

Technical specifications for integration with SMPP service

Technical specifications for integration with SMPP service

Document history

Document Creation	25/04/2021
Updating the “Error Codes” table and the EmsClass in callbacks to the client	02/08/2022

Technical specifications for integration with SMPP service

Acronyms and Definitions

- ✓ **SMPP**: Short Message Peer-to-Peer
- ✓ **PDU**: Protocol Data Unit
- ✓ **TLV**: Tag Length Value
- ✓ **SMS**: Short Message Service
- ✓ **MO**: Mobile Originated

Technical specifications for integration with SMPP service

Summary

1. Introduction.....	5
2. <i>Command Status Table</i>	5
3. <i>TLV Table</i>	6
4. <i>Error Codes Table</i>	7
5. EMSClass Table.....	9
6. Conection.....	10
7. Sending <i>SMS</i>	10
8. Delivery Callback.....	11
9. MO Callback.....	12

Technical specifications for integration with SMPP service

1. Introduction

Messaging service is based on the SMPP protocol version 3.4, complying with all its specifications and standards, with regard to communication and data.

2. *Command Status Table*

The “Table 1 - Command Status List” of Command Status, indicates the status of any and all communication actions performed between the SMPP service and the connected Client, in both directions, such information is provided in the “command_status” field of the Header PDU of each executed command.

Table 1 - Command Status List

Decimal Code	Name	Description
0	ESME_ROK	No Error
1	ESME_RINVMSGLEN	Message too long
2	ESME_RINVCMDLEN	Command length is invalid
3	ESME_RINVCMDID	Command ID is invalid or not supported
4	ESME_RINVBNDSTS	Incorrect bind status for given command
5	ESME_RALYBND	Already bound
6	ESME_RINVPRFTLG	Invalid Priority Flag
7	ESME_RINVREGDLVFLG	Invalid registered delivery flag
8	ESME_RSYSERR	System error
10	ESME_RINVSRCADR	Invalid source address
11	ESME_RINVDSTADR	Invalid destination address
12	ESME_RINVMSGID	Message ID is invalid
13	ESME_RBINDFAIL	Bind failed
14	ESME_RINVPASWD	Invalid password
15	ESME_RINVSYSID	Invalid System ID
17	ESME_RCANCELFAIL	Canceling message failed
19	ESME_RREPLACEFAIL	Message replacement failed
20	ESME_RMSSQFUL	Message queue full
21	ESME_RINVSERTYP	Invalid service type
51	ESME_RINVNUMDESTS	Invalid number of destinations
52	ESME_RINVDLNAME	Invalid distribution list name
64	ESME_RINVDESTFLAG	Invalid destination flag
66	ESME_RINVSUBREP	Invalid submit with replace request
67	ESME_RINVESMCLASS	Invalid esm class set

Technical specifications for integration with SMPP service

68	ESME_RCNTSUBDL	Invalid submit to distribution list
69	ESME_RSUBMITFAIL	Submitting message has failed
72	ESME_RINVSRCNPI	Invalid source address type of number (TON)
73	ESME_RINVSRCNPI	Invalid source address numbering plan (NPI)
80	ESME_RINVDSTTON	Invalid destination address type of number (TON)
81	ESME_RINVDSTNPI	Invalid destination address numbering plan (NPI)
83	ESME_RINVSYSTYP	Invalid system type
84	ESME_RINVREPFLAG	Invalid replace_if_present flag
85	ESME_RINVNUMMSG	Invalid number of messages
88	ESME_RTHROTTLED	Throttling error
97	ESME_RINVSCHED	Invalid scheduled delivery time
98	ESME_RINVEXPIRY	Invalid Validity Period value
99	ESME_RINVDFTMSGID	Predefined message not found
100	ESME_RX_T_APPN	ESME Receiver temporary error
101	ESME_RX_P_APPN	ESME Receiver permanent error
102	ESME_RX_R_APPN	ESME Receiver reject message error
103	ESME_RQUERYFAIL	Message query request failed
192	ESME_RINVTLVSTREAM	Error in the optional part of the PDU body
193	ESME_RTLVNOTALLWD	TLV not allowed
194	ESME_RINVTLVLEN	Invalid parameter length
195	ESME_RMISSINGTLV	Expected TLV missing
196	ESME_RINVTLVVAL	Invalid TLV value
254	ESME_RDELIVERYFAILURE	Transaction delivery failure
255	ESME_RUNKNOWNERR	Unknown error
256	ESME_RSERTYPUNAUTH	ESME not authorised to use specified servicetype
257	ESME_RPROHIBITED	ESME prohibited from using specified operation
258	ESME_RSERTYPUNAVAIL	Specified servicetype is unavailable
259	ESME_RSERTYPDENIED	Specified servicetype is denied
260	ESME_RINVDCS	Invalid data coding scheme
261	ESME_RINVSRCADDRSUBUNIT	Invalid source address subunit
262	ESME_RINVSTDADDRSUBUNIT	Invalid destination address subunit

3. TLV TABLE

“Table 2 - TLV Status Table” indicates the current status of the SMS on return to the customer providing the SMS delivery details. The information in the “value” column of the table is informed in the “stat” field of the “short_message” session contained in the PDU.

