not allowed to use this service</i>		<i>Billrate 42 (SMS)</i>
<i>Wrong usage of billrate 81-84</i>		<i>If Third Party is using billrate 81-84 in a wrong manner, enabling platform generates billrate 89</i>	<i>MBS generates CDR with adapted billrate</i>		<i>Billrate 89</i>

Table 3: Error messages and Billrates

2.12 Wrong Keyword

In case the end customer sends a wrong keyword, the Third Party must send a SMS with Billrate 42 and a text which informs the end customer about the wrong keyword. To prevent a “Ping Pong” effect (e.g. if a MT message reaches a GSM module, instead of an end customer, the module will answer with an invalid keyword) TP should store all received messages with invalid keywords. If there are a few SMS from the same MSISDN in a very short time the application should stop to send the wrong keyword notification (answer to the invalid keyword).

<i>Case</i>	<i>Command</i>	<i>Description</i>	<i>Text of Reply SMS</i>	<i>Billing Text</i>	<i>Billrate (Charge)</i>
<i>Wrong key-word</i>	<i>Wrong key-word</i>	<i>If end customer sends a wrong keyword</i>	<i>Text which informs the end customer about the wrong keyword</i>	<i>WRONG KEYWORD or ERROR</i>	<i>Billrate 42 (SMS)</i>

Table 4: Wrong keyword



Advertising in the error message of invalid keywords are not allowed!

2.13 End customer authentication and authorization

SMS Business Numbers performs user authentication and provides the phone number (MSISDN) of the end customer to the Third Party. Further it performs authorization checks for credit limit (so called Top Stop) and age (Age Check). For ensuring proper age verification the Third Party must receive or deliver the content via a short ID of range 6xx.

3. Technical Concept

2.14 General Overview

Swisscom offers Third Parties connections to its mobile and billing network via the Enabling Platform. The Enabling Platform acts as gateway for incoming and outgoing requests (Enabling Platform is an umbrella term for the whole message transport network which consists of several systems and platforms). Requests may be transmitted to a Third Party by the so called Third Party Interface (TPI). The protocol used is Multipart SOAP (SOAP Messages with Attachments) via HTTP/1.1(<https://www.w3.org/TR/SOAP-attachments> for further information please see chapter 3 or <http://www.w3.org/TR/SOAP-attachments>).

Be sure to support http 1.1 (chunked mode) standard in order to receive MO SMS properly.

The application must be fully http 1.1 compliant and whether it may mainly handle variable chunk lengths. We refer to the chunk mode specification which allow chunk lengths from 1 bit to max the whole message length chunk.

If you are using the Swisscom “SMS Business Numbers Referenz API” [13] you are fully compliant with http 1.1 standard including variable chunk length.

To send adult content, it’s required to use a short-id beginning with 6xxxx. The SMS BN infrastructure then checks that the sending will not reach minors, nor recipient with adult blockage.

2.15 Functional Overview

The following table summarizes the functions of the two interfaces.

Function	SMS	
	Deliver	Submit
Interface	XML/SOAP	XML/SOAP
https	✓	✓
Receive (SMS from end customer to TP)	✓	n/a
Send (SMS from TP to end customer)	n/a	✓
Define additional parameters SMS	n/a	✓
Binary SMS	✓	✓
Delivery notification	✓	✓
Attachments such as Text, Pictures, Sound, Video	text	text
MSISDN	plain	plain
Billing	n/a	amount or charge
Language	✓	n/a
Handset Type	✓	n/a

Table 5: TPI Interface functional overview

3 Third Party Interfaces (TPI)

3.1 Overview

Message Broker (MB) supports SMS submission over SOAP, as well as SMS delivery over SOAP (handset owners send SMS to the Third Party). This is sketched in the following figure:

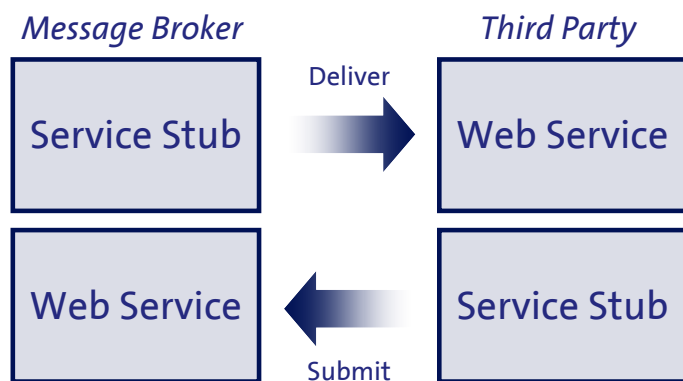


Figure 13: Service Delivery over SOAP

Both ways are implemented by the Third Party interface (TPI), in the form of a web service based on SOAP. A “simple” message based service (JAXM [9]) with no complex type binding and no notion of method call JAXM is supported. Swisscom delivers a reference implementation [7] for the TPI Interface which makes it easy to the Third Parties to implement the JAXM Web Service. The data exchange is formatted with XML. The transport is made over https. This enables to have a synchronous request – response behavior.

The aim of web services is that Third Parties may realize their client programs in any programming language which are supporting XML/SOAP. For the most common programming languages there are interface compilers which generate a client program code for accessing the web services.

If the Third Parties intend to use Java software as Message Broker client, he can use the provided reference implementation (MB_TPI_x.x-bxx.zip [7]) to connect to Message Broker.

If the Third Parties use a programming language other than Java, it might be simpler to use the JAXM type service because the XML structure “on the wire” is somewhat simpler. The supported fields and the general message flow is for both service types exactly the same.

