



Intarget SMPP API

2015

V1.1

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Version History

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1. Introduction

This document describes the requirements for client (ESME) applications that interface with the Higate system via the SMPP protocol. The Higate SMPP Gateway enables an authorized Higate user to send content - such as SMS messages - to Higate, and to receive content - such as Delivery Notifications and Mobile-Originated messages - from Higate, using the standard SMPP protocol.

2. Environment

2.1 Setup

To use the SMPP API, the following is needed:

- A correctly configured Higate account, which includes:
- An authorized user name and password;
- A service code with associated routing set up.

A Higate account manager will provide the required information.

3. SMPP Compliance Information

The Higate SMPP Interface supports the SMPP V3.4 and V5.0 protocol, and is implemented as an SMSC. A client application is therefore expected to behave as an ESME.

3.1 Unsupported ESME-sourced SMPP PDUs

The following ESME-sourced SMPP PDUs are not supported:

- broadcast_sm
- cancel_broadcast_sm
- cancel_sm
- query_broadcast_sm
- query_sm
- replace_sm
- submit_multi
- data_sm

3.2 Unsupported SMSC-sourced SMPP PDUs

The following SMSC-sourced SMPP PDUs are not supported:

- alert_notification
- data_sm
- outbind

3.3 Higate Specific Requirements and Limitations

The following table lists specific requirements for certain PDU fields:

Higate Specific Requirements

| PDU | Field name | |
|-----------------------------------|--------------------|---|
| bind_transceiver bind_receiver | system_type | This must be an ASCII string that defines the receive filter to be applied to the bind. Refer to section 5 for a description of Receive filtering. |
| submit_sm | service_type | Set to either "CMT" (default) or "CMTX" depending on the format of the message content (Standard format or as Hex-Encoded string) - see below. Messages longer than the allowed maximum sm_length value must utilize the message_payload TLV parameter. |
| | message_payload | This field must be used as an alternative to the short_message field if the data length exceeds the standard short_message capacity. This field will also be used in deliver_sm messages if the data is too long to fit in the short_message field. |
| | replace_if_present | This flag is always ignored. |
| | | All MO messages and delivery receipts will be delivered to the client application via the deliver_sm message type. The client application must already be bound (as a transceiver or a receiver) to receive these. |

The following Higate specific implementation requirements exist:

- Client applications may bind as receivers, transmitters or transceivers.
- All MT messages must utilize the submit_sm message type.
- All MO messages and delivery receipts will be delivered to the client application via the deliver_sm message type. The client application must already be bound (as a transceiver or a receiver) to receive these. All receipts that are pending delivery will be delivered as soon as a bind is made that accepts deliver_sm messages.
- See the sections later in this document for information about Higate-specific TLVs.

4. Delivery Receipts

'deliver_sm' messages will be either intermediate status notifications, or final status notifications. A final status could either mean that the message was delivered, failed or expired. The esm_class field will define what it is, either MC_DELIVERY_RECEIPT (4) or INTERMEDIATE_DELIVERY_NOTIFICATION (hex 20, decimal 32).

4.1 Attached TLVs (Standard)

The following SMPP standard "optional" TLVs are returned with every deliver_sm message:

4.1.1 TLV message_state (SMPP)

The following values are supported:

TLV message_state Values

| Message Status | Value | Description |
|----------------|-------|--|
| ENROUTE | 1 | The message is in 'enroute' status |
| DELIVERED | 2 | Message has been delivered to its destination. |
| EXPIRED | 3 | Message validity period has expired. |
| REJECTED | 8 | Message is in a rejected state. |

4.1.2 TLV receipted_message_id (SMPP)

This TLV consists of the *destination_addr*, the *higate_reference_no*, and Higate's internal message number. If the *higate_reference_no* is not provided in the *submit_sm*, it will default to 0 (note that it is required for OBS transactions and should be unique for every transaction). The value of the *receipted_message_id* TLV is provided as an ASCII string in the following format:

"destination_addr / higate_reference_no / internal_number"

for example: "27825551212/123456/287473".

4.2 Matching of Delivery Receipts

The delivery receipts for all MT messages includes the TLV *receipted_message_id*, the value of which matches the *message_id* value of the associated *submit_sm_resp*. To track the status of a message these parameters should be matched as follows:

4.2.1 Free MT Messages

For this type of message all three parts of the *message_id* value will match, with the second part, *higate_reference_number*, matching that supplied during the *submit_sm* transaction.

4.2.2 Premium MT Messages (Linked OBS)

For this type of message the unique *higate_reference_number* used during the *submit_sm* transaction must be used to identify the associated *deliver_sm* response. Note that for linked OBS transaction a *deliver_sm* is received for either the OBS part or the linked message part, see below:

There are two possible scenarios:

- A. Successful billing – For a successful billing transaction the *submit_sm* response will contain an internal number field equal to 0. This is because the linked transaction this number refers to does not yet exist as it depends on the billing result. The second parameter *higate_reference_number* will match that supplied during the *submit_sm* transaction. The subsequent *deliver_sm* message will contain all three parts with the last part, *internal_number*, referring to the internal Higate sequence number of the linked message. The second parameter must be used for matching with the originating transaction.
- B. Unsuccessful billing – As for the previous case the *submit_sm* response will contain an internal number field equal to 0. The second parameter *higate_reference_number* will match that supplied during the *submit_sm* transaction. The subsequent *deliver_sm* message will contain all three parts with the last part, *internal_number*,

referring to the internal Higate sequence number of the failed OBS request message. The second parameter must be used for matching with the originating transaction.

4.2.3 Silent OBS

For this type of message all three parts of the *message_id* value will match, with the second part, *higate_reference_number*, matching that supplied during the *submit_sm* transaction. The *internal_number* field will contain the internal Higate sequence number of the OBS request.

4.3 Vendor-specific TLVs

Vendor specific TLVs attached to *deliver_sm* messages are described separately in sections 11.2 and 11.3 for MT and MO messages respectively.

5. Receiver Filtering

A Receiver or Transceiver bind may limit the received (MO and DR) messages by utilization of the *system_type* parameter in the bind message.

For a BIND_RECEIVER or BIND_TRANSCEIVER message the *system_type* has the following values and associated interpretations:

Receiver Filtering

| System Type | Filter |
|--------------|--|
| \$M | Receive only MO Messages |
| \$D | Receive only Delivery Receipts excluding VSR |
| \$U | Receive only USSD Notifications |
| \$A | Receive only Delivery Receipts including VSR |
| \$MD or \$DM | Receive only MO and Delivery Receipts |
| Empty | Will not receive any MO or DR messages |

The *system_type* of a BIND_TRANSMITTER message is ignored and can be left blank as this type of bind cannot receive delivery notifications.

Note that if there are multiple receivers of that have the same or common filters, then these binds will receive the common message types in a round-robin fashion.

For instance, suppose that we had the following binds:

| | |
|--------|---|
| Bind 1 | Transceiver with <i>system_type</i> \$M |
| Bind 2 | Receiver with <i>system_type</i> \$MD |
| Bind 3 | Receiver with <i>system_type</i> \$M |

- MO messages will be routed to the binds in this sequence: 1, 2, 3, 1, 2, 3, ... etc
- DR messages will be routed to the binds in this sequence: 2,2,2,2,2,... etc

Note also that a Receiver or Transceiver with an empty *system_type* will not receive any messages.

Note: Each system ID is allowed a limited (default 4) number of connections to Higate. Should additional capacity be needed the amount of connections can be increased.

6. Message Content Formatting

6.1 Standard Format

This is the normal format of the *short_message* (or *message_payload*) field of the *submit_sm* message and is simply a sequence of ASCII characters. In this case, the *service_type* must be defined as "CMT".

6.2 Hex-encoded Strings

The Higate implementation of the SMPP protocol allows for messages to be formatted as Hex encoded strings. For instance, the sort message "Hello World" may be also formatted as a string of hexadecimal characters: **48656C6C6F20576F726C64**, but when messages are formatted in this way, the *service_type* (of the *submit_sm* message) must be defined as "CMTX".

Encoding the message in this way is useful when sending all the segments of a segmented message in a single *submit_sm* message. In this case each segment is Hex-encoded individually and then concatenated together with decimal-point ('.') delimiters.

For example:

```
0605040B8423F0000603AEAF8201056A0045C60B03687474703A2F2F3139332E3 .  
0605040B8436372F6961632F6D333F00101
```

Notes

1. Do not include any spaces in the combined string. The spaces on either side of the embedded '.' in the example above are included for readability only.
2. Hex-encoded messages will generally exceed the length allowed by the *short_message* field, and so the *message_payload* field should be used.

6.3 Long Text Message

The Higate will accept standard text messages longer than the usual 160 7-bit characters and that have not been explicitly segmented. In this instance, Higate will handle the segmentation (and construct the required UDH headers) on the clients' behalf. Note that the transaction fee for the message is computed based on the total number of required segments. The *message_payload* field should be used for long messages.

For instance, the following 225 character message:

"This is a long message that exceeds the usual 160 character length. The message is automatically segmented by the Higate into as many segments as are necessary in order to send the complete message to the subscribers' handset."

Will be converted by the Higate into the following two segments:


```

05 00 03 59 02 01 54
68 69 73 20 69 73 20 61 20 6C 6F 6E 67 20 6D 65
73 73 61 67 65 20 74 68 61 74 20 65 78 63 65 65
64 73 20 74 68 65 20 75 73 75 61 6C 20 31 36 30
20 63 68 61 63 74 65 72 20 6C 65 6E 67 74 68 2E
20 54 68 65 20 6D 65 73 73 61 67 65 20 69 73 20
61 75 74 6F 6D 61 74 69 63 61 6C 6C 79 20 73 65
67 6D 65 6E 74 65 64 20 62 79 20 74 68 65 20 48
69 67 61 74 65 20 69 6E 74 6F 20 61 73 20 6D 61
6E 79 20 73 65 67 65 6D 65 6E 74 73 20 61 73 20
61 72 65 20 6E 65 63 65 02 04 00 02 15 91 02 0C

```

```

...Y..T
his is a long me
ssage that excee
ds the usual 160
chacter
length.The
message is
automatically se
gmented by the H
igate into as ma
ny segments as
are nece.....

```

```

05 00 03 59 02 02 73
73 61 72 79 20 69 6E 20 6F 72 64 65 72 20 74 6F
20 73 65 6E 64 20 74 68 65 20 63 6F 6D 70 6C 65
74 65 20 6D 65 73 73 61 67 65 20 74 6F 20 74 68
65 20 73 75 62 73 63 72 69 62 65 72 73 27 20 68
61 6E 64 73 65 74 2E

```

```

...Y..s
sary in order to
send the comple
te message to th
e subscribers' h
andset.

```

Notice the inserted 'User Defined Headers' (UDH) on both segments.

7. Enquire Link

The Higate SMSC shall periodically send *enquire_link* PDUs to check if the ESME is still responsive. Should the ESME not respond to the *enquire_link* request the connection shall be terminated. Note that in such a case no unbind PDU is issued.

The SMSC shall respond to *enquire_link* requests from the ESME. The minimum time interval for these requests should be 30 seconds.

8. Throttling

The Higate SMSC does not implement a time base throttling restriction. The system operates via sliding window protocol that limits the number of in flight messages per client connection. The implication is that the throughput is limited by the time it takes the SMSC and ESME to process a transaction. If the number of in flight messages exceeds the limit set the SMSC will respond with a status code : ESME_RMSGQFUL. If this status code is received the PDU should be resubmitted after a short timeout to allow messges to clear from the queue.

For more information on the sliding window mechanism refer to the Intarget **Higate Concepts** document.

9. MT-Billing

In the South African context, there is currently no operator-defined MT billing model. Instead, the local operators have implemented 'Online Billing Systems' (OBS) that allow WASPs to issue billing requests directly against the subscriber's MSISDN without the requirement to send or receive an SMS. However, for the sake of simplicity and uniformity, the Higate platform offers a mechanism that effectively emulates the MT-billing model that is available elsewhere. Thus, when a client application sends an MT-billed message to the Higate, the Higate manages the process of issuing an OBS authorization request and then sending of the attached SMS (if the associated OBS request is successful). Free MT-billed messages are sent as plain SMS without any OBS request.

Note: A client application may prefer to send an OBS authorization request without sending an SMS. See OBS-Only ("Silent") Billing elsewhere in this document for more information.

In order to achieve this, the Higate requires the following OBS parameters:

- The value of the OBS transaction
- The associated Higate Service code - required for routing purposes
- Flags specifying how the OBS transaction is to be confirmed
- OBS Parameters: This is a set of parameters that completely defines the OBS information, including the value of the transaction. This gives users complete control of what is specified, in contrast to a billing code, which provides a fixed set of parameters (but may be more convenient to use). The OBS parameters are specified in an optional TLV, which is described below.