Table 2 – TLV Status Table

Value	Description
-------	-------------

Technical specifications for integration with SMPP service

DELIVRD	The message is delivered to its destination.
EXPIRED	The message validity period has expired.
DELETED	The message has been deleted.
UNDELIV	The message is undeliverable.
UNKNOWN	The message is in an invalid state.
REJECTD	The message is in a rejected state.

4. **Error Codes Table**

“Table 3 - Error Codes” indicates in more detail the type of error that occurred in the processing and delivery of the SMS, this information is reported in the return to the customer who provides the SMS delivery details. The information in the “Code” column of the table is informed in the “err” field of the “short_message” session contained in the PDU.

Table 3 - Error Codes

Code	Description
000	The message was delivered to the intended carrier or handset.
001	This is a general error that the service you are attempting to use is not allowed; you may have inaccurate permissions, formatting or may not be enabled to use that service.
010	Operator not identified.
011	Invalid key.
012	Message not found.
013	User not found.
014	Route not found.
015	Provider route undefined.
016	Send not permitted.
017	Message contains span.
018	Message delivered without confirmation.
100	An application within the Bandwidth service is experiencing a temporary error that is preventing the message from being processed
101	App going down. Message not received. Sender should send these messages later or to other hosts.
106	Impossible to route / Attempt to deliver through retries has failed and you will need to reattempt these messages later.
111	Received messaged for connection which is already closed - reopen connection and retry messages.
201	Bandwidth service expired the message after attempts to deliver through retries failed.
211	Bandwidth service application is temporarily busy so it cannot receive messages at this time
220	Message not received. Cannot save message to store.
231	Bandwidth did not receive all parts of the message. Message cannot be sent.
242	Bandwidth service failed the message due to an error with the user data header (udh). This could be because total parts in UDH do not match received before, duplicate message part
301	The message contains invalid characters that are not supported. Bandwidth cannot re-encode messages for destination.
302	The From number associated with the message is a number not routable to a carrier or valid in the industry (Ex: a 9 digit number).
303	The To number associated with the message is a number not routable to a carrier or valid in the industry (Ex: a 9 digit number).

Technical specifications for integration with SMPP service

304	Invalid concatenation User Data Header (udh), Bandwidth cannot process the message.
305	Malformed UDH length indicator: udh length greater than message length, Bandwidth cannot process the message.
306	Bandwidth cannot process the request for a delivery receipt (DLR) as the flag is not set properly. In case of ESME: registered delivery flag not in range [0, 1]. In case of SMSC: registered delivery flag not 0.
350	Message passed validation on the receive stage, but failed on send. This is likely because the destination number (To) is an invalid number.
352	The message size is too large for the destination carrier to support.
401	Message is unable to be routed within Bandwidth particularly when the source and destination are the same number. The destination or To number is mis-provisioned or there is a configuration with the message that is causing a situation where a message is being sent repeatedly between the same numbers.
402	data_fail_with_code attribute set in source TN profile.
403	Messaging on this From number is forbidden most commonly because the number does not belong to BW or the account. Other reasons include: the TN is not enabled in the Bandwidth Dashboard, the account associated with this number is not enabled for this type of messaging, the TN is disconnected, or it is an invalid number (i.e., 1111111111).
405	The From telephone number is considered unallocated when the number does not exist in our database as an active number or the number is not enabled for messaging.
406	The To number associated with this message, while a valid North American number, is not yet assigned to a carrier and the message cannot be sent downstream.
431	The message cannot be sent as the account associated with the message is not provisioned for Short code messaging.
432	Bandwidth system indicates the account associated with the message is not enabled for this messaging zone, this country or this country is outside of messaging reach (specifically for MMS).
433	Either the source or destination account is not enabled for toll free messaging.
434	Toll Free messaging to this destination number is not allowed. Number is likely not enabled for toll free messaging or not active.
451	The user id is not valid or permitted to send messages on your account. Verify the user ID associated with your account and retry the message.
452	The application id specified is not a valid Application Id or the application id is not associated with the account.
470	This message has been filtered and blocked by Bandwidth for spam. Messages can be blocked for a variety of reasons, including but not limited to volumetric filtering, content blocking, SHAFT violation, etc.
481	The From number has been flagged by Bandwidth as prohibited from sending messages. Numbers can be added to a blacklist when they are associated with messages that repeatedly violate spam policies, fraud policies, or messaging AUP.
482	The number you are attempting to send to is blocked from receiving messages.
492	Messaging to an emergency number is forbidden.
493	Bandwidth service indicates the sender is not authorized to send messages from the account.
500	There was a failure with sending the message.
501	There was a failure with sending the message.
600	Destination application cannot accept new messages at this time. This could result from network congestion, messaging queue full on the vendor side, or throttling error on the vendor side.
610	The downstream carrier application is experiencing an error. submitting the message has failed or cancelling message has failed
620	The carrier is reporting a general error associated with their application processing the message.
630	NACK - no response or acknowledgement received from the carrier
650	Carrier Service is reporting a failure to send to destination (mobile operator or handset).
700	Carrier rejected message for invalid service type. This usually means messaging (SMS or MMS) is not supported by the carrier or handset.