The interface is basically string based. All values are sent as a string representation over the network. In MB Strings and its character representation is treated as Unicode (16 bit). Over the TPI interface all strings are expected to be UTF-8 encoded.

If the Third Parties use https to connect TPI Interface to MBS, it is important that the https request contains the URL of the MBS and not the IP Address, because the VeriSign certificate checks the received URL.

Example: <https://messagingproxy.swisscom.ch:16200/submit>

3.2 Technical Overview

The Enabling Platform consists of Messaging Proxy, Message Broker, SMSC and Rating engine. Third Party is able to connect to Messaging Proxy via a SOAP based TPI Interface. In MT case the Message Broker splits message and billing information. Messages are forwarded to transport systems, such as SMSC. Billing information is collected in the Rating engine. The Rating engine calculates the revenue share for Third Parties and sends the whole billing report (end customer billing and Third Party revenue share) towards Billing for complete the whole billing process. In MO case Message Broker receives messages from SMSC and sends it to the right Third Party.

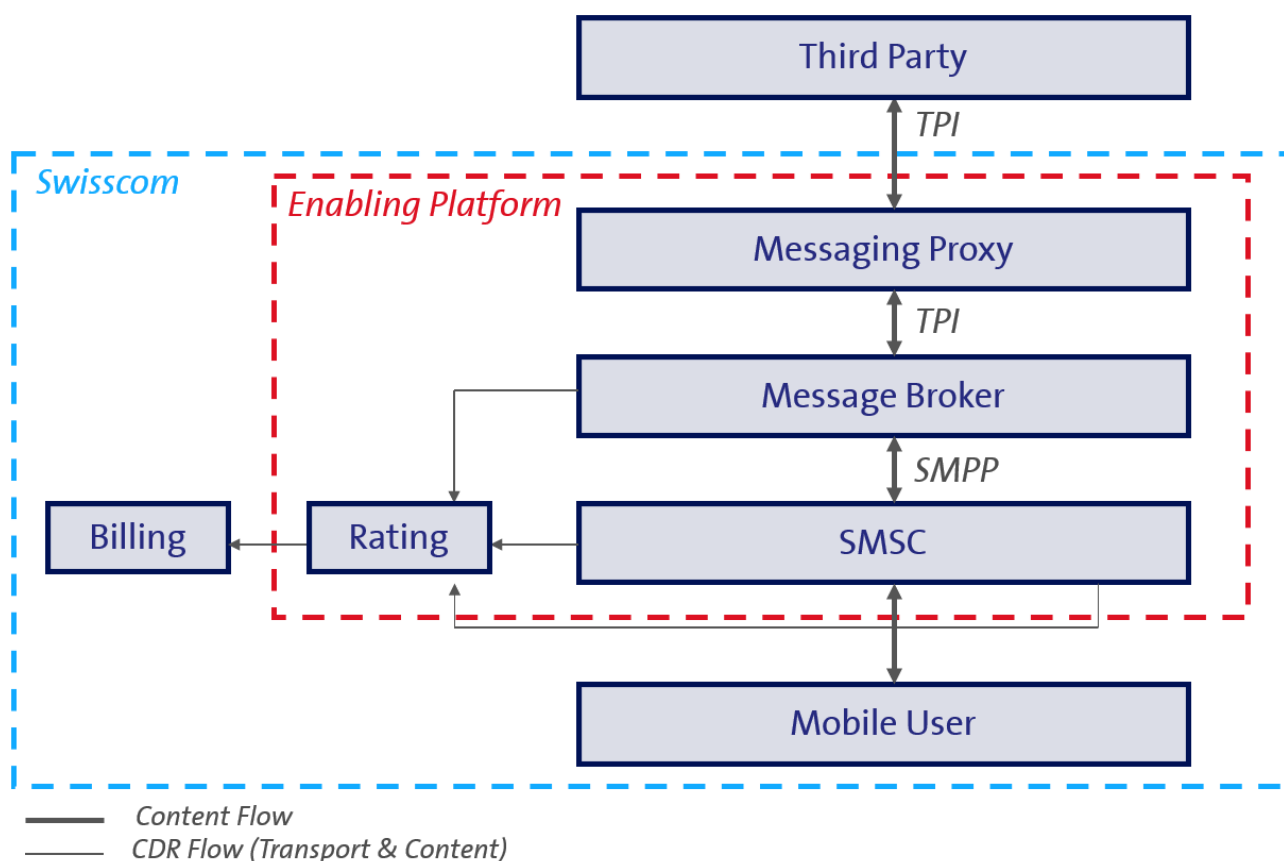


Figure 14: Technical overview

3.3 SMS Services

The request is transmitted as https in a XML/SOAP format to a server at the Third Parties. For each request, a new connection is opened. The Third Parties may implement any of a range of common techniques (CGI, servlet, etc.) to service the request.

The MB is able to receive and process SMS Submit Requests from the Third Parties and send them further to the SMSC. Similarly, it may receive SMS Deliver Request from the SMSC and forward them further to the Third parties.

For SMS submission, the Third Party sends a SMS Submit Request to the MB, which translates it into a request accepted by SMSC. The latter parses and checks the received request and replies with a response. MB translates this response back into a SMS Submit Response and sends it synchronously to the Third Party.

To deliver a SMS to the Third Party, MB receives a message from SMSC and appends a request to a message queue. MB extracts the message from the queue, translates it into a SMS Deliver Request and sends it to the Third Party. Therefore, the latter must implement a Web Service in order to be able to receive SMS Deliver Request from MB. Upon receipt of a SMS Deliver Request, the Third Party must return a SMS Delivery Response synchronously.