10. TLV for OBS Parameters

NOTE:

There is a new Higate vendor-specific TLV, named `higate_billing_identification_2`. This supersedes `higate_billing_identification` (and `billing_identification`) and is in a totally different format for ease of use.

Because the SMPP protocol does not directly support OBS parameters, the Higate implementation supports MT-billing by using the standard SMPP v5 *billing_identification* TLV (an optional TLV for the *submit_sm* message).

Since many customers use SMPP v3.4 and may be restricted by their software in terms of which TLVs they can use, Higate also accepts a vendor-specific optional TLV, named `higate_billing_identification_2` (vendor-specific tag 0x1422).

This supersedes the older *higate_billing_identification* TLV (vendor-specific tag 0x141A), which is deprecated. No new code should use the older TLV, and users are strongly advised to upgrade to the new TLV. New features will only be added to the new TLV.

NOTE:

The Higate vendor-specific TLV, `higate_reference_no`, must be provided for each OBS transaction. This number must be unique for each transaction, or a duplicate OBS error will occur. It is an unsigned 64-bit number (19 significant digits), so it has a large range that won't run out any time soon.

Higate Billing Identification TLV

| [V2.0.1.1] TLV : <i>higate_billing_identification_2</i> | | | |
|---|--------|--------------|--|
| Field | Size | Octets | Description |
| Parameter Tag | 2 | Integer | 0x1422 (<code>higate_billing_identification_2</code>) |
| Length | 2 | Integer | Length of Value part in octets |
| Value | 1-1024 | Octet String | Bits 7.....0 0XXXXXXX (Reserved) 1XXXXXXX (Vendor Specific) The first octet represents the Billing Format tag and indicates the format of the billing information in the remaining octets. The remaining octets contain the billing information and are described below in section 8.1. |

10.1 Higate Billing Information

The following parameter sets are available for the respective billing format flags. Either one could be used but note that the *BILLING_CODE* format is being phased out.

Higate_billing_identification values description (Full OBS)

Billing Information – OBS_FULL (80_{hex})

This is formatted as a number of key-value pairs, similar in nature to HTTP headers. Each pair is a name (string), followed by a colon and optional spaces, and terminated by a newline (ASCII 0x0A) or CR+LF (ASCII 0x0D, 0x0A). The end of the name value pairs must be an empty line, in other words, a newline or CRLF following immediately after the last newline or CRLF. If a value is optional, the entire key: value line may be omitted to get the default. Do not put the key in without the value; this is invalid.

| Name | Description |
|-------------|--|
| RxSeqNo | A numeric string that corresponds to the SeqNo of the MO SMS from the subscriber that triggered this billing request. Currently, this parameter may be set to zero (that is, ASCII 48 "0" followed by a zero octet) or omitted. Defaults to zero |
| Value | Must be specified. The value of the OBS request expressed in (Rand) cents. Example "120" represents a financial value of R1.20. |
| Service | May be omitted. A text string that is provided to the client when the account is configured. Defaults to the empty string. |
| Type | May be omitted. If provided, must always be the text string "Mobile". Defaults to "Mobile". |
| AccRef | May be omitted. Defaults to the empty string. |
| Description | A text string description of the content being delivered to the subscriber - limited to 128 octets excluding the line terminator. May be omitted. |
| ItemId | May be omitted. Defaults to the empty string. |
| MerchantId | May be omitted. Defaults to the empty string. |

Example:

Let's say that

- RxSeqNo = 1111,
- Value = 499,
- Service = "MYSERV",
- Type = "Mobile",
- AccRef = "",
- Description = "Some description",
- ItemId = "", and
- MerchantId = "".

The correctly encoded *higate_billing_identification_2* value is shown below. Note that AccRef, ItemId, and MerchantId are omitted and the default value will be used for them.

```
RxSeqNo: 1111\n
Value: 499\n
Service: MYSERV\n
Type: Mobile\n
Description: Some description\n
\n
```

11. OBS Only (Silent Billing)

Sometimes one needs to bill for something without sending a corresponding SMS message. This is achieved by sending a billing (OBS) transaction.

To do this using Higate's SMPP implementation, include a *higate_toc* TLV set to 7 (TOC_OBS) and issue an SMPP *submit_sm* containing the parameters required for an OBS request (described below). You must supply a *short_message* or *message_payload* containing the string "SILENT" (all uppercase) or the SHG SMSC will reject the request. This is for your protection, to avoid SMS messages inadvertently becoming silent OBS requests because the *higate_toc* flag value of 7 is unwittingly retained.

The SMPP parameters below are supported for the "silent" OBS transaction. They are not all required. These parameters are in addition to the mandatory SMPP parameters documented in SMPP V3.4.

Silent OBS TLVs

| Name | Tag | Required? | Comments | Default |
|---------------------------------|--------|----------------------|------------|---------|
| higate_reference_no | 0x141F | Yes | Positive # | None |
| higate_toc | 0x1409 | Yes | Must be 7 | None |
| higate_service | 0x140A | No | | "" |
| higate_sub_service | 0x140B | No | | "" |
| higate_time_mask | 0x140D | No | | 0 |
| higate_adult_rating | 0x140E | No | | 0 |
| higate_flags | 0x1413 | Yes ^{Note1} | See TLV | 0 |
| higate_billing_identification_2 | 0x1422 | Yes | See TLV | None |
| higate_subscription_data_2 | 0x1423 | Yes | See TLV | None |
| higate_ext_data_2 | 0x1424 | No | See TLV | Omitted |

Note1

Since the Higate SMPP interface does not currently provide a confirmation method the *higate_flags* TLV should always be used with SILENT OBS transactions and the AUTO_CONFIRM flag (0x200) should always be set. Although the system will accept this message any Vodacom OBS transactions will remain unconfirmed.

12. Multi-Segment Messages

12.1 Transaction Fees

Each segment of a multi-segment SMS is accounted for individually, so for example the cost of sending a 3-segment SMS is still equivalent to sending three distinct SMSs.

12.2 Segmented MT-Billed Messages

Higate supports the standard mechanism for submitting multi-segment SMS messages over SMPP; however, unless this is properly handled, it can present a problem for messages that are also MT-billed.

The issue is as follows:

- For a single large (MT-billed) content message (e.g. a WAP push) the resulting SMS may sometimes be longer than the maximum segment length (140 8-bit bytes or 160 7-bit bytes), which means that the client application must partition the content into multiple segments and submit each segment separately to the Higate.
- However, the subscriber must only be billed once for the entire content despite the fact that there are multiple segments.
- This implies that only one of the segments (probably the first) must actually be associated with an OBS transaction (OBS-linked). The remaining segments must not have any associated OBS transactions, and are immediately forwarded on to the relevant local operator as an ordinary zero-rated MT message. The OBS-linked segment on the other hand must first have its associated OBS transaction authorized by the operator before the SMS segment may be sent to the subscriber.
- However OBS interfaces to the local operators are sometimes congested leading to a backup of the queued OBS transactions. Consequently there may sometimes be a considerable delay between the delivery of the non-OBS-linked segments and the single OBS-linked segment - leading ultimately to a failure to deliver the complete message.
- There are also additional problems and complications:
 - The OBS-linked segment may never actually be sent if its associated OBS transaction is not authorized.
 - The OBS-linked segment and remaining segments need to be submitted with different Billing Codes reflecting their different OBS-linkage statuses.

12.3 The Higate Solution

In order to overcome these problems it is strongly recommended that all segments of the messages be submitted to the Higate in a single composite unit as follows:

- The client application must segment the message in the usual way, taking care to include the required User Data Headers (UDH) in each segment.
- Each segment is then formatted as a Hex-encoded string and concatenated together using a single decimal point character ('.') between each segment.
- The complete Hex-encoded set of concatenated segments is then submitted to the Higate using the *message_payload* field of the *submit_sm* message, taking care to set the *service_type* to "CMTX".

This allows the Higate to treat all the associated SMS segments as one composite unit for OBS billing purposes. In other words, no SMS segments are sent to the subscriber until the associated OBS transaction is successful.

13. USSD

The Higate SMSC enables USSD dialogues by means of standard *submit_sm* and *deliver_sm* PDUs.

The message formatting and message flow are described in detail in the **Intarget Higate Concepts** document.

The flow of USSD transactions are best described by referring to the examples in **section 18.4**

The following are important factors to take into account for USSD transactions:

- On the receiver bind add the 'U' to the receiver *system_type* to enable USSD events, for example \$U. If this is not specified no USSD events will be received.
- An incoming session will be via *deliver_sm*, for each session you will have a single OPEN event, a number of REQUEST events (one or more) and a CLOSE event.
- The OPEN event is identified by Dialogue ID value of 1 (TLV 0x1431) - It is not possible to respond on this event.
- DIALOGUE REQUEST event is identified by Dialogue ID value of 4 (TLV 0x1431) – A response should be issued on this event with a *submit_sm* which contains the reply content in the *short_message* field and the same Higate Session ID as the original request in the *higate_ussd_session_id* TLV (TLV 0x1430)
- The CLOSE event is identified by Dialogue ID value of 2 (TLV 0x1431) - It is not possible to respond on this event
- To keep the session open on reply, specify a *higate_flags* TLV value of 0, to close it specify a value of 1

The following vendor specific TLVs apply to USSD transactions:

USSD Vendor Specific TLVs

| Name | Tag | Range | Description |
|----------------------------|--------|-------------------|---|
| higate_ussd_session_id | 0x1430 | C-Octet string | |
| higate_ussd_dialogue_id | 0x1431 | unsigned char(1) | One of the following IDs indicating the state of the USSD session: 1 = DID_OPEN (Session was started) 2 = DID_CLOSE (Session terminated) 3 = DID_TRACE (Script trace event) 4 = DID_REQUEST(Request) 5 = DID_ERROR (Error Condition) |
| higate_ussd_network_sid | 0x1432 | C-Octet string | |
| higate_ussd_script | 0x1433 | C-Octet string | |
| higate_ussd_script_line_no | 0x1434 | unsigned long (4) | |

14. Voucher Repository

The Higate system offers a voucher repository through which almost any type of voucher can be issued. The message formatting and message flow are described in detail in the **Intarget Higate Concepts** document.

14.1 Higate SMPP/XML

When submitting a voucher request a standard *submit_sm* transaction is issued similar to sending an SMS message. The following fields of the *submit_sm* should be given particular attention.

| Field | Value | Description |
|------------------|--------------|--|
| service_type | CMT or CMTX | Use CMT for plain ASCII and CMTX if the message is hex encoded. |
| source_addr | NULL | This parameter is not applicable to VSR transactions, set to null. |
| destination_addr | | MSISDN of the voucher recipient. The voucher is issued for the network this MSISDN belongs to. |
| short_message | XML Document | XML Voucher Submit Document This can also be hex encoded but then the service type should be set accordingly. |

When submitting a voucher request it is very important to include the *higate_toc* and *higate_reference_no* Vendor Specific TLVs. The *higate_service* TLV is also required should VSR routing not be on the default service code.

A unique value for the *higate_reference_no* TLV is required by the default service setup although unique reference numbering can be disabled on request. To avoid the danger of duplicate voucher transactions a unique number is recommended.

15. Vendor-specific TLVs

15.1 submit_sm Vendor-specific TLVs

The following optional vendor-specific TLVs are accepted when sending a *submit_sm* PDU. Note that Octet String, C-Octet String and Integer have the meanings as defined in the SMPP V3.4 Standard Document.