Technical specifications for integration with SMPP service

701	Carrier service is reporting the destination is not reachable or the SMS service is not available.
702	This error indicates the destination subscriber is unavailable. There are several reasons for this; the subscriber has turned off handset, the destination is unreachable or barred, the GSM subscriber is busy for outbound SMS, SIM card is full, voicemail is full, or cannot reach the destination handset and has stored the message for retry in its « Store & Forward » function.
720	Carrier Rejected as Invalid Destination Address. This could mean the number is not in the numbering plan (area code does not exist or the number is just invalid) or the number is not enabled for messaging (like a landline). Additionally, for toll free messages to TMobile, this could also mean the user has opted to block all toll free and short code traffic.
721	The phone number you are attempting to send to is on the deactivation list. It is not associated with a carrier to be able to receive messages or is inactive.
730	Carrier is reporting there is no route available for messages. This could be because no routing exists to the destination, no roaming route is available, the destination handset is roaming on a network that cannot be reached, or the route is blocked for another reason.
740	Carrier is rejecting the message due to invalid source address - the number does not exist in the numbering plan. Other reasons for this error code is the source carrier is invalid/disabled, source not authorized or the number type is not supported.
750	The destination carrier has rejected the message but did not provide a specific reason. Specifically for AT&T traffic, this could be a prepaid user whose account is out of money, a subscriber that is provisioned to not receive this type of SMS or it was identified as Spam.
751	Carrier has rejected the message because the message length is invalid or too long.
752	Carrier is rejecting the message as malformed; this could be because of a blank message, unacceptable data value, the carrier does not accept messages with more than 160 characters, syntax error, content is invalid, message ID is invalid, invalid parameter length, expected TLV missing, invalid TLV value, invalid data coding scheme, invalid number of destinations, error in the optional part of the PDU body, TLV not allowed, or XML validation error.
770	The Carrier is reporting this message as blocked for SPAM. Some examples of common spam blocks: unwanted content, SHAFT violations (including specific keywords), or originating address has been flagged for repeated spam content.
775	User has opted out of receiving messages from a particular sender. Remove the destination TN from the subscriber list and cease communication with the destination.
780	Carrier rejected due to P2P volumetric violation. You are sending at a higher rate (mps) than is allowed for P2P traffic. Please contact BW support to review your account settings and ensure you are utilizing the appropriate A2P channels for high volume traffic.
790	Carrier Rejected Due to Short Code Restriction. Destination address blocked by mobile operator, destination cannot receive short code messages, or the mobile operator blocked the destination from receiving messages from this short code for some other reason.
791	Carrier Rejected SC Campaign Not Allowed or blocked by the mobile operator
792	Short Code not provisioned on mobile operator's network.
793	Short Code expired with the mobile operator.
902	Bandwidth timed out waiting for the delivery receipt, this could be because the downstream provider did not send the requested delivery receipt or they sent after the system timed out at two hours.
999	Unknown Error

5. EMSClass Table

“Table 4 - EMSClass code table” indicates the action of the callback that is sent back to the client. The information in the “value” column of the table is informed in the “esm_class” field contained in the callback PDU.