TPI Interface enables also to receive and to send binary SMS and EMS. You will find information about binary SMS and EMS (UDH, DCS, Nokia ports etc.) in the next chapters.

The SOAP messages exchanged between MB and Third Party are described in the remaining of this chapter. However, the interface between MB and SMSC is purely internal and is thus not be detailed in this document.

3.3.1 SMS Deliver (MB → Third Party)

3.3.1.1 SMS Deliver Request (MB → Third Party)

In order to receive SMS Deliver Requests, the Message Broker client (Third Party) must accept https requests containing one well formed SOAP envelope and zero or more attachments.

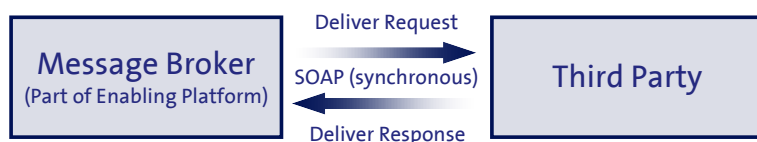


Figure 15: SMS Deliver Request from MB to Third Party

Possible SMS Deliver Request parameters are:

Information Element / SOAP tag	Type	Value	Presence	Description	SMS / SMPP
transaction-id	String ¹		Mandatory	Transaction ID created by MBS	n/a
message-type	String ¹	SMSDeliverRequest	Mandatory	Identifies this message as a SMS_deliver request.	n/a
tpi-version	String ¹		Mandatory	Identifies the version of the interface	n/a
linked-id	String ¹		Optional	Identifier that may be used by the VASP in a subsequent SMSSubmit	n/a
from	String ¹	41796598872	Mandatory	The address of the SMS originator (MSISDN)	source_addr
recipient	String ¹		Mandatory	The address(es) of the intended recipients of the subsequent processing by the VASP or the original recipient address(es). It is possible to mark an address to be used only for informational purposes.	destination_addr
dcs	String ¹		Optional	The DCS (Data Coding Scheme of binary SMS)	data_coding
udh	String ¹		Optional	User Data Header (especially for concatenated messages)	TLV
date-time	Date ²	UTC formatted	Mandatory	The time and date of the submission of the SMS (time stamp).	TLV

Information Element / SOAP tag	Type	Value	Presence	Description	SMS / SMPP
language	String ¹	de, en, ?, fr, it	Optional	The used language (two characters). Or ? (language in SIS unknown)	n/a
handset-brand	String ¹	e.g. Sony Ericsson	Optional	Handset manufacturer	n/a
handset-model	String ¹	e.g. K750i	Optional	Handy model	n/a
handset-tac	String ¹	e.g. 356552	Optional	TAC Code (part of IMEI) Type approval code	n/a
handset-snr	String ¹	e.g. 724445	Optional	Handsets serial number	n/a
handser-svn	String ¹	e.g. 05	Optional	Version of handset software	n/a
customer-age	String ¹	e.g. 24	Optional	Age of end customer	n/a
content	HREF Attribute File-name[] ¹	SOAP attachment (String) ³	Optional	The content of the message. (Text file must be UTF-8 encoded!)	short_message
balance-check	String ¹	e.g. no, 2.00, amount ok, amount low	Optional	Parameter „Balance Check“ with possible values no amount reshold (if prepaid amount of EK is lower than set „reshold“ the service can be blocked from third party The result of balance check will be submitted to third party. Amount --> real amount is submitted threshold --> amount ok or amount low will be submitted	n/a

Table 6: SMS Deliver Request parameter

- ¹ Strings are Unicode based and must be UTF-8 encoded. Theoretical length up to 65536 characters if there are no other limitations.
- ² Dates can be set in local time. Using the JAXM type service date values shall be sent as UTC values using the format 2003-05-05T21:43:15Z or as a local time value using the format 2003-05-05T23:43:15+02:00 which indicates the current offset between local time and UTC in hours and minutes as (local time – UTC).
- ³ If an MO SMS includes a non 7-bit ascii character (e.g. ô), SMSC uses UCS-2 8-bit encoding (hex) and forwards the MO SMS to MBS. MBS forwards such UCS-2 messages untouched to Third Party. The charset in SMS delivery request will be set to UTF-16 (instead of UCS-2)



In case the end customer sends a long SMS (more than one SMS with 160 characters), Third Party will receive one concatenated SMS. This means the enabling system is collecting together all long SMS parts and the Third Party can receive content with more than 160 characters.

3.3.1.2 SMS Deliver Response (Third Party → MB)

A SMS Deliver Response must be sent by the Third Party in response to a SMS Deliver Request. A response is either represented by an https response containing one well formed SOAP envelope for the JAXM service [9].

A SMS Deliver Response is defined by the following parameters:

Information Element	Type	Value	Presence	Description
transaction-id	String ¹		Mandatory	The identification of the Deliver Request and Deliver Response pair
message-type	String ¹	SMSDeliverResponse	Mandatory	Identifies this message as a SMS Deliver Request
state	Integer	See Table 8: Request states within response	Mandatory	Status of the completion of the request

Information Element	Type	Value	Presence	Description
state-text	String ¹	See Table 8: Request states within response	Optional	Text description of the status for display purposes, should qualify the request status
tpi-version	String ¹		Mandatory	Version of the TPI Interface
service-category	String ¹		Optional	Information supplied by the Third Party which may be included in charging information. The syntax and semantics of the content of this information are out of the scope of this specification.