Submit_sm Vendor-specific TLVs

| Name | Tag | Range | Description |
|---------------------------------|--------|----------------------|---|
| higate_toc | 0x1409 | Integer(1) | Higate Type Of Content (see Higate documentation). For example, the TOC for SMS is 1. |
| higate_service | 0x140A | C-Octet String(17) | Name of the Higate service. |
| higate_sub_service | 0x140B | C-Octet String(17) | Name of the Higate sub-service. |
| higate_tag | 0x140C | C-Octet String(9) | Numeric string tag that may follow the MSISDN. |
| higate_time_mask | 0x140D | Integer(4) | This is a bit-mask, where each of the low-order 24 bits represents an hour of the day. If a bit is set then it means that Higate will <i>not</i> deliver the message to the network if the current time is within the associated hour. For example: a TimeMask value of 00000000 11000000 00000000 01111111 means do not send the message if it is between 22H00 and 23H59, or between 00H00 and 06H59. More simply, don't send this message if it is later than 11PM or earlier than 7AM (local Higate server time). The high order byte is currently unused but is reserved for future use. |
| higate_adult_rating | 0x140E | Integer(1) | One of the Higate adult rating codes (see Higate documentation). |
| higate_flags | 0x1413 | Integer(4) | Higate flags (see Higate documentation). If the flags TLV is omitted, the flags will be calculated by the Higate SMPP server based on service_type, esm_class, data_coding, and billing_identification. |
| higate_reference_no | 0x141F | Integer(8) | This must be used instead of the user_message_reference, which has too small a range to avoid duplicate OBS errors. |
| higate_billing_identification_2 | 0x1422 | Octet String (32768) | V2.0.1.1 upwards, see section on billing identification |

| | | | |
|----------------------------|--------|----------------------|---|
| higate_subscription_data_2 | 0x1423 | Octet String (65536) | <p>Clients are required to send this when sending any OBS-linked submit_sm message. It contains details of the subscription to which the OBS is linked.</p> <p>The TLV data is a set of key/value pairs that are in the format key1: value1\n key2: value 2\n \n</p> <p>The "\n" is a line terminator and must be one of <LF> or <CR><LF>. Current keys are as follows and are case-sensitive.</p> <p>Started: UTC (GMT) DateTime subscription started, format YYYY-MM-DD HH:MM:SS (e.g. 2008-09-15 15:59:52). If this is the first time this is sent, the word FIRST must be appended, e.g. Started: 2008-09-15 15:59:52 FIRST\n</p> <p>Category: Descriptive single word, max 32 characters, about what kind of subscription this is (e.g. "BookClub, RingTone, WapPush").</p> <p>Trigger: This is how the subscription was initially triggered, for example, by an SMS MO, via the Web, or USSD. The format is one of the following: SMSMO: 1234567 USSD: 1234567 WEB OTHER</p> <p>Started and Category keys are required; Trigger is optional.</p> <p>Example: Started: 2008-09-15 15:59:52\n Category: BookClub\n Trigger: SMSMO: 1234567\n \n</p> |
| higate_ext_data_2 | 0x1424 | Octet String (65536) | <p>This supports OBS operator-specific data that may be required. The TLV data is a sequence of newline-terminated strings, organized as key-value pairs as described in higate_subscription_data_2 above. Each key must start with "OBS.Ext.". For example, if an operator named ABC has a requirement for a data point named ContentType with a value "001" to be provided with the OBS message, the key would be "OBS.Ext.ABC.ContentType", and the value would be "001". The total number and size of keys and values are limited by the maximum length of this TLV.</p> |
| higate_ussd_session_id | 0x1430 | C-Octet string | |
| higate_ussd_dialogue_id | 0x1431 | unsigned char(1) | <p>One of the following IDs indicating the state of the USSD session:</p> <ul style="list-style-type: none"> 1 = DID_OPEN (Session was started) 2 = DID_CLOSE (Session terminated) 3 = DID_TRACE (Script trace event) 4 = DID_REQUEST(Request) 5 = DID_ERROR (Error Condition) |
| higate_ussd_network_sid | 0x1432 | C-Octet string | |
| higate_ussd_script | 0x1433 | C-Octet string | |

| | | | |
|----------------------------|--------|-------------------|--|
| higate_ussd_script_line_no | 0x1434 | unsigned long (4) | |
|----------------------------|--------|-------------------|--|

15.2 deliver_sm Delivery Notification Vendor-specific TLVs

One or more of the following vendor-specific TLVs are returned by Higate's SMSC when it sends the ESME a *deliver_sm* message containing a delivery receipt or status notification. Note that Octet String, C-Octet String and Integer have the meanings as defined in the SMPP V3.4 Standard Document.

deliver_sm Delivery Receipt/Status Notification Vendor-specific TLVs

| Name | Tag | Range | Description |
|--------------------|--------|---------------------|---|
| higate_mobile_code | 0x1408 | C-Octet String(9) | This is a 6 character null-terminated string, all characters of which are decimal digits. It comprises two zero-filled 3-digit values, the MCC and MNC. MCC is the ITU mobile country code, while MNC is the mobile network code. For example, South Africa's MCC is 655, and Vodacom SA's MNC is 01. The higate_mobile_code corresponding to this would be "655001". |
| higate_toc | 0x1409 | Integer(1) | Higate Type Of Content (see Higate documentation). For example, the TOC for SMS is 1. |
| higate_service | 0x140A | C-Octet String(17) | Name of the Higate service. |
| higate_acc_balance | 0x140F | Integer(8) | Account balance in units (currently cents). Signed value, may be negative. |
| higate_balance | 0x1411 | Integer(8) | Sub-account balance in units (currently cents). Signed value, may be negative. |
| higate_flags | 0x1413 | Integer(4) | Higate flags (see Higate documentation) |
| higate_network_id | 0x1414 | Integer(4) | ID of the network that processed the message. See Higate documentation. |
| higate_value | 0x1415 | Integer(8) | The value in units of the OBS, SMSMO or VSR transaction, if applicable, or 0. |
| higate_result_code | 0x1416 | Integer(4) | The Higate result code for this status notification/delivery receipt. See Higate documentation for values. |
| higate_result_text | 0x1417 | C-Octet String(129) | A textual description of the result code |
| higate_sub_code | 0x1419 | Integer(4) | The Higate sub-code of the result code, if applicable, or 0. |

15.3 deliver_sm Mobile Originated (MO) Vendor-specific TLVs

The following vendor-specific TLVs are returned by Higate's SMSC when sending to the ESME a *deliver_sm* message containing a mobile originated (MO) message. Note that Octet String, C-Octet String and Integer have the meanings as defined in the SMPP V3.4 Standard Document.

deliver_sm Mobile Originated (MO) Vendor-specific TLVs

| Name | Tag | Range | Description |
|---------------------|--------|--------------------|--|
| higate_mobile_code | 0x1408 | C-Octet String(9) | This is a 6 character null-terminated string, all characters of which are decimal digits. It comprises two zero-filled 3-digit values, the MCC and MNC. MCC is the ITU mobile country code, while MNC is the mobile network code. For example, South Africa's MCC is 655, and Vodacom SA's MNC is 01. The corresponding to this would be "655001". |
| higate_toc | 0x1409 | Integer(1) | Higate Type Of Content (see table below). |
| higate_service | 0x140A | C-Octet String(17) | Name of the Higate service. |
| higate_adult_rating | 0x140E | Integer(1) | One of the Higate adult rating codes (see table below). |
| higate_acc_balance | 0x140F | Integer(8) | Account balance in units (currently cents). Signed value, may be negative. |
| higate_balance | 0x1411 | Integer(8) | Sub-account balance in units (currently cents). Signed value, may be negative. |
| higate_flags | 0x1413 | Integer(4) | Higate flags (see Higate documentation) |
| higate_network_id | 0x1414 | Integer(4) | ID of the network that originated the message. See Higate documentation. |
| higate_sent_time | 0x1418 | Integer(4) | The local time at which the message was sent, in seconds since the epoch (Unix time). |
| higate_to_tag | 0x141B | C-Octet String(17) | The tag that was sent along with the MSISDN. |
| higate_value | 0x141C | Integer(8) | Reserved. |
| higate_sequence_no | 0x1421 | Integer(8) | The unique Higate-defined transaction ID. |

16. Higate Account Balance

The customer's Higate account balance information is attached to each *deliver_sm* message in the *higate_acc_balance* and *higate_balance* TLVs. The total amount of Higate credits available is equal to the sum of these values, unless the account is allowed to have a negative limit in which case this limit should be taken into account.

For Example:

| | Example 1 | Example 2 | Example 3 |
|----------------------------------|------------------|------------------|------------------|
| Main account balance: | 100 000 | 100 000 | -10 000 |
| Sub Account balance | 50 000 | 50 000 | 5 000 |
| Credit Limit: | 0 | -20 000 | -20 000 |
| Higate Credits Available: | 150 000 | 170 000 | 15 000 |

The *higate_acc_balance* TLV contains the main account balance, i.e. how many Higate credits are left in the customer's main account.

The *higate_balance* TLV contains the *sub_account* balance, i.e. credits allocated to be used during this session. When these credits have been consumed an automatic drawdown (transfer) is done from the main account to replenish the sub account balance (if so configured).

The subscriber will observe the value of the *higate_balance* TLV decrementing for each transaction. When a transaction is attempted and there are not sufficient credits available in the *sub_account* the automatic drawdown will take place (if so configured). The value of the *higate_acc_balance* TLV will show a decrease by a maximum of the drawdown amount. The *higate_balance* TLV will show increase of the same size (minus the cost of the last transaction that triggered the drawdown).

16.1 Common Error Codes

Common SMPP Error Codes

| SMPP Error Code | Value (Hex) | Description | User Action |
|----------------------------|---------------------------------|---|--|
| ESME_RSUBMITFAIL | 0x00000003 (Standard SMPP) | submit_sm failed | This message can be caused by a variety of factors; the most common however is when the client account has run out of credit. Check the account balance. |
| ESME_RINVCMDID | 0x00000003 (Standard SMPP) | Invalid Command ID | Fix code |
| ESME_RBINDFAIL | 0x0000000D (Standard SMPP) | Bind failed | Possibly the wrong username or password was used |
| ESME_RINVEXPYRY | 0x00000062 (Standard SMPP) | Invalid expiry time | Fix code |
| ESME_RTHROTTLED | 0x00000058 (Standard SMPP) | Server congested | Resubmit the submit_sm |
| ESME_RMSGQFUL | 0x00000014 | Queue full - Too many in-flight messages | Lower submit rate |
| ESME_HG_UNSUPPORTED_TOC | 0x00000190 (Vendor Specific) | This Higate TOC is not supported | Check routing |
| ESME_HG_MISSING_DATA | 0x00000191 (Vendor Specific) | One of the values in a Higate TLV is missing | Check TLV setup |
| ESME_HG_VALIDATION_FAILURE | 0x00000192 (Vendor Specific) | One of the values in a Higate TLV is incorrect | Fix invalid value |
| ESME_HG_MESSAGE_TO_BIG | 0x00000193 (Vendor Specific) | Message was too large | Check message |
| ESME_HG_OUT_OF_CREDIT | 0x00000194 | No Higate credit available | Add credit |
| ESME_HG_CONFIG_ERROR | 0x00000195 | Possible configuration error | This error usually indicates that no routing exists for the bearer type and network. Check routing. |

17. Routing

Example Routing Configuration Sheet

```

Login Details
-----

ID           : 451
Name          : C3Test01
Password      : xxxxxxxx
Created       : 05/03/17 12:49:21
Status        : Enabled
API Type      : Persistent
Default Service : C3T01
Default URL    :
Auto-drawdown : No
Drawdown Amount : 26000 Credits
Final Status Only : False

Service Codes  Vod Service Code  URL
-----
C3T01          INT00017

Transmit (MT) routings by service code
-----
C3T01
SMS
  Rule: By Network
    Telkom Mobile SA
    GateID: 279
    Source Address: 27811605204    PUBLIC    Tags ENABLED    3
  Rule: By Network
    Vodacom
    GateID: 209
    Source Address: 27820048062    PUBLIC    Tags ENABLED    216
USS
  Rule: Default
    GateID: 299
OBS
  Rule: By Network
    Vodacom
    GateID: 211
  Rule: By Network
    Telkom Mobile SA
    GateID: 320
  Rule: By Network
    MTN
    GateID: 254
VSR
  Rule: By Network
    GateID: 316
  Rule: Default
    GateID: 316

Receiver (MO) SMS routings by service code
-----
C3T01
  27811609902    by Default Number
  
```

Each account login has a routing sheet (see Listing 1) associated with it which contains all the necessary information to transact with the Higate system. The configuration in the example listing is used for all examples in this document. For more information on the routing sheet refer to the **Intarget Higate Concepts** document.

18. Examples

The following examples show actual PDU data from test cases to demonstrate the correct PDU composition for the various bearer services.