Table 4 -EMSClass Codes Table

Value	Description
-------	-------------

Technical specifications for integration with SMPP service

0	No receipt
1	Receipt requested when final outcome is delivery success or failure
2	Receipt requested when final outcome is delivery failure
4	Receipt requested when final outcome is delivery success

6. Conection

“Table 5 - Connection Parameters”, illustrates the parameters that must be used to establish connection to the SMPP server.

Table 5 – Connection Parameters

Description	Parameter
Protocol	SMPP
Conection Type	<i>bind-transceiver</i>
Host	smpp-messaging.solucoesdigitais.cc
DOOR	2775
TLS DORR	2776
User and Password	Provided by support
Active Connection Check Time	30 seconds
SMPP VERSION	3.4

6.1. ANSWERS / MO's

Among the standard data of the SMPP protocol that are returned in the PDU of the connection establishment action, we have the following data that are more relevant:

- **“command_status”**: According to the reference described in the item **“2 Command Status Table”**;
- **“system_id”**: Which returns the respective used user;
- **“command”**: Returns description of executed command, **“bind_transceiver_resp”**.

7. Sending SMS

“Table 6 - PDU parameters for message submission”, illustrates the PDU parameters to be informed when sending the message **“submit sm”**.

Table 6 - PDU parameters for message submission

PDU Camp	Parameter
<i>destination_addr</i>	Destination Phone Number
<i>data_coding</i>	• 0x00 – GSM7 - Default (GSM3.38 extended table is not supported by carriers.)

Technical specifications for integration with SMPP service

	• 0x01 – ASCII (GSM) • 0x03 – LATIN1 • 0x08 – UCS2 • 0x10 – FLASH
<i>message_payload</i>	Content/text to be sent

7.1. Codification

- ***“data_coding”***: As established by the SMPP protocol standard, each encoding category has a set of characters that are supported, and that are related to the size in which the message is segmented.
;
- ***“message_payload”***: The content must be sent all at once, without the need for character size breaks. The text must also be encoded according to the chosen *“data_coding”*.

7.2. ANSWER / MO

Among the standard data of the SMPP protocol that are returned in the PDU of the message sending action, we have the following data that are more relevant:

- ***“command_status”***: According to the reference described in the item ***“2 Command Status Table”***;
- ***“command”***: Description of executed command, ***“submit_sm_resp”***;
- ***“message_id”***: Informing the message ID within the system.

8. Delivery Callback

Among the standard data of the SMPP protocol that return in the callback PDU that detail the message sending data, the most relevant are:

- ***“command_status”***: According to the reference described in the item ***“2 Command Status Table”***;
- ***“command”***: Description of executed command, ***“deliver_sm”***;
- ***“esm_class”***: According to the reference described in item ***“5 EMSClass Table”***;
 - where ***‘4’*** combined with ***‘DELIVRD’*** from the ***“stat”*** camp of ***“short_message”***, indicates that the operator informed that it was successfully delivered to the device.
 - where ***‘1’*** combined with ***‘DELIVRD’*** from the ***“stat”*** camp of ***“short_message”***, indicates that was delivered to the operator, but for some reason detailed in the ***“err”*** field of the ***“short_message”***, the delivery cannot be confirmed.
- Where ***‘2’*** combined with any value of the ***“stat”*** field of the ***“short_message”***, indicates that the operator informed that it cannot be delivered, and the reason is detailed in the ***“err”*** field of the ***“short_message”***.

Technical specifications for integration with SMPP service

- ***“short_message”***: Contains the “message” field that details the delivery data.

8.2. Short_Message

- ***“id”***: Message ID within the system, returned in the “message_id” field as described in item **Erro: Origem da referência não encontrada**;
- ***“sub”***: Always 001;
- ***“dlvrd”***: It will have the value 001 when the device was delivered to the device, or 000 when the delivery was not successful..
- ***“submit date”***: Date and time the SMS was sent to the operator;
- ***“done date”***: Date and time the delivery receipt was received from the carrier;
- ***“stat”***: According to the reference described in the item **“3 TLV Table”**;
- ***“err”***: According to the reference described in the item **“4 Error Codes Table”**;
- ***“text”***: A brief description of the error that occurred.

9. MO Callback

Among the standard data of the SMPP protocol that return in the callback PDU for sending messages originating from the device, the most relevant are:

- ***“command_status”***: According to the reference described in the item **“2 Command Status Table”**;
- ***“command”***: Description of executed command, ***“deliver_sm”***;
- ***“esm_class”***: According to the reference described in the item **“5 EMSClass Table”**;
 - Where '0' indicates that it is a callback message sent from the user's device;
- ***“short_message”***: Contains the “message” field that contains the text sent by the device user.