Table 7: SMS Deliver Response parameter

¹ Strings are Unicode based and must be UTF-8 encoded. Theoretical length up to 65536 characters if there are no other limitations.

Possible SMS Request States within response message are:

Status Code	Status Text	Meaning
1000	Success	This code indicates that the request was executed completely
1100	Partial success	This code indicates that the request was executed partially but some parts of the request could not be completed. Lower order digits and the optional details element may indicate what parts of the request were not completed
2000	Client error	Client made an invalid request
2001	Operation restricted	The request was refused due to lack of permission to execute the command
2002	Address Error	The address supplied in the request was not in a recognized
2003	Address Not Found	The address supplied in the request could not be located
2004	Multimedia content refused	The server could not parse the MIME content that was attached to the SOAP message and indicated by the content element or the content size or media type was unacceptable
2006	LinkedID not found	This code is returned when a LinkedID was supplied and the server could not find the related message
2007	Message format corrupt	An element value format is inappropriate or incorrect
3000	Server Error	The server failed to fulfill an apparently valid request
3001	Not Possible	The request could not be carried out because it is not possible.
3002	Message rejected	Server could not complete the service requested
3003	Multiple addresses not supported	The Server does not support this operation on multiple recipients. The operation may be re-submitted as multiple single recipient operations
4000	General service error	The requested service cannot be fulfilled
4001	Improper identification	Identification header of the request does not uniquely identify the client
4002	Unsupported version	The version indicated by the interface version element is not supported
4003	Unsupported operation	The server does not support the request indicated by the MessageType element in the header of the message
4004	Validation error	The SOAP and XML structures could not be parsed, mandatory fields are missing, or the message-format is not compatible to the format specified. Details field may specify the parsing error that caused this status
4005	Service error	The operation caused a server failure and should not be resent
4006	Service unavailable	This indication may be sent by the server when service is temporarily unavailable, e.g. when server is busy
4007	Service denied	The client does not have permission or funds to perform the requested operation

Table 8: Request states within response

3.3.1.3 Example in case of SMS Deliver:

In case of SMS Deliver, the Message Broker issues a SOAP (JAXM [9]) Request as shown in the following table:

POST / deliver HTTP/1.1 User-Agent: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1) Content-Type: multipart/related; boundary=557e7942	HTTP header
--	-------------

Accept: */* Accept-charset: utf-8 SOAPAction: SMSDeliverRequest Via: HTTP/1.0 10.222.38.200:9000 Host: 10.234.31.43:18888 Connection: close Content-Length: 1075	
--557e7942	Boundary
Content-Type: text/xml; charset=UTF-8 Content-Transfer-Encoding: binary Content-Id: 1	MIME part header
<?xml version="1.0" encoding="UTF-8"?> <soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/" xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"> <soapenv:Header> <version soapenv:actor="MB" soapenv:mustUnderstand="0" xmlns="">1.0</version> <request-type soapenv:actor="MB" soapenv:mustUnderstand="0" xmlns="">SMSDELIVER.REQ</request-type> </soapenv:Header> <soapenv:Body> <tns:SMSDeliverRequest xmlns:tns="http://www.swisscom.com/mb/schema"> <transaction-id>143520150615090538027</transaction-id> <tpi-version>1.4.0-b92</tpi-version> <from>41791112233</from> <recipient>90087</recipient> <date-time>2015-06-15T07:05:37Z</date-time> <content filename="String" href="0"/> <message-type>SMSDeliverRequest</message-type> </tns:SMSDeliverRequest> </soapenv:Body> </soapenv:Envelope>	SOAP part
--557e7942	Boundary
Content-Type: text/plain; charset="utf-8" Content-Id: <0>	MIME part header
<i>Test SMS: Hello World!</i>	Attachment
--557e7942—	Boundary

* Deliver messages are always sent chunked encoded! That's why there are numbers between the message parts.

The Third Party returns a response in the following form:

HTTP/1.1 200 OK Connection: close Server: Jetty(6.1.2)	HTTP header
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/" xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:xsi="http://www.w3.org/2001/XMLSchema-in- stance"><soapenv:Header><version soapenv:actor="tpi" soapenv:mustUnderstand="0" xsi:type="xsd:string">1.4.0-b92 built on 2014-09-15 @ 11:13:10</version><request-type soapenv:actor="tpi" soapenv:mustUnderstand="0" xsi:type="xsd:string">SMSDELIVER.RESP</request-type></soapenv:Header><soapenv:Body><tns:SMSDeliverResponse xmlns:tns="http://www.swisscom.com/mb/schema"> <transaction-id>143520150615090538027</transaction-id> <state>1000</state> <state-text>Success</state-text> <tpi-version>1.4.0-b92 built on 2014-09-15 @ 11:13:10</tpi-version> <message-type>SMSDeliverResponse</message-type>	SOAP part

```
</tns:SMSDeliverResponse></soapenv:Body></soapenv:Envelope>
```

* Deliver Responses can be chunked encoded.

It indicates that the message has been accepted (state = 0) and the recipient is valid. The TransactionID corresponds with the values sent with the request.

3.3.2 SMS Submit (Third Party → MB)

3.3.2.1 SMS Submit Request (Third Party → MB)

In order to send SMS Submit Requests, the Message Broker client (Third Party) must support https requests containing one well formed SOAP envelope and zero or more attachments.