18.1 Bind

The following example shows a transceiver bind configured to send and receive delivery notifications for all services. Note the System type being set to \$MDUA and also the response indicating connection to a SMPP 3.4 compliant SMSC.

| BIND_TRANCEIVER | | |
|-------------------|-----------------|----------------------------|
| Field name | Field value | Field hexdump |
| Command length | 43 | 00 00 00 2B |
| Command id | BIND_TRANCEIVER | 00 00 00 09 |
| Command status | ESME_ROK | 00 00 00 00 |
| Sequence number | 1 | 00 00 00 01 |
| System id | c3test01 | 63 33 74 65 73 74 30 31 00 |
| Password | xxxxxxx | 78 78 78 78 78 78 78 00 |
| System type | \$MDUA | 24 4D 44 55 41 00 |
| Interface version | 0x34 | 34 |
| Addr TON | 0 | 00 |
| Addr NPI | 0 | 00 |
| Address range | | 00 |

| BIND_TRANCEIVER_RESP | | |
|----------------------|------------------------|----------------------------------|
| Field name | Field value | Field hexdump |
| Command length | 32 | 00 00 00 20 |
| Command id | 0x9=CM_BIND_TRANCEIVER | 80 00 00 09 |
| Command status | 0=ESME_ROK | 00 00 00 00 |
| Sequence number | 1 | 00 00 00 01 |
| System id | HigateSmpp | 48 69 67 61 74 65 53 6D 70 70 00 |
| TLV | | |
| Tag | SC_INTERFACE_VERSION | 02 10 |
| Length | 1 | 00 01 |
| Interface version | 3.4 | 34 |

18.2 SMS MT

The following example shows the sending of a simple SMS message with content "Test message from Higate SMPP".

The following are points are important to note:

No source_addr – the MNOs does not allow spoofing of the source address. Because of mobile number portability it is not possible for the client to know to which network the MSISDN belongs to. Each network has a different source

address which gets assigned by the Higate system. The source address can be used to specify a tag value but this is best left to the *higate_tag* TLV which serves the same purpose.

The *higate_reference_no* TLV (optional for SMS) specifies a reference number that is associated with the message. This reference number is included in all delivery notifications for this message.

The *higate_toc* TLV (optional for SMS only) specifies the type of content, in this case SMS. SMS is the default TOC should this TLV be omitted.

The *higate_flags* TLV (optional) sets the message modifier flags. A value of 0 indicates no flags are set, which is also the default value if this TLV is omitted.

The *higate_service* TLV (optional) indicates what service code (i.e. routing rule) should be used for this transaction. If set to NULL or if omitted the default service code as indicated on the routing sheet is used.

| SUBMIT_SM | | |
|-------------------------|-------------------------------|--|
| Field name | Field value | Field hexdump |
| Command length | | 00 00 00 6D |
| Command id | SUBMIT_SM | 00 00 00 04 |
| Command status | ESME_ROK | 00 00 00 00 |
| Sequence number | 1 | 00 00 00 01 |
| service_type | CMT | 43 4D 54 00 |
| source_addr_ton | | 00 |
| source_addr_npi | | 01 |
| source_addr | | 00 |
| dest_addr_ton | | 01 |
| dest_addr_npi | | 01 |
| destination_addr | 27767931435 | 32 37 37 36 37 39 33 31 34 33 35 00 |
| esm_class | | 00 |
| protocol_id | | 00 |
| priority_flag | | 00 |
| schedule_delivery_time | | 00 |
| validity_period | | 00 |
| registered_delivery | | 01 |
| replace_if_present_flag | | 00 |
| data_coding | | 00 |
| sm_default_msg_id | | 00 |
| sm_length | | 1D |
| short_message | Test message from Higate SMPP | 54 65 73 74 20 6D 65 73 73 61 67 65 20 66 72 6F 6D 20 48 69 67 61 74 65 20 53 4D 50 50 |
| TLV (optional) | | |
| Tag | higate_reference_no | 14 1F |
| Length | 8 | 00 08 |
| ESME Reference Number | | 00 00 00 00 00 00 4F 76 |
| TLV (optional) | | |
| Tag | higate_service | 14 0A |
| Length | 1 | 00 01 |

| | | |
|-----------------------|---------------------|-------------|
| Service Code | (none specified) | 00 |
| TLV (optional) | | |
| Tag | higate_toc | 14 09 |
| Length | 1 | 00 01 |
| TOC | SMS | 01 |
| TLV (optional) | | |
| Tag | higate_flags | 14 13 |
| Length | 4 | 00 04 |
| Flags | 0 | 00 00 00 00 |

The response message contains the Message ID (*receipted_message_id* TLV) which is a concatenation of the MSISDN, Reference Number and Higate Sequence Number (see 4.1.2)

| SUBMIT_SM_RESP | | |
|-----------------------|------------------------------|--|
| Field name | Field value | Field hexdump |
| Command length | 45 | 00 00 00 2D |
| Command id | submit_sm_resp | 80 00 00 04 |
| Command status | 0=ESME_ROK | 00 00 00 00 |
| Sequence number | 1 | 00 00 00 01 |
| Message id | 27767931435/20342/2888235058 | 32 37 37 36 37 39 33 31 34 33 35 2F 32 30 33 34 32 2F 32 38 38 38 32 33 35 30 35 38 00 |

The final delivery notification. Note the following:

Short message contains the delivery receipt in which the id field contains the Higate sequence number 2888235058 which was part of the *receipted_message_id* of the original *submit_sm_resp*. The entire *receipted_message_id* TLV is also included as is the *higate_reference_no* TLV. Either of these can be used to link the DN message back to the originating transaction. It is suggested to use the *receipted_message_id* as this is supported by most off-the-shelf SMSCs.

The account balance TLVs as described in section 16 are also included in all DNs. Note that this specific account has a credit limit set to -50000 which should be taken into account when doing the calculation.

| DELIVER_SM (DN) | | |
|------------------------|-------------|-------------------------------------|
| Field name | Field value | Field hexdump |
| Command length | | 00 00 01 5B |
| Command id | | 00 00 00 05 |
| Command status | 0=ESME_ROK | 00 00 00 00 |
| Sequence number | 1 | 00 00 00 01 |
| service_type | CMT | 43 4D 54 00 |
| source_addr_ton | | 00 |
| source_addr_npi | | 00 |
| source_addr | | 00 |
| dest_addr_ton | | 01 |
| dest_addr_npi | | 01 |
| destination_addr | 27767931435 | 32 37 37 36 37 39 33 31 34 33 35 00 |
| esm_class | | 04 |

| | | |
|-------------------------|--|---|
| protocol_id | | 00 |
| priority_flag | | 00 |
| schedule_delivery_time | | 00 |
| validity_period | | 00 |
| registered_delivery | | 00 |
| replace_if_present_flag | | 00 |
| data_coding | | 00 |
| sm_default_msg_id | | 00 |
| sm_length | | 7E |
| short_message | id:2888235058 sub:001 dlvr:001 submit date:150313004855 done date:150313004855 stat:DELIVRD err:000 text:Test message from Hi | 69 64 3A 32 38 38 38 32 33 35 30 35 38 20 73 75 62 3A 30 30 31 20 64 6C 76 72 64 3A 30 30 31 20 73 75 62 6D 69 74 20 64 61 74 65 3A 31 35 30 33 31 33 30 30 34 38 35 35 20 64 6F 6E 65 20 64 61 74 65 3A 31 35 30 33 31 33 30 30 34 38 35 35 20 73 74 61 74 3A 44 45 4C 49 56 52 44 20 65 72 72 3A 30 30 30 20 74 65 78 74 3A 54 65 73 74 20 6D 65 73 73 61 67 65 20 66 72 6F 6D 20 48 69 |
| TLV (14 08) | | |
| Tag | higate_mobile_code | 14 08 |
| Length | | 00 07 |
| Mobile Code | MCC=655 (South Africa) MNC=001 (Vodacom) | 36 35 35 30 30 31 00 |
| TLV | | |
| Tag | higate_toc | 14 09 |
| Length | 1 | 00 01 |
| | SMS | 01 |
| TLV | | |
| Tag | higate_service | 14 0A |
| Length | 6 | 00 06 |
| | C3T01 | 43 33 54 30 31 00 |
| TLV | | |
| Tag | higate_acc_balance | 14 0F |
| Length | 8 | 00 08 |
| | -50000 credits | FF FF FF FF FF F8 5E E0 |
| TLV | | |
| Tag | higate_balance | 14 11 |
| Length | 8 | 00 08 |
| | 13615 | 00 00 00 00 00 00 35 2F |
| TLV | | |
| Tag | higate_network_id | 14 14 |
| Length | 4 | 00 04 |
| | VODACOM | 00 00 00 01 |
| TLV | | |
| Tag | higate_flags | 14 13 |
| Length | 4 | 00 04 |
| | HIGATE_FLAG_SMS_DN_FINAL | 00 01 00 00 |
| TLV | | |
| Tag | higate_value | 14 15 |
| Length | 8 | 00 08 |

| | | |
|------------|------------------------------|--|
| | 0 | 00 00 00 00 00 00 00 00 |
| TLV | | |
| Tag | higate_result_code | 14 16 |
| Length | 4 | 00 04 |
| | RECEIPTED | 00 00 00 04 |
| TLV | | |
| Tag | higate_result_text | 14 17 |
| Length | 10 | 00 0A |
| | Receipted | 52 65 63 65 69 70 74 65 64 00 |
| TLV | | |
| Tag | higate_sub_code | 14 19 |
| Length | 4 | 00 04 |
| | 0 (No error) | 00 00 00 00 |
| TLV | | |
| Tag | higate_reference_no | 14 1F |
| Length | 8 | 00 08 |
| | 20342 | 00 00 00 00 00 00 4F 76 |
| TLV | | |
| Tag | receipted_message_id | 00 1E |
| Length | 30 | 00 1D |
| | 27767931435/20342/2888235058 | 32 37 37 36 37 39 33 31 34 33 35 2F 32 30 33 34 32 2F 32 38 38 38 32 33 35 30 35 38 00 |
| TLV | | |
| Tag | message_state | 04 27 |
| Length | 1 | 00 01 |
| | DELIVERED | 02 |
| TLV | | |
| Tag | higate_src_address | 14 25 |
| Length | 12 | 00 0C |
| | 27820048062 | 32 37 38 32 30 30 34 38 30 36 32 00 |

18.3 SMS MO

The following PDUs illustrates a standard SMS MO transaction. Note the *higate_value* TLV which indicates the value of this MO message. In the case of a premium MO message (for example a short code) this TLV will contain the rated value of the message.

| DELIVER_SM (MO) | | |
|-------------------------|---|--|
| Field name | Field value | Field hexdump |
| Command length | | 00 00 00 B9 |
| Command id | | 00 00 00 05 |
| Command status | 0=ESME_ROK | 00 00 00 00 |
| Sequence number | 2 | 00 00 00 02 |
| service_type | CMT | 43 4D 54 00 |
| source_addr_ton | | 01 |
| source_addr_npi | | 01 |
| source_addr | 27767931435 | 32 37 37 36 37 39 33 31 34 33 35 00 |
| dest_addr_ton | | 01 |
| dest_addr_npi | | 01 |
| destination_addr | 27820048062216 | 32 37 38 32 30 30 34 38 30 36 32 32 31 36 00 |
| esm_class | | 00 |
| protocol_id | | 00 |
| priority_flag | | 00 |
| schedule_delivery_time | | 00 |
| validity_period | | 00 |
| registered_delivery | | 00 |
| replace_if_present_flag | | 00 |
| data_coding | | 01 |
| sm_default_msg_id | | 00 |
| sm_length | | 0D |
| short_message | Reply message | 52 65 70 6C 79 20 6D 65 73 73 61 67 65 |
| TLV | | |
| Tag | higate_sequence_no | 14 21 |
| Length | 8 | 00 08 |
| | | 00 00 00 00 05 BB 32 65 |
| TLV | | |
| Tag | higate_mobile_code | 14 08 |
| Length | 7 | 00 07 |
| Mobile Code | MCC=655 (South Africa) MNC=001 (Vodacom) | 36 35 35 30 30 31 00 |
| TLV | | |
| Tag | higate_toc | 14 09 |
| Length | 1 | 00 01 |
| | SMS | 01 |
| TLV | | |

| | | |
|-------------|-------------------------------|-------------------------|
| Tag | higate_service | 14 0A |
| Length | 6 | 00 06 |
| | C3T01 | 43 33 54 30 31 00 |
| TLV | | |
| Tag | higate_acc_balance | 14 0F |
| Length | 8 | 00 08 |
| | | FF FF FF FF FF F8 5E E0 |
| TLV | | |
| Tag | higate_balance | 14 11 |
| Length | 8 | 00 08 |
| | | 00 00 00 00 00 00 35 2A |
| TLV | | |
| Tag | higate_flags | 14 13 |
| Length | 4 | 00 04 |
| | 0 | 00 00 00 00 |
| TLV | | |
| Tag | higate_network_id | 14 14 |
| Length | 4 | 00 04 |
| | VODACOM | 00 00 00 01 |
| TLV | | |
| Tag | higate_adult_rating | 14 0E |
| Length | 1 | 00 01 |
| Rating Code | ADULT_NONE | 00 |
| TLV | | |
| Tag | higate_sent_time | 14 18 |
| Length | 5 | 00 04 |
| Time | Thu, 12 Mar 2015 22:49:38 GMT | 55 02 18 02 |
| TLV | | |
| Tag | higate_to_tag | 14 1B |
| Length | 4 | 00 04 |
| | 216 | 32 31 36 00 |
| TLV | | |
| Tag | higate_value | 14 1C |
| Length | 8 | 00 08 |
| Value | 0 (non-premium MO) | 00 00 00 00 00 00 00 00 |

18.4 USSD

18.4.1 Example 1

The PDUs in the following section describes a complete USSD Dialogue session. The USSD prefix *120*9510# was dialled from a handset to initiate the session.