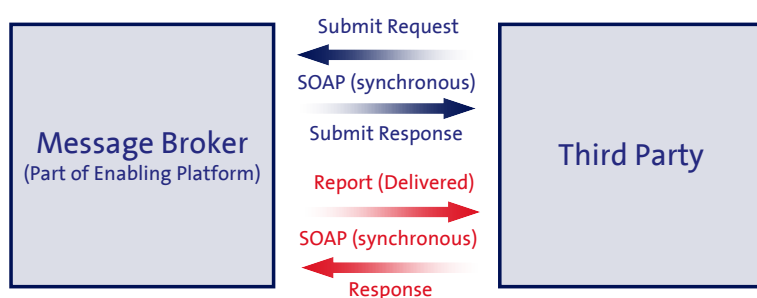


Figure 16: SMS Submit Request from Third Party to MB

Possible SMS Submit Request parameters are:

Information Element / SOAP tag	Type	Value	Presence	Description	SMSC / SMPP
short-id	int	Short ID	Mandatory	Together with <i>ServiceName</i> selection parameters for used service.	n/a
service-name	String ³	Max. length: 160Characters	Mandatory	Together with <i>ShortID</i> selection parameters for used service.	n/a
username	String ³	Max. length: 160 Characters	Mandatory	User name for accessing service	n/a
password	String ³	Max. length: 160 Characters	Mandatory	Password for authentication.	n/a
recipient	String [] ³	MSISDN in international Format: 41796598872 or +41796598872 or Client ID (encrypted MSISDN, Numeric or alphanumeric)	Mandatory	The address of the recipient destination(s). Encrypted or plain. There can be up to 100 MSISDN (service addicted). Every recipient sees only his MSISDN.	destination_addr
content	HREF Attribute File-name[] ¹	SOAP attachment (String)	Optional	The text content of the short message. SMS (normaly 160 characters but also more is possible, then MBS will split the message in concatenated SMS, each will have 160 charactes) and EMS (Text file must be UTF-8 encoded!) If charset is missing, the default parameter 'charset="utf-8"' will now be added to the content-type header of each message part of type 'text/*' of a multipart	short_message
from	String ³	164	Mandatory	Identification of sender (alphanumeric). A string indicating the originating sender (originator). char <=5: MBS sets OTOA=empty (16 char) char >5: MBS sets OTOA=1139 (16 char and SMSC sets +in front of char)	source_addr

Information Element / SOAP tag	Type	Value	Presence	Description	SMSC / SMPP
				char alphanumeric: MBS sets OTOA=5039 (11 char)	
amount	double	-9999.9999 to +9999.9999	Optional	Amount to be billed to customer. Unit is in CHF. Either charge or amount must be set. If none is defined, message will be rejected. If both are defined, message will be rejected. The Message Broker supervisor can define a minimum and maximum amount.	n/a
charge	int	0 to 999	Optional	Billrate, billing code Either charge or amount must be set. If none is defined, message will be rejected. If both are defined, message will be rejected. The Message Broker supervisor can limit the valid range of charge values.	n/a
bill-text	String ³	Max. length: 31 characters	Mandatory	The value of the field will be printed on the invoice. (billtext)	n/a
time-of-expiry	Date ²	UTC formatted	Optional	The desired time of expiry for the message.	validity-period
earliest-delivery-time	Date ²	UTC formatted	Optional	The earliest desired time of delivery of the Message to the recipient.	schedule_delivery_time
originator-url	String ³	http://host:port	Optional	Originator's URL, optional information	n/a
report-address	String ³	http://host:port	Optional	The URL of the listening CP server. Required if reports requested.	n/a
delivery-report	boolean	true / false	Optional	Flag indicating if delivery reports are requested	registered_delivery
priority	String ³	low / normal / high	Optional	Parameter, function used like in a e-mail	n/a
transaction-id	String ³	1 – n	Mandatory	Transaction ID determined by CP. The submit response will have the same transaction ID	n/a
message-type	String ³	SMSSubmitRequest	Mandatory	Type of the message (e.g. SMSSubmitRequest or CUSSubmitRequest)	n/a
linked-id	String ³		Optional	This identifies a correspondence to a previous valid message delivered to the VASP	n/a
service-category	String ³		Optional	Defines the Service category e.g. Sports, News, Adult, request only, Chat. It is also used for request only services	n/a
tax-rate	double	7.6%	Optional	TP defines the tax rate in % (0, 2.4 or 7.6) for this content	n/a
tpi-version	String ³		Mandatory	Defines the version of the used TPI	n/a
rplsm	Integer	numeric value 1-7	Optional	SMS: Replace Short Message. Values 1 – 7 map to RPID 65 – 71. A message on the ME with the same RIP and sender will be replaced	protocol_id
nokia-binary-port	String	alpha, hex coded	Optional	Nokia Binary Port on Handset If this is set, you have also to define parameter is-text!	data_coding && esm_classes
message-class	Integer	Value 0-3	Optional	Message Class, UA parameter	esm_classes
is-text	Boolean	true / false Default: true	Optional	Used for sending EMS messages or Nokia binary messages. Defines, if <i>data</i> is text or transparent data. If <i>true</i> , MT (message type of the SMPP message) is set to 2 or 3 (text) If <i>false</i> , MT is set to 4 (binary)	n/a

Information Element / SOAP tag	Type	Value	Presence	Description	SMSC / SMPP
				If <i>isText</i> is set, the message is treated as EMS message. If <i>isText</i> is not set, the message is not treated as EMS message.	
udh	String	Hex String	Optional	Indicates if content of message is used for EMS. Used for sending an EMS message. With this key, the UDH (User Data Header) can be specified. If <i>isText</i> is not set, UDH is ignored. If UDH is set, the parameter Nokia Binary Port is ignored.	data_coding & esm_classes
dcs	String	Hex-coded String (2 Bytes). Example: 08	Optional	Used for sending an EMS message. With this key, the DCS (Data Coding Scheme) can be specified. If <i>isText</i> is not set, DCS is ignored. If DCS is set, the parameter Nokia Binary Port is ignored.	data_coding

Table 9: SMS Submit Request parameter

- ¹ The attachment must be added as MIME multipart attachment and referenced via Content ID in the contend field. They will be transported as MIME BodyParts of the https request.
- ² Dates can be set in local time. Using the JAXM type service Date values shall be sent as UTC values using the format 2003-05-05T21:43:15Z or as a local time value using the format 2003-05-05T23:43:15+02:00 which indicates the current offset between local time and UTC in hours and minutes as (local time – UTC).
- ³ Strings are Unicode based and must be UTF-8 encoded. Theoretical length up to 65536 characters if there are no other limitations.
- ⁴ SMS and EMS Text file must be UTF-8 encoded! If charset is missing, the default parameter 'charset="utf-8"' will now be added to the content-type header of each message part of type 'text/*' of a multipart.

3.3.2.2 SMS Submit Response (MB → TP)

Every request results either in a fault condition (Exception or SOAP fault element) or in a valid response object/SOAP structure. A response is either represented by an https response containing one well formed SOAP envelope for the JAXM service [9].

A SMS Submit Response is defined by the following parameters:

Information Element/ SOAP Tag	Type	Value	Presence	Description
transaction-id	String		Mandatory	Transaction ID determined by TP. The response will have the same transaction ID.
State	Integer	see Table 12: Request states	Mandatory	Signals success or failure for this request.
state-text	String ¹	see Table 12: Request states	Mandatory	An explanation text for request status.
message-type	String	SMSSubmitResponse	Mandatory	Type of the message (e.g. SMSSubmitResponse or CUCSubmitResponse)
message-id	String		Mandatory	Identifies this message.

Information Element/ SOAP Tag	Type	Value	Presence	Description
message-state	Message Status	see Table 11: Message-state parameter in array	Optional	Array of MessageStatus described in the following table. Items corresponding to each addressed recipient. message-state is not present in case of a failed request (state not 1000)

Table 10: SMS Submit Response parameter

The message-state is defined by the following parameters (array):

Information Element/ SOAP Tag message-state	Type	Value	Presence	Description
recipient	String	MSISDN as it was defined in the request	Mandatory	Identifies one single message
State	Int	see Table 13: Message-states	Mandatory	Status of the message for this specific recipient
state-text	String ¹	see Table 13: Message-states	Mandatory	Explanation text for Message Status

Table 11: Message-state parameter in array

¹ Strings are Unicode based and must be UTF-8 encoded. Theoretical length up to 65536 characters if there are no other limitations.

Possible request states within SMS Submit response message are:

State	State-text	Description
1000	Ok	Transaction ok
2101	Short ID unknown +[Additional Info, if necessary]	Short ID (ServiceGroup) undefined for this request
2102	Format error +[Additional Info, if necessary]	Request could not be parsed (e.g. SOAP or TPI format fault)
2103	Authentication failed +[Additional Info, if necessary]	Unknown username or invalid password
2104	Value outside allowed limits +[Additional Info, if necessary]	Value exceeded defined max. value
2107	Too large content size. +[Additional Info, if necessary]	Content size is bigger then allowed
2109	Unsupported MIME type. +[Additional Info, if necessary]	MIME type unknown or not supported
2110	Unknown service. +[Additional Info, if necessary]	Service is not configured
2112	Service type does not match +[Additional Info, if necessary]	Service found but provisioned service type does not match
2120	Billing data error +[Additional Info, if necessary]	General billing error
2123	Amount out of bound +[Additional Info, if necessary]	Amount out of bound
2124	Charge out of bound +[Additional Info, if necessary]	Charge out of bound
2125	Amount format invalid +[Additional Info, if necessary]	Amount format invalid
2126	Charge format invalid +[Additional Info, if necessary]	Charge format invalid
2127	Tax rate not valid +[Additional Info, if necessary]	Unknown tax rate
2130	Too many recipients +[Additional Info, if necessary]	Maximum number of recipients exceeded
2135	Invalid client ID +[Additional Info, if necessary]	Client ID could not be decoded
2150	Plain MSISDN not allowed +[Additional Info, if necessary]	Service does not allow clear-text MSISDNs
3101	Internal server errors +[Additional Info, if necessary]	An internal server error occurred
3102	DB access error +[Additional Info, if necessary]	The system database could not be accessed
3103	IO error +[Additional Info, if necessary]	The communication with a transport system failed
3104	Server configuration error +[Additional Info, if necessary]	Server configuration contains an invalid element
3150	Participating system errors +[Additional Info, if necessary]	A participating system returned a non-recoverable error
4101	Request limit exceeded +[Additional Info, if necessary]	A limit on the service or system level was exceeded

Table 12: Request states

The message-state text field is an informative field that gives more information about the reason of the rejection / failure.