Session OPEN:

Take note of the higate_ussd_session_id TLV which contains the ID number of the session and is used to respond to dialogue requests. This number stays the same throughout the session. The higate_ussd_dialogue_id indicates what kind of USSD request this is. The only dialogue ID the application can respond to is the REQUEST. The OPEN and CLOSE events are for indication only.

Note that the short_message field is empty since no data is passed during OPEN and CLOSE.

| DELIVER_SM (MO) | | |
|-------------------------|---------------------------|-------------------------------------|
| Field name | Field value | Field hexdump |
| Command length | | 00 00 00 A6 |
| Command id | | 00 00 00 05 |
| Command status | 0=ESME_ROK | 00 00 00 00 |
| Sequence number | 2 | 00 00 00 08 |
| service_type | CMT | 43 4D 54 00 |
| source_addr_ton | | 00 |
| source_addr_npi | | 00 |
| source_addr | 27767931435 | 32 37 37 36 37 39 33 31 34 33 35 00 |
| dest_addr_ton | | 00 |
| dest_addr_npi | | 00 |
| destination_addr | *120*9510# | 2A 31 32 30 2A 39 35 31 30 23 00 |
| esm_class | | 00 |
| protocol_id | | 00 |
| priority_flag | | 00 |
| schedule_delivery_time | | 00 |
| validity_period | | 00 |
| registered_delivery | | 00 |
| replace_if_present_flag | | 00 |
| data_coding | | 00 |
| sm_default_msg_id | | 00 |
| sm_length | | 00 |
| TLV | | |
| Tag | higate_toc | 14 09 |
| Length | 1 | 00 01 |
| TOC | USSD | 04 |
| TLV | | |
| Tag | higate_mobile_code | 14 08 |
| Length | 7 | 00 07 |

| | | |
|--------------------|---|----------------------------------|
| Mobile Code | MCC=655 (South Africa) MNC=001 (Vodacom) | 36 35 35 30 30 31 00 |
| TLV | | |
| Tag | higate_service | 14 0A |
| Length | 6 | 00 06 |
| Service Code | C3T01 | 43 33 54 30 31 00 |
| TLV | | |
| Tag | higate_acc_balance | 14 0F |
| Length | 8 | 00 08 |
| Account Balance | | FF FF FF FF FF F8 5E E0 |
| TLV | | |
| Tag | higate_balance | 14 11 |
| Length | 8 | 00 08 |
| Login Balance | | 00 00 00 00 00 00 34 91 |
| TLV | | |
| Tag | higate_ussd_session_id | 14 30 |
| Length | 10 | 00 0A |
| Higate Session ID | 794435910 | 37 39 34 34 33 35 39 31 32 00 |
| TLV | | |
| Tag | higate_ussd_network_sid | 14 32 |
| Length | 11 | 00 0B |
| Network Session ID | 4673008354 | 35 31 38 33 33 32 38 36 38 33 00 |
| TLV | | |
| Tag | higate_ussd_dialogue_id | 14 31 |
| Length | 1 | 00 01 |
| Dialogue ID | 1 (OPEN) | 01 |
| TLV | | |
| Tag | higate_value | 14 1C |
| Length | 0 | 00 08 |
| Premium Value | 0 cents | 00 00 00 00 00 00 00 00 |
| TLV | | |
| Tag | higate_ussd_script | 14 33 |
| Length | 1 | 00 01 |
| Script Name | | 00 |
| TLV | | |
| Tag | higate_ussd_script_line_no | 14 34 |
| Length | 4 | 00 04 |
| Script Line Number | 0 | 00 00 00 00 |

The REQUEST (dialogue ID) immediately follows the OPEN event. Note that for the very first request no data is passed from the handset – the short message field always contains the text REQ for the first REQUEST.

| DELIVER_SM (MO) | | |
|-------------------------|---|-------------------------------------|
| Field name | Field value | Field hexdump |
| Command length | | 00 00 00 A9 |
| Command id | | 00 00 00 05 |
| Command status | 0=ESME_ROK | 00 00 00 00 |
| Sequence number | 2 | 00 00 00 09 |
| service_type | CMT | 43 4D 54 00 |
| source_addr_ton | | 00 |
| source_addr_npi | | 00 |
| source_addr | 27767931435 | 32 37 37 36 37 39 33 31 34 33 35 00 |
| dest_addr_ton | | 00 |
| dest_addr_npi | | 00 |
| destination_addr | *120*9510# | 2A 31 32 30 2A 39 35 31 30 23 00 |
| esm_class | | 00 |
| protocol_id | | 00 |
| priority_flag | | 00 |
| schedule_delivery_time | | 00 |
| validity_period | | 00 |
| registered_delivery | | 00 |
| replace_if_present_flag | | 00 |
| data_coding | | 00 |
| sm_default_msg_id | | 00 |
| sm_length | | 03 |
| short_message | REQ | 52 45 51 |
| TLV | | |
| Tag | higate_toc | 14 09 |
| Length | 1 | 00 01 |
| TOC | USSD | 04 |
| TLV | | |
| Tag | higate_mobile_code | 14 08 |
| Length | 7 | 00 07 |
| Mobile Code | MCC=655 (South Africa) MNC=001 (Vodacom) | 36 35 35 30 30 31 00 |
| TLV | | |
| Tag | higate_service | 14 0A |
| Length | 6 | 00 06 |
| Service Code | C3T01 | 43 33 54 30 31 00 |
| TLV | | |
| Tag | higate_acc_balance | 14 0F |
| Length | 8 | 00 08 |
| Account Balance | | FF FF FF FF FF F8 5E E0 |
| TLV | | |
| Tag | higate_balance | 14 11 |
| Length | 8 | 00 08 |

| | | |
|--------------------|-----------------------------------|----------------------------------|
| Login Balance | | 00 00 00 00 00 00 34 91 |
| TLV | | |
| Tag | higate_ussd_session_id | 14 30 |
| Length | 10 | 00 0A |
| Higate Session ID | | 37 39 34 34 33 35 39 31 32 00 |
| TLV | | |
| Tag | higate_ussd_network_sid | 14 32 |
| Length | 11 | 00 0B |
| Network Session ID | | 35 31 38 33 33 32 38 36 38 33 00 |
| TLV | | |
| Tag | higate_ussd_dialogue_id | 14 31 |
| Length | 1 | 00 01 |
| Dialogue ID | 4 (REQUEST) | 04 |
| TLV | | |
| Tag | higate_value | 14 1C |
| Length | 0 | 00 08 |
| Premium Value | 0 cents | 00 00 00 00 00 00 00 00 |
| TLV | | |
| Tag | higate_ussd_script | 14 33 |
| Length | 1 | 00 01 |
| Script Name | | 00 |
| TLV | | |
| Tag | higate_ussd_script_line_no | 14 34 |
| Length | 4 | 00 04 |
| Script Line Number | 0 | 00 00 00 00 |

To respond to a dialogue request the application submits the reply specifying the *higate_ussd_session* ID for which the response is. It is important that the *higate_toc* be set to USSD (4). The *higate_flags* TLV is used to indicate if the session should remain open (0) or be closed from the application side (1). In this example the reply text “Reply with keep open” is sent to the handset.

| SUBMIT_SM | | |
|------------------|-------------|----------------|
| Field name | Field value | Field hexdump |
| Command length | | 00 00 00 57 |
| Command id | SUBMIT_SM | 00 00 00 04 |
| Command status | ESME_ROK | 00 00 00 00 |
| Sequence number | 1 | 00 00 00 01 |
| service_type | CMT | 43 4D 54 00 |
| source_addr_ton | | 00 |
| source_addr_npi | | 01 |
| source_addr | | 00 |
| dest_addr_ton | | 00 |
| dest_addr_npi | | 01 |
| destination_addr | USSD | 55 53 53 44 00 |
| esm_class | | 00 |
| protocol_id | | 00 |

| | | |
|-------------------------|-------------------------------|---|
| priority_flag | | 00 |
| schedule_delivery_time | | 00 |
| validity_period | | 00 |
| registered_delivery | | 01 |
| replace_if_present_flag | | 00 |
| data_coding | | 00 |
| sm_default_msg_id | | 00 |
| sm_length | | 14 |
| short_message | Reply with keep open | 52 65 70 6C 79 20 77 69 74 68 20 6B 65 65 70 20 6F 70 65 6E |
| TLV | | |
| Tag | higate_ussd_session_id | 14 30 |
| Length | 10 | 00 0A |
| Service Code | | 37 39 34 34 33 35 39 31 32 00 |
| TLV | | |
| Tag | higate_toc | 14 09 |
| Length | 1 | 00 01 |
| TOC | USSD | 04 |
| TLV | | |
| Tag | higate_flags | 14 13 |
| Length | 4 | 00 04 |
| Flags | 0 (NONE) | 00 00 00 00 |

In response to the message, the handset replies with the word “ok”.

| DELIVER_SM (MO) | | |
|-------------------------|-------------|-------------------------------------|
| Field name | Field value | Field hexdump |
| Command length | | 00 00 00 A8 |
| Command id | | 00 00 00 05 |
| Command status | 0=ESME_ROK | 00 00 00 00 |
| Sequence number | 2 | 00 00 00 0A |
| service_type | CMT | 43 4D 54 00 |
| source_addr_ton | | 00 |
| source_addr_npi | | 00 |
| source_addr | 27767931435 | 32 37 37 36 37 39 33 31 34 33 35 00 |
| dest_addr_ton | | 00 |
| dest_addr_npi | | 00 |
| destination_addr | *120*9510# | 2A 31 32 30 2A 39 35 31 30 23 00 |
| esm_class | | 00 |
| protocol_id | | 00 |
| priority_flag | | 00 |
| schedule_delivery_time | | 00 |
| validity_period | | 00 |
| registered_delivery | | 00 |
| replace_if_present_flag | | 00 |
| data_coding | | 00 |

| | | |
|--------------------|--|----------------------------------|
| sm_default_msg_id | | 00 |
| sm_length | | 02 |
| short_message | ok | 6F 6B |
| TLV | | |
| Tag | higate_toc | 14 09 |
| Length | 1 | 00 01 |
| TOC | USSD | 04 |
| TLV | | |
| Tag | higate_mobile_code | 14 08 |
| Length | 7 | 00 07 |
| Mobile Code | MCC=655 (South Africa) MNC=001(Vodacom) | 36 35 35 30 30 31 00 |
| TLV | | |
| Tag | higate_service | 14 0A |
| Length | 6 | 00 06 |
| Service Code | C3T01 | 43 33 54 30 31 00 |
| TLV | | |
| Tag | higate_acc_balance | 14 0F |
| Length | 8 | 00 08 |
| Account Balance | | FF FF FF FF FF F8 5E E0 |
| TLV | | |
| Tag | higate_balance | 14 11 |
| Length | 8 | 00 08 |
| Login Balance | | 00 00 00 00 00 00 34 91 |
| TLV | | |
| Tag | higate_ussd_session_id | 14 30 |
| Length | 10 | 00 0A |
| Higate Session ID | | 37 39 34 34 33 35 39 31 32 00 |
| TLV | | |
| Tag | higate_ussd_network_sid | 14 32 |
| Length | 11 | 00 0B |
| Network Session ID | | 35 31 38 33 33 32 38 36 38 33 00 |
| TLV | | |
| Tag | higate_ussd_dialogue_id | 14 31 |
| Length | 1 | 00 01 |
| Dialogue ID | 4 (REQUEST) | 04 |
| TLV | | |
| Tag | higate_value | 14 1C |
| Length | 0 | 00 08 |
| Premium Value | 0 cents | 00 00 00 00 00 00 00 00 |
| TLV | | |
| Tag | higate_ussd_script | 14 33 |
| Length | 1 | 00 01 |
| Script Name | | 00 |
| TLV | | |
| Tag | higate_ussd_script_line_no | 14 34 |

| | | |
|--------------------|---|-------------|
| Length | 4 | 00 04 |
| Script Line Number | 0 | 00 00 00 00 |