Possible message-state and state-text (message/content) within response message:

State	State-text	Description
0	Ok	This MSISDN is valid and has no blocking
2	Invalid MSISDN Format	Format of recipient is invalid
4	NO_SCMN No Swisscom mobile customer	This MSISDN does not belong to a Swisscom customer and must be removed from any subscription database
4	TMP_REJ Temporarily rejected customer	This customer is temporarily bared in the Swisscom network
4	ALL_PREMIUM_SCM all premium services blocked, set by SCM	The customer is not allowed to use SMS premium services (activated by Swisscom)
4	ALL_PREMIUM_CUST all premium services blocked, set on customers demand	The customer does not want to use or does not allow the user of the phone to use SMS premium services
4	ADULT_PREMIUM_SCM adult content services blocked, set by SCM	The customer is not allowed to use adult SMS premium services (activated by Swisscom)
4	ADULT_PREMIUM_CUST adult content services blocked, set on customers demand	The customer does not want to use or does not allow the user of the phone to use adult SMS premium services
4	REACHED_SCM limit reached, set by SCM	The customer reached the monthly limit (set by Swisscom)
4	REACHED_CUST limit reached, set on customers demand	The customer reached the monthly limit (set by the owner of the subscription)
4	ADULT_PREMIUM_AGE age verification not passed	Subscriber age <16 years or not passed
4	ADULT_PREMIUM_AGE age information not available	Age information not available
4	ADULT_PREMIUM_AGE age verification failed	Age verification failed
4	BLOCKED_MSISDN this MSISDN is not allowed to use this service	MSISDN, which is not allowed to use this service
4	ERR_DST Invalid destination	The destination is not a standard mobile number (MSISDN) or belongs to a foreign network
4	SIS N/A	Validation of MSISDN is not possible, because the validation server (SIS) is not available at the moment and service is set to pessimistic behavior
4	Invalid MSISDN	MSISDN is not valid (amount of digits or invalid number range) or a non Swisscom customer
4	Invalid Customer	This MSISDN does not belong to a Swisscom customer or is inactive and must be removed from any subscription database
4	[Additional Info, if necessary]	Free configurable message text, for a few errors (e.g. Discovered non numeric char)

Table 13: Message-states

Example Request State and message-state:

The message-state field contains the recipient, state and state-text information.

```

<state>1000</state> (-----> Request State)
<state-text>Ok</state-text> (-----> Request State Text)
<message-state recipient="+41791112233" state="0" state-text="ok"/>
<message-state recipient="+41795200089" state="0" state-text="ok"/>
<message-state recipient="+41787408343" state="4" state-text="NO_SCMN No Swisscom mobile customer"/>
<message-state recipient="14DBDFCC9CE40ACB9" state="2" state-text="Invalid MSISDN Format"/>

```



The request status text field explains the request status. This field contains informative information only. It should not be used for processing. It provides more detailed information to assist eventual problem investigation.

In the message-state field there is one entry for each recipient. The structure contains 3 attributes (see Table 11: Message-state parameter).

3.3.2.3 Example JAXM Submit (send an object, WSDL is not needed)

The easiest way to communicate with the Enabling Platform is by using the provided Java client framework. If the Third Party is unable to use this Java code, one can compose a SOAP Request as follows using any programming language.

<pre>POST /submit HTTP/1.1 Content-Type: multipart/related; type="text/xml"; start="<26EA5E833E0C746B2FA8C96592EEDB2B>"; .boundary="----- _Part_0_1489439555.1434351772642" SOAPAction: "" User-Agent: Axis/1.4 Host: 10.222.38.200:16100 Expect: 100-continue Transfer-Encoding: chunked HTTP/1.1 100 Continue 759</pre>	<p>HTTP header</p>
<pre>-----_Part_0_1489439555.1434351772642</pre>	<p>boundary</p>
<pre>Content-Type: text/xml; charset=UTF-8 Content-Transfer-Encoding: binary Content-Id: <26EA5E833E0C746B2FA8C96592EEDB2B></pre>	<p>MIME part header</p>
<pre><?xml version="1.0" encoding="UTF-8"?><soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/" xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"> <soapenv:Header> <version soapenv:actor="tpi" soapenv:mustUnderstand="0" xsi:type="soapenc:string" xmlns:soapenc="http://schemas.xmlsoap.org/soap/encoding/">1.4.0-b92 built on 2014-09-15 @ 11:13:10</version> <request-type soapenv:actor="tpi" soapenv:mustUnderstand="0" xsi:type="soapenc:string" xmlns:soapenc="http://schemas.xmlsoap.org/soap/encoding/">SMSSUBMIT.REQ</request-type> </soapenv:Header> <soapenv:Body> <tns:SMSSubmitRequest xmlns:tns="http://www.swisscom.com/mb/schema"> <short-id>90087</short-id> <service-name>SMS-SUB-90087</service-name> <username>SwisscomBN</username> <password>ftT45X82</password> <amount>0.2</amount> <bill-text>Test SMS Service</bill-text> <report-address>http://10.234.31.43:18888/report</report-address> <delivery-report>true</delivery-report> <transaction-id>tbd</transaction-id> <tpi-version>1.4.0-b92 built on 2014-09-15 @ 11:13:10</tpi-version> <content filename="cid:615E30E1E5C908002854EDB821751000.txt" href="cid:615E30E1E5C908002854EDB821751000"/> <from>90087</from> <recipient>41791112233</recipient></pre>	<p>SOAP part</p>

<message-type>SMSSubmitRequest</message-type> </tns:SMSSubmitRequest> </soapenv:Body> </soapenv:Envelope>	
-----= Part_0_1489439555.1434351772642	boundary
Content-Type: text/plain; charset="utf-8" Content-Transfer-Encoding: binary Content-Id: cid:615E30E1E5C908002854EDB821751000	MIME part header
Hallo, das ist ein Test SMS!	attachment
-----= Part_0_1489439555.1434351772642 -- 0	boundary