The application now responds again, but this time forces the session closed by setting the *higate_flags* TLV to CLOSE SESSION (value 1).

| SUBMIT_SM | | |
|-------------------------|-------------------------------|---|
| Field name | Field value | Field hexdump |
| Command length | | 00 00 00 53 |
| Command id | SUBMIT_SM | 00 00 00 04 |
| Command status | ESME_ROK | 00 00 00 00 |
| Sequence number | 2 | 00 00 00 02 |
| service_type | CMT | 43 4D 54 00 |
| source_addr_ton | | 00 |
| source_addr_npi | | 01 |
| source_addr | | 00 |
| dest_addr_ton | | 00 |
| dest_addr_npi | | 01 |
| destination_addr | USSD | 55 53 53 44 00 |
| esm_class | | 00 |
| protocol_id | | 00 |
| priority_flag | | 00 |
| schedule_delivery_time | | 00 |
| validity_period | | 00 |
| registered_delivery | | 01 |
| replace_if_present_flag | | 00 |
| data_coding | | 00 |
| sm_default_msg_id | | 00 |
| sm_length | | 10 |
| short_message | Reply with close | 52 65 70 6C 79 20 77 69 74 68 20 63 6C 6F 73 65 |
| TLV | | |
| Tag | higate_ussd_session_id | 14 0A |
| Length | 10 | 00 0A |
| Service Code | | 37 39 34 34 33 35 39 31 32 00 |
| TLV | | |
| Tag | higate_toc | 14 09 |
| Length | 1 | 00 01 |
| TOC | 4 = USSD | 04 |
| TLV | | |
| Tag | higate_flags | 14 13 |
| Length | 4 | 00 04 |
| Flags | 1 - CLOSE SESSION | 00 00 00 01 |

Lastly the CLOSE (dialogue ID) event is received from the SMSC indicating that the session has been closed. No further actions can be performed on this session.

| DELIVER_SM (MO) | | |
|-------------------------|---|-------------------------------------|
| Field name | Field value | Field hexdump |
| Command length | | 00 00 00 A6 |
| Command id | | 00 00 00 05 |
| Command status | 0=ESME_ROK | 00 00 00 00 |
| Sequence number | 2 | 00 00 00 07 |
| service_type | CMT | 43 4D 54 00 |
| source_addr_ton | | 00 |
| source_addr_npi | | 00 |
| source_addr | 27767931435 | 32 37 37 36 37 39 33 31 34 33 35 00 |
| dest_addr_ton | | 00 |
| dest_addr_npi | | 00 |
| destination_addr | *120*9510# | 2A 31 32 30 2A 39 35 31 30 23 00 |
| esm_class | | 00 |
| protocol_id | | 00 |
| priority_flag | | 00 |
| schedule_delivery_time | | 00 |
| validity_period | | 00 |
| registered_delivery | | 00 |
| replace_if_present_flag | | 00 |
| data_coding | | 00 |
| sm_default_msg_id | | 00 |
| sm_length | | 00 |
| TLV | | |
| Tag | higate_toc | 14 09 |
| Length | 1 | 00 01 |
| TOC | USSD | 04 |
| TLV | | |
| Tag | higate_mobile_code | 14 08 |
| Length | 7 | 00 07 |
| Mobile Code | MCC=655 (South Africa) MNC=001 (Vodacom) | 36 35 35 30 30 31 00 |
| TLV | | |
| Tag | higate_service | 14 0A |
| Length | 6 | 00 06 |
| Service Code | C3T01 | 43 33 54 30 31 00 |
| TLV | | |
| Tag | higate_acc_balance | 14 0F |
| Length | 8 | 00 08 |
| Account Balance | | FF FF FF FF FF F8 5E E0 |
| TLV | | |
| Tag | higate_balance | 14 11 |
| Length | 8 | 00 08 |
| Login Balance | | 00 00 00 00 00 00 34 96 |

| TLV | | |
|--------------------|-----------------------------------|----------------------------------|
| Tag | higate_ussd_session_id | 14 30 |
| Length | 10 | 00 0A |
| Higate Session ID | 794435910 | 37 39 34 34 33 35 39 31 30 00 |
| TLV | | |
| Tag | higate_ussd_network_sid | 14 32 |
| Length | 11 | 00 0B |
| Network Session ID | 4673008354 | 34 36 37 33 30 30 38 33 35 34 00 |
| TLV | | |
| Tag | higate_ussd_dialogue_id | 14 31 |
| Length | 1 | 00 01 |
| Dialogue ID | 2 (CLOSE) | 02 |
| TLV | | |
| Tag | higate_value | 14 1C |
| Length | 0 | 00 08 |
| Premium Value | 0 cents | 00 00 00 00 00 00 00 00 |
| TLV | | |
| Tag | higate_ussd_script | 14 33 |
| Length | 1 | 00 01 |
| Script Name | | 00 |
| TLV | | |
| Tag | higate_ussd_script_line_no | 14 34 |
| Length | 4 | 00 04 |
| Script Line Number | 0 | 00 00 00 00 |

18.4.2 Example 2

A USSD session can be terminated in various ways (refer to the **Intarget Higate Concepts** document). In the example below (unrelated to the previous example) the session was closed due to the handset not responding in time.

| DELIVER_SM (MO) | | |
|------------------|-------------|-------------------------------------|
| Field name | Field value | Field hexdump |
| Command length | | 00 00 00 A6 |
| Command id | | 00 00 00 05 |
| Command status | 0=ESME_ROK | 00 00 00 00 |
| Sequence number | 2 | 00 00 00 03 |
| service_type | CMT | 43 4D 54 00 |
| source_addr_ton | | 00 |
| source_addr_npi | | 00 |
| source_addr | 27767931435 | 32 37 37 36 37 39 33 31 34 33 35 00 |
| dest_addr_ton | | 00 |
| dest_addr_npi | | 00 |
| destination_addr | *120*9510# | 2A 31 32 30 2A 39 35 31 30 23 00 |
| esm_class | | 00 |
| protocol_id | | 00 |

| | | |
|-------------------------|---|----------------------------------|
| priority_flag | | 00 |
| schedule_delivery_time | | 00 |
| validity_period | | 00 |
| registered_delivery | | 00 |
| replace_if_present_flag | | 00 |
| data_coding | | 00 |
| sm_default_msg_id | | 00 |
| sm_length | | 00 |
| TLV | | |
| Tag | higate_toc | 14 09 |
| Length | 1 | 00 01 |
| TOC | USSD | 04 |
| TLV | | |
| Tag | higate_mobile_code | 14 08 |
| Length | 7 | 00 07 |
| Mobile Code | MCC=655 (South Africa) MNC=001 (Vodacom) | 36 35 35 30 30 31 00 |
| TLV | | |
| Tag | higate_service | 14 0A |
| Length | 6 | 00 06 |
| Service Code | C3T01 | 43 33 54 30 31 00 |
| TLV | | |
| Tag | higate_acc_balance | 14 0F |
| Length | 8 | 00 08 |
| Account Balance | | 08 FF FF FF FF FF F8 5E E0 |
| TLV | | |
| Tag | higate_balance | 14 11 |
| Length | 8 | 00 08 |
| Login Balance | | 00 00 00 00 00 00 34 1C |
| TLV | | |
| Tag | higate_ussd_session_id | 14 30 |
| Length | 10 | 00 0A |
| Higate Session ID | | 37 39 34 34 33 35 39 34 34 00 |
| TLV | | |
| Tag | higate_ussd_network_sid | 14 32 |
| Length | 11 | 00 0B |
| Network Session ID | | 35 37 34 38 38 38 39 34 38 34 00 |
| TLV | | |
| Tag | higate_ussd_dialogue_id | 14 31 |
| Length | 1 | 00 01 |
| Dialogue ID | 2 (CLOSE) | 02 |
| TLV | | |
| Tag | higate_value | 14 1C |
| Length | 0 | 00 08 |
| Premium Value | 0 cents | 00 00 00 00 00 00 00 00 |
| TLV | | |

| | | |
|--------------------|-----------------------------------|-------------|
| Tag | higate_ussd_script | 14 33 |
| Length | 1 | 00 01 |
| Script Name | | 00 |
| TLV | | |
| Tag | higate_ussd_script_line_no | 14 34 |
| Length | 4 | 00 04 |
| Script Line Number | 0 | 00 00 00 00 |

18.5 Silent OBS

OBS transaction are perhaps the most complicated of all transactions to perform via SMPP as it includes a number for required TLVs containing information about the billing transaction.

Below are a number of examples showing the most common type of transactions:

18.5.1 Example 1 – Not Subscribed

In this example a billing transaction is submitted but the MSISDN specified is not subscribed to the service being billed for.

Sending a *submit sm* with silent OBS

The following TLVs are important to note and applies to all OBS transactions:

TLV **higate_billing_identification_2**

[0x80]RxSeqNo:0

Value:1

Type:Mobile

Note the first byte is always set to 80 hex. The *RxSeqNo* can be linked to the sequence number of the MO transaction that started the subscription (if any) but can be set to 0. The Value parameter is very important as this indicates the value of the billing transaction (in this case 1c). The Type should always be set to “Mobile”.

TLV **higate_subscription_data_2**

Started:2015-03-13 10:11:12

Category:ExampleWeekly

Trigger:

This TLV contains the information of the subscription. Started refers to the date the subscription was started. The Category refers to the product name as set up on the Product Portal. The Trigger field can be used to indicate what triggered the subscription but can be left blank.

TLV **higate_reference_no**

The 64 bit value of this TLV should indicate a UNIQUE reference number. Billing transaction for which a reference number already exists will be rejected.

TLV higate_toc

The TOC should be set to 7 (OBS) except in the case of linked OBS transactions where it is set to 1 (SMS)

TLV higate_flags

The flags parameter (256) in this case indicates Auto Confirmation. This is the recommended setting.

| SUBMIT_SM | | |
|-------------------------|---|---|
| Field name | Field value | Field hexdump |
| Command length | | 00 00 00 B7 |
| Command id | SUBMIT_SM | 00 00 00 04 |
| Command status | ESME_ROK | 00 00 00 00 |
| Sequence number | 1 | 00 00 00 01 |
| service_type | CMT | 43 4D 54 00 |
| source_addr_ton | | 00 |
| source_addr_npi | | 01 |
| source_addr | | 00 |
| dest_addr_ton | | 01 |
| dest_addr_npi | | 01 |
| destination_addr | 27767931435 | 32 37 37 36 37 39 33 31 34 33 35 00 |
| esm_class | | 00 |
| protocol_id | | 00 |
| priority_flag | | 00 |
| schedule_delivery_time | | 00 |
| validity_period | | 00 |
| registered_delivery | | 01 |
| replace_if_present_flag | | 00 |
| data_coding | | 00 |
| sm_default_msg_id | | 00 |
| sm_length | | 06 |
| short_message | SILENT | 53 49 4C 45 4E 54 |
| TLV | | |
| Tag | higate_toc | 14 09 |
| Length | 1 | 00 01 |
| TOC | OBS | 07 |
| TLV | | |
| Tag | higate_reference_no | 14 1F |
| Length | 8 | 00 08 |
| Reference Number | | 00 00 00 00 00 00 4F 79 |
| TLV | | |
| Tag | higate_billing_identification_2 | 14 22 |
| Length | | 00 20 |
| Service Code | [0x80]RxSeqNo:0 Value:1 Type:Mobile | 80 52 78 53 65 71 4E 6F 3A 30 0A 56 61 6C 75 65 3A 31 0A 54 79 70 65 3A 4D 6F 62 69 6C 65 0A 0A |

| TLV | | |
|--------------|---|---|
| Tag | higate_subscription_data_2 | 14 23 |
| Length | | 00 41 |
| Service Code | Started:2015-03-13 10:11:12 Category:ExampleWeekly Trigger: | 53 74 61 72 74 65 64 3A 32 30 31 35 2D 30 33 2D 31 33 20 31 30 3A 31 31 3A 31 32 0D 0A 43 61 74 65 67 6F 72 79 3A 45 78 61 6D 70 6C 65 57 65 65 6B 6C 79 0D 0A 54 72 69 67 67 65 72 3A 0D 0A 0D 0A |
| TLV | | |
| Tag | higate_flags | 14 13 00 04 |
| Length | 4 | 00 04 |
| Flags | 0 | 00 00 02 00 |

Read the *submit_sm* response:

| SUBMIT_SM_RESP | | |
|-----------------|------------------------------|---|
| Field name | Field value | Field hexdump |
| Command length | 45 | 00 00 00 2D |
| Command id | submit_sm_resp | 80 00 00 04 |
| Command status | 0=ESME_ROK | 00 00 00 00 |
| Sequence number | 1 | 00 00 00 01 |
| Message id | 27767931435/20345/2888237043 | 32 37 37 36 37 39 33 31 34 33 35 2F 32 30 33 34 35 2F 32 38 38 38 32 33 37 30 34 33 00 |

Read a *deliver_sm*:

This PDU is an intermediate delivery notification.

Note the *higate_result_code* (**QUEUED**) and *message_state* (**ENROUTE**) TLVs indicating that the message is queued for processing.

| DELIVER_SM (DN) | | |
|------------------------|---|-------------------------------------|
| Field name | Field value | Field hexdump |
| Command length | | 00 00 01 39 |
| Command id | deliver_sm | 00 00 00 05 |
| Command status | 0=ESME_ROK | 00 00 00 00 |
| Sequence number | 1 | 00 00 00 07 |
| service_type | CMT | 43 4D 54 00 |
| source_addr_ton | Unknown | 00 |
| source_addr_npi | Unknown | 00 |
| source_addr | - | 00 |
| dest_addr_ton | International | 01 |
| dest_addr_npi | ISDN (E163/E164) | 01 |
| destination_addr | 27767931435 | 32 37 37 36 37 39 33 31 34 33 35 00 |
| esm_class | Short Message contains Intermediate Delivery Notification | 20 |
| protocol_id | (not used) | 00 |
| priority_flag | Level 0 | 00 |
| schedule_delivery_time | - | 00 |

| | | |
|-------------------------|---|---|
| validity_period | - (SMSC default) | 00 |
| registered_delivery | SMSC Delivery Receipt requested where final delivery outcome is delivery success or failure | 00 |
| replace_if_present_flag | (not used) | 00 |
| data_coding | SMSC Default Alphabet | 00 |
| sm_default_msg_id | (not used) | 00 |
| sm_length | | 6A |
| short_message | id:2888237043 sub:001 dlvr:001 submit date:150313014639 done date:150313014639 stat:ENROUTE err:000 text: | 69 64 3A 32 38 38 38 32 33 37 30 34 33 20 73 75 62 3A 30 30 31 20 64 6C 76 72 64 3A 30 30 31 20 73 75 62 6D 69 74 20 64 61 74 65 3A 31 35 30 33 31 33 30 31 34 36 33 39 20 64 6F 6E 65 20 64 61 74 65 3A 31 35 30 33 31 33 30 31 34 36 33 39 20 73 74 61 74 3A 45 4E 52 4F 55 54 45 20 65 72 72 3A 30 30 30 20 74 65 78 74 3A |
| TLV | | |
| Tag | higate_mobile_code | 14 08 |
| Length | 7 | 00 07 |
| Mobile Code | MCC=655 (South Africa) MNC=001(Vodacom) | 36 35 35 30 30 31 00 |
| TLV | | |
| Tag | higate_toc | 14 09 |
| Length | 1 | 00 01 |
| TOC | OBS | 07 |
| TLV | | |
| Tag | higate_service | 14 0A |
| Length | 6 | 00 06 |
| Service | C3T01 | 43 33 54 30 31 00 |
| TLV | | |
| Tag | higate_acc_balance | 14 0F |
| Length | 8 | 00 08 |
| Account Balance | | FF FF FF FF FF F8 5E E0 |
| TLV | | |
| Tag | higate_balance | 14 11 |
| Length | 8 | 00 08 |
| Login Balance | | 00 00 00 00 00 00 34 F5 |
| TLV | | |
| Tag | higate_flags | 14 13 |
| Length | 4 | 00 04 |
| Flags | HIGATE_FLAG_SMS_DN_FINAL HIGATE_FLAG_OBS_AUTO_CONFIRM | 00 01 02 00 |
| TLV | | |
| Tag | higate_network_id | 14 14 |
| Length | 4 | 00 04 |
| NetworkID | 1 = Vodacom | 00 00 00 01 |
| TLV | | |
| Tag | higate_value | 14 15 |
| Length | 8 | 00 08 |
| Value | 1 cent | 00 00 00 00 00 00 00 01 |

| TLV | | |
|----------------|------------------------------|--|
| Tag | higate_result_code | 14 16 |
| Length | 4 | 00 04 |
| Result Code | 1 - QUEUED | 00 00 00 01 |
| TLV | | |
| Tag | higate_result_text | 14 17 |
| Length | 7 | 00 07 |
| Result Text | Queued | 51 75 65 75 65 64 00 |
| TLV | | |
| Tag | higate_sub_code | 14 19 |
| Length | 4 | 00 04 |
| Sub Code | 0 | 00 00 00 00 |
| TLV | | |
| Tag | higate_reference_no | 14 1F |
| Length | 8 | 00 08 |
| Reference No | | 00 00 00 00 00 00 4F 79 |
| TLV | | |
| Tag | receipted_message_id | 00 1E |
| Length | | 00 1D |
| Message ID | 27767931435/20345/2888237043 | 32 37 37 36 37 39 33 31 34 33 35 2F 32 30 33 34 35 2F 32 38 38 38 32 33 37 30 34 33 00 |
| TLV | | |
| Tag | message_state | 04 27 |
| Length | 1 | 00 01 |
| State | 1 = ENROUTE | 01 |
| TLV | | |
| Tag | higate_src_address | 14 25 |
| Length | 1 | 00 01 |
| Source Address | - | 00 |

Read a *deliver_sm*:

This PDU shows the final delivery notification. Note the *higate_result_code* TLV indicating the failure state of the transaction. The *higate_result_text* indicates the reason for the failure.

| DELIVER_SM (DN) | | |
|-----------------|---------------|---------------|
| Field name | Field value | Field hexdump |
| Command length | | 00 00 01 67 |
| Command id | deliver_sm | 00 00 00 05 |
| Command status | 0=ESME_ROK | 00 00 00 00 |
| Sequence number | 1 | 00 00 00 08 |
| service_type | CMT | 43 4D 54 00 |
| source_addr_ton | Unknown | 00 |
| source_addr_npi | Unknown | 00 |
| source_addr | - | 00 |
| dest_addr_ton | International | 01 |

| | | |
|-------------------------|---|---|
| dest_addr_npi | ISDN (E163/E164) | 01 |
| destination_addr | 27767931435 | 32 37 37 36 37 39 33 31 34 33 35 00 |
| esm_class | Short Message contains Intermediate Delivery Notification | 20 |
| protocol_id | (not used) | 00 |
| priority_flag | Level 0 | 00 |
| schedule_delivery_time | - | 00 |
| validity_period | - (SMSC default) | 00 |
| registered_delivery | SMSC Delivery Receipt requested where final delivery outcome is delivery success or failure | 00 |
| replace_if_present_flag | (not used) | 00 |
| data_coding | SMSC Default Alphabet | 00 |
| sm_default_msg_id | (not used) | 00 |
| sm_length | | 6A |
| short_message | id:2888237043 sub:001 dlvr:001 submit date:150313014640 done date:150313014640 stat:UNDELIV err:001 text: | 69 64 3A 32 38 38 38 32 33 37 30 34 33 20 73 75 62 3A 30 30 31 20 64 6C 76 72 64 3A 30 30 31 20 73 75 62 6D 69 74 20 64 61 74 65 3A 31 35 30 33 31 33 30 31 34 36 34 30 20 64 6F 6E 65 20 64 61 74 65 3A 31 35 30 33 31 33 30 31 34 36 34 30 20 73 74 61 74 3A 55 4E 44 45 4C 49 56 20 65 72 72 3A 30 30 31 20 74 65 78 74 3A |
| TLV | | |
| Tag | higate_mobile_code | 14 08 |
| Length | 7 | 00 07 |
| Mobile Code | MCC=655 (South Africa) MNC=001 (Vodacom) | 36 35 35 30 30 31 00 |
| TLV | | |
| Tag | higate_toc | 14 09 |
| Length | 1 | 00 01 |
| TOC | OBS | 07 |
| TLV | | |
| Tag | higate_service | 14 0A |
| Length | 6 | 00 06 |
| Service | C3T01 | 43 33 54 30 31 00 |
| TLV | | |
| Tag | higate_acc_balance | 14 0F |
| Length | 8 | 00 08 |
| Account Balance | | FF FF FF FF FF F8 5E E0 |
| TLV | | |
| Tag | higate_balance | 14 11 |
| Length | 8 | 00 08 |
| Login Balance | | 00 00 00 00 00 00 34 F5 |
| TLV | | |
| Tag | higate_flags | 14 13 |
| Length | 4 | 00 04 |
| Flags | HIGATE_FLAG_SMS_DN_FINAL HIGATE_FLAG_OBS_AUTO_CONFIRM | 00 01 02 00 |
| TLV | | |
| Tag | higate_network_id | 14 14 |

| | | |
|----------------|--|---|
| Length | 4 | 00 04 |
| NetworkID | 1 = Vodacom | 00 00 00 01 |
| TLV | | |
| Tag | higate_value | 14 15 |
| Length | 8 | 00 08 |
| Value | 1 cent | 00 00 00 00 00 00 00 01 |
| TLV | | |
| Tag | higate_result_code | 14 16 |
| Length | 4 | 00 04 |
| Result Code | 6 - FAILED | 00 00 00 06 |
| TLV | | |
| Tag | higate_result_text | 14 17 |
| Length | 7 | 00 35 |
| Result Text | [E504A0]Double Opt In : Subscriber is not subscribed | 5B 45 35 30 34 41 30 5D 44 6F 75 62 6C 65 20 4F 70 74 20 49 6E 20 3A 20 53 75 62 73 63 72 69 62 65 72 20 69 73 20 6E 6F 74 20 73 75 62 73 63 72 69 62 65 64 00 |
| TLV | | |
| Tag | higate_sub_code | 14 19 |
| Length | 4 | 00 04 |
| Sub Code | (Error Code) | C0 00 0F A0 |
| TLV | | |
| Tag | higate_reference_no | 14 1F |
| Length | 8 | 00 08 |
| Reference No | | 00 00 00 00 00 00 4F 79 |
| TLV | | |
| Tag | receipted_message_id | 00 1E |
| Length | | 00 1D |
| Message ID | 27767931435/20345/2888237043 | 32 37 37 36 37 39 33 31 34 33 35 2F 32 30 33 34 35 2F 32 38 38 38 32 33 37 30 34 33 00 |
| TLV | | |
| Tag | message_state | 04 27 |
| Length | 1 | 00 01 |
| State | UNDELIVERABLE | 05 |
| TLV | | |
| Tag | higate_src_address | 14 25 |
| Length | 1 | 00 01 |
| Source Address | - | 00 |

18.5.2 Example 2 – DOI Subscribe – User Declines

| SUBMIT_SM | | |
|-------------------------|--|--|
| Field name | Field value | Field hexdump |
| Command length | | 00 00 00 BD |
| Command id | SUBMIT_SM | 00 00 00 04 |
| Command status | ESME_ROK | 00 00 00 00 |
| Sequence number | 1 | 00 00 00 01 |
| service_type | CMT | 43 4D 54 00 |
| source_addr_ton | | 00 |
| source_addr_npi | | 01 |
| source_addr | | 00 |
| dest_addr_ton | | 01 |
| dest_addr_npi | | 01 |
| destination_addr | 27767931435 | 32 37 37 36 37 39 33 31 34 33 35 00 |
| esm_class | | 00 |
| protocol_id | | 00 |
| priority_flag | | 00 |
| schedule_delivery_time | | 00 |
| validity_period | | 00 |
| registered_delivery | | 01 |
| replace_if_present_flag | | 00 |
| data_coding | | 00 |
| sm_default_msg_id | | 00 |
| sm_length | | 06 |
| short_message | SILENT | 53 49 4C 45 4E 54 |
| TLV | | |
| Tag | higate_toc | 14 09 |
| Length | 1 | 00 01 |
| TOC | OBS | 07 |
| TLV | | |
| Tag | higate_reference_no | 14 1F |
| Length | 8 | 00 08 |
| ESME Reference Number | | 00 00 00 00 00 00 4F 7A |
| TLV | | |
| Tag | higate_billing_identification_2 | 14 22 |
| Length | | 00 20 |
| | RxSeqNo:0.Value:1.Type:Mobile | 14 22 00 20 80 52 78 53 65 71 4E 6F 3A 30 0A 56 61 6C 75 65 3A 31 0A 54 79 70 65 3A 4D 6F 62 69 6C 65 0A 0A |
| TLV | | |
| Tag | higate_subscription_data_2 | 14 23 |
| Length | | 00 41 |
| | Started:2015-03-13 10:11:12 FIRST. .Category:ExampleWeekly..Trigger:... | 14 23 00 47 53 74 61 72 74 65 64 3A 32 30 31 35 2D 30 33 2D 31 33 20 31 30 3A 31 31 3A 31 32 20 46 49 52 53 54 0D 0A 43 61 74 65 67 6F 72 79 3A 45 78 61 6D 70 6C 65 |

| | | |
|------------|--------------|---|
| | | 57 65 65 6B 6C 79 0D 0A 54 72 69 67 67 65 72 3A 0D 0A 0D 0A |
| TLV | | |
| Tag | higate_flags | 14 13 00 04 |
| Length | 4 | 00 04 |
| Flags | 0 | 00 00 00 00 |