* Submit messages can be transfer-encoding: chunked or content-Length: nnnn

The corresponding response is much simpler without attachments and looks as follows:

HTTP/1.1 200 OK Content-Type: text/xml Server: Microsoft-IIS/7.5 Status: 200 OK X-Powered-By: ASP.NET Date: Mon, 15 Jun 2015 07:02:52 GMT Connection: close Content-Length: 835	HTTP header
<?xml version="1.0" encoding="UTF-8"?> <soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/" xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"> <soapenv:Header> <version soapenv:actor="MB" soapenv:mustUnderstand="0" xmlns="">1.0</version> <request-type soapenv:actor="MB" soapenv:mustUnderstand="0" xmlns="">SMSSUBMIT.RESP</request-type> </soapenv:Header> <soapenv:Body> <tns:SMSSubmitResponse xmlns:tns="http://www.swisscom.com/mb/schema"> <transaction-id>tbd</transaction-id> <state>1000</state> <state-text>Ok</state-text> <message-id>129320150615090252702</message-id> <message-state recipient="41791112233" state="0" state-text="Ok"/> <message-type>SMSSubmitResponse</message-type> </tns:SMSSubmitResponse> </soapenv:Body> </soapenv:Envelope>	SOAP part

It indicates that the message has been accepted (state = 0) and the recipient is valid. The TransactionID (if set) corresponds with the values sent with the request.

3.3.3 SMS Delivery Report (Delivery Notifications)

In the case of SMS submissions, Message Broker accepts SOAP invocations based on message (JAXM). Optionally, Message Broker can send Delivery Reports back to the Third Party. They are transmitted as https GET

Request. Therefore, the Message Broker client must be able to accept this kind of requests. This requirement is sketched in figure below:

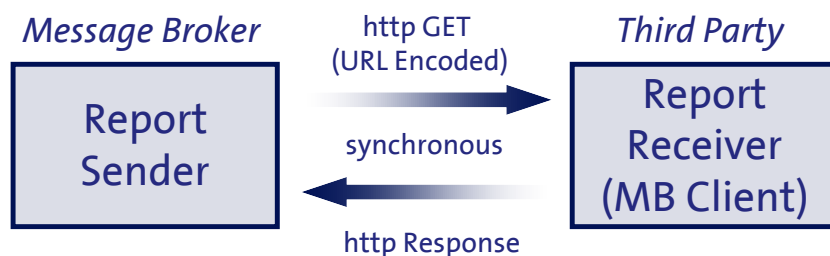


Figure 17: Delivery Reports

Whenever a SMS Report has been requested by a Submit Request, Message Broker will send an appropriate https GET Request to the provided report address supplying information about the involved message and recipient as well as the type of event in form of URL encoded parameters.

An https GET Request is defined by the following parameters:

Information Element	Type	Value	Presence	Description
reportType	String	DELIVERY	Mandatory	Type of report
msgId	String ¹		Mandatory	Identifies this message. The ID is generated by MB
recipient	String	MSISDN as sent with submit request	Mandatory	Identifies involved recipient
msgState	Long	1 – n (see Table 15: msgState and msgStateText)	Mandatory	Signals status of message
msgStateText	String ¹	Retrieved (see Table 15: msgState and msgStateText)	Optional	Explanation text for Message Status. This text is delivered by SMSC

Table 14: https GET request parameter

¹ Strings are Unicode based and must be UTF-8 encoded. Theoretical length up to 65536 characters if there are no other limitations.

The message is sent as URL encoded https GET Request. **Possible msgState and msgStateText within response message are:**

msgState	msgStateText	Description
0	Retrieved +[Additional Info, if necessary]	Message successful delivered to handset
1	Rejected +[Additional Info, if necessary]	Message from end customer or system rejected
2	Expired +[Additional Info, if necessary]	Message is expired
3	Deferred +[Additional Info, if necessary]	End customer will start message download later
4	Unrecognised +[Additional Info, if necessary]	Handset is not able to recognise the message (e.g. version problem)
5	Indeterminate +[Additional Info, if necessary]	Is not known, if message was delivered correctly
6	Forwarded +[Additional Info, if necessary]	End customer has message forwarded without download
7	Unreachable +[Additional Info, if necessary]	End customer not reachable (e.g. network or routing problems)

Table 15: msgState and msgStateText

Notification messages can optionally be sent by Message Broker to inform the Third Party about events in the SMSC. The notification message is formatted as http GET.

Error messages and reason codes in notifications from SMSC („network_error_code“ TLV) are shown in msgStateText in brackets []. The network_error_code parameter is used to indicate the actual network error code for a delivery failure. The network_error_code parameter is a 6-digit hexadecimal code (for more details see SMPP v5.0 spec.).

This error codes are only in SMS Delivery Notifications available because the SMS message flow is “store and forward”

Example GET Request (MBS → Third Party):

```
GET /report?reportType=DELIVERY&msgid=129320150615090252702&recipient=41791112233&msgState=0&msgStateText=Retrieved HTTP/1.1
User-Agent: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1)
accept: */*
accept-charset: utf-8
Via: HTTP/1.0 10.222.38.200:9000
Connection: close
Host: 10.234.31.43:18888
```

Example Response (Third Party → MBS):

```
HTTP/1.1 200 OK
Content-Type: text/html; charset=iso-8859-1
Connection: close
Server: Jetty(6.1.2)

<html><body>successful</body></html>
```

Possible https Responses are:

- successful
- failed



It is important to analyze the Delivery Notifications. Only these notifications can give you the overview about successful delivered messages in order to create meaningful statistics.