Read the *deliver_sm*:

Intermediate status notification:

| DELIVER_SM (DN) | | |
|-------------------------|---|---|
| Field name | Field value | Field hexdump |
| Command length | | 00 00 01 39 |
| Command id | deliver_sm | 00 00 00 05 |
| Command status | 0=ESME_ROK | 00 00 00 00 |
| Sequence number | 1 | 00 00 00 01 |
| service_type | CMT | 43 4D 54 00 |
| source_addr_ton | Unknown | 00 |
| source_addr_npi | Unknown | 00 |
| source_addr | - | 00 |
| dest_addr_ton | International | 01 |
| dest_addr_npi | ISDN (E163/E164) | 01 |
| destination_addr | 27767931435 | 32 37 37 36 37 39 33 31 34 33 35 00 |
| esm_class | Short Message contains Intermediate Delivery Notification | 20 |
| protocol_id | (not used) | 00 |
| priority_flag | Level 0 | 00 |
| schedule_delivery_time | - | 00 |
| validity_period | - (SMSC default) | 00 |
| registered_delivery | SMSC Delivery Receipt requested where final delivery outcome is delivery success or failure | 00 |
| replace_if_present_flag | (not used) | 00 |
| data_coding | SMSC Default Alphabet | 00 |
| sm_default_msg_id | (not used) | 00 |
| sm_length | | 6A |
| short_message | id:2888237077 sub:001 dlvr:001 submit date:150313014925 done date:150313014925 stat:ENROUTE err:000 text: | 69 64 3A 32 38 38 38 32 33 37 30 37 37 20 73 75 62 3A 30 30 31 20 64 6C 76 72 64 3A 30 30 31 20 73 75 62 6D 69 74 20 64 61 74 65 3A 31 35 30 33 31 33 30 31 34 39 32 35 20 64 6F 6E 65 20 64 61 74 65 3A 31 35 30 33 31 33 30 31 34 39 32 35 20 73 74 61 74 3A 45 4E 52 4F 55 54 45 20 65 72 72 3A 30 30 30 20 74 65 78 74 3A |
| TLV | | |
| Tag | higate_mobile_code | 14 08 |
| Length | 7 | 00 07 |
| Mobile Code | MCC=655 (South Africa) MNC=001(Vodacom) | 36 35 35 30 30 31 00 |
| TLV | | |
| Tag | higate_toc | 14 09 |

| | | |
|-----------------|--|-------------------------|
| Length | 1 | 00 01 |
| TOC | OBS | 07 |
| TLV | | |
| Tag | higate_service | 14 0A |
| Length | 6 | 00 06 |
| Service | C3T01 | 43 33 54 30 31 00 |
| TLV | | |
| Tag | higate_acc_balance | 14 0F |
| Length | 8 | 00 08 |
| Account Balance | | FF FF FF FF FF F8 5E E0 |
| TLV | | |
| Tag | higate_balance | 14 11 |
| Length | 8 | 00 08 |
| Login Balance | | 00 00 00 00 00 00 34 E6 |
| TLV | | |
| Tag | higate_flags | 14 13 |
| Length | 4 | 00 04 |
| Flags | HIGATE_FLAG_SMS_DN_FINAL HIGATE_FLAG_OBS_AUTO_CONFIRM | 00 01 02 00 |
| TLV | | |
| Tag | higate_network_id | 14 14 |
| Length | 4 | 00 04 |
| NetworkID | 1 = Vodacom | 00 00 00 01 |
| TLV | | |
| Tag | higate_value | 14 15 |
| Length | 8 | 00 08 |
| Value | 1 cent | 00 00 00 00 00 00 00 01 |
| TLV | | |
| Tag | higate_result_code | 14 16 |
| Length | 4 | 00 04 |
| Result Code | 1 - QUEUED | 00 00 00 01 |
| TLV | | |
| Tag | higate_result_text | 14 17 |
| Length | 7 | 00 07 |
| Result Text | Queued | 51 75 65 75 65 64 00 |
| TLV | | |
| Tag | higate_sub_code | 14 19 |
| Length | 4 | 00 04 |
| Sub Code | 0 | 00 00 00 00 |
| TLV | | |
| Tag | higate_reference_no | 14 1F |
| Length | 8 | 00 08 |
| Reference No | | 00 00 00 00 00 00 4F 7A |
| TLV | | |
| Tag | receipted_message_id | 00 1E |
| Length | | 00 1D |

| | | |
|----------------|------------------------------|--|
| Message ID | 27767931435/20346/2888237077 | 00 1E 00 1D 32 37 37 36 37 39 33 31 34 33 35 2F 32 30 33 34 36 2F 32 38 38 38 32 33 37 30 37 37 00 |
| TLV | | |
| Tag | message_state | 04 27 |
| Length | 1 | 00 01 |
| State | 1 = ENROUTE | 01 |
| TLV | | |
| Tag | higate_src_address | 14 25 |
| Length | 1 | 00 01 |
| Source Address | - | 00 |

Read the *deliver_sm*:

Intermediate status notification. Note that the result code has changed to “**PENDING**” – indicating the system is waiting for the user to respond to the opt-in message.

| DELIVER_SM (DN) | | |
|-------------------------|---|---|
| Field name | Field value | Field hexdump |
| Command length | | 00 00 01 3A |
| Command id | deliver_sm | 00 00 00 05 |
| Command status | 0=ESME_ROK | 00 00 00 00 |
| Sequence number | 1 | 00 00 00 02 |
| service_type | CMT | 43 4D 54 00 |
| source_addr_ton | Unknown | 00 |
| source_addr_npi | Unknown | 00 |
| source_addr | - | 00 |
| dest_addr_ton | International | 01 |
| dest_addr_npi | ISDN (E163/E164) | 01 |
| destination_addr | 27767931435 | 32 37 37 36 37 39 33 31 34 33 35 00 |
| esm_class | Short Message contains Intermediate Delivery Notification | 20 |
| protocol_id | (not used) | 00 |
| priority_flag | Level 0 | 00 |
| schedule_delivery_time | - | 00 |
| validity_period | - (SMSC default) | 00 |
| registered_delivery | SMSC Delivery Receipt requested where final delivery outcome is delivery success or failure | 00 |
| replace_if_present_flag | (not used) | 00 |
| data_coding | SMSC Default Alphabet | 00 |
| sm_default_msg_id | (not used) | 00 |
| sm_length | | 6A |
| short_message | id:2888237077 sub:001 dlvr:001 submit date:150313014926 done date:150313014926 stat:ENROUTE err:000 text: | 69 64 3A 32 38 38 38 32 33 37 30 37 37 20 73 75 62 3A 30 30 31 20 64 6C 76 72 64 3A 30 30 31 20 73 75 62 6D 69 74 20 64 61 74 65 3A 31 35 30 33 31 33 30 31 34 39 32 36 20 64 6F 6E 65 20 64 61 74 65 3A 31 35 30 33 31 33 30 31 34 39 32 36 20 73 74 61 74 3A 45 4E 52 4F 55 54 45 20 65 72 72 3A 30 30 30 20 74 65 78 74 3A |
| TLV | | |

| | | |
|-----------------|--|-------------------------|
| Tag | higate_mobile_code | 14 08 |
| Length | 7 | 00 07 |
| Mobile Code | MCC=655 (South Africa) MNC=001 (Vodacom) | 36 35 35 30 30 31 00 |
| TLV | | |
| Tag | higate_toc | 14 09 |
| Length | 1 | 00 01 |
| TOC | OBS | 07 |
| TLV | | |
| Tag | higate_service | 14 0A |
| Length | 6 | 00 06 |
| Service | C3T01 | 43 33 54 30 31 00 |
| TLV | | |
| Tag | higate_acc_balance | 14 0F |
| Length | 8 | 00 08 |
| Account Balance | | FF FF FF FF FF F8 5E E0 |
| TLV | | |
| Tag | higate_balance | 14 11 |
| Length | 8 | 00 08 |
| Login Balance | | 00 00 00 00 00 00 34 E6 |
| TLV | | |
| Tag | higate_flags | 14 13 |
| Length | 4 | 00 04 |
| Flags | HIGATE_FLAG_SMS_DN_FINAL HIGATE_FLAG_OBS_AUTO_CONFIRM | 00 01 02 00 |
| TLV | | |
| Tag | higate_network_id | 14 14 |
| Length | 4 | 00 04 |
| NetworkID | 1 = Vodacom | 00 00 00 01 |
| TLV | | |
| Tag | higate_value | 14 15 |
| Length | 8 | 00 08 |
| Value | 1 cent | 00 00 00 00 00 00 00 01 |
| TLV | | |
| Tag | higate_result_code | 14 16 |
| Length | 4 | 00 04 |
| Result Code | 9 - PENDING | 00 00 00 09 |
| TLV | | |
| Tag | higate_result_text | 14 17 |
| Length | 8 | 00 08 |
| Result Text | Pending | 50 65 6E 64 69 6E 67 00 |
| TLV | | |
| Tag | higate_sub_code | 14 19 |
| Length | 4 | 00 04 |
| Sub Code | 0 | 00 00 00 00 |
| TLV | | |

| | | |
|----------------|------------------------------|--|
| Tag | higate_reference_no | 14 1F |
| Length | 8 | 00 08 |
| Reference No | | 00 00 00 00 00 00 4F 7A |
| TLV | | |
| Tag | receipted_message_id | 00 1E |
| Length | | 00 1D |
| Message ID | 27767931435/20346/2888237077 | 00 1E 00 1D 32 37 37 36 37 39 33 31 34 33 35 2F 32 30 33 34 36 2F 32 38 38 38 32 33 37 30 37 37 00 |
| TLV | | |
| Tag | message_state | 04 27 |
| Length | 1 | 00 01 |
| State | 1 = ENROUTE | 01 |
| TLV | | |
| Tag | higate_src_address | 14 25 |
| Length | 1 | 00 01 |
| Source Address | - | 00 |

Read the *deliver_sm*:

Final status notification. Note the result code indicating failure and the result text indicating the reason for the failure.

It is very important in the case of DOI to always check the result text, as a failure of type “Insufficient funds” would still indicate successful opt-in but unsuccessful billing.

| DELIVER_SM (DN) | | |
|------------------------|---|-------------------------------------|
| Field name | Field value | Field hexdump |
| Command length | | 00 00 01 53 |
| Command id | deliver_sm | 00 00 00 05 |
| Command status | 0=ESME_ROK | 00 00 00 00 |
| Sequence number | 1 | 00 00 00 01 |
| service_type | CMT | 43 4D 54 00 |
| source_addr_ton | Unknown | 00 |
| source_addr_npi | Unknown | 00 |
| source_addr | - | 00 |
| dest_addr_ton | International | 01 |
| dest_addr_npi | ISDN (E163/E164) | 01 |
| destination_addr | 27767931435 | 32 37 37 36 37 39 33 31 34 33 35 00 |
| esm_class | Short Message contains Intermediate Delivery Notification | 20 |
| protocol_id | (not used) | 00 |
| priority_flag | Level 0 | 00 |
| schedule_delivery_time | - | 00 |
| validity_period | - (SMSC default) | 00 |
| registered_delivery | SMSC Delivery Receipt requested where final delivery outcome is delivery success or failure | 00 |

| | | |
|-------------------------|---|---|
| replace_if_present_flag | (not used) | 00 |
| data_coding | SMSC Default Alphabet | 00 |
| sm_default_msg_id | (not used) | 00 |
| sm_length | | 6A |
| short_message | id:2888237077 sub:001 dlvr:001 submit date:150313015406 done date:150313015406 stat:UNDELIV err:001 text: | 69 64 3A 32 38 38 38 32 33 37 30 37 37 20 73 75 62 3A 30 30 31 20 64 6C 76 72 64 3A 30 30 31 20 73 75 62 6D 69 74 20 64 61 74 65 3A 31 35 30 33 31 33 30 31 35 34 30 36 20 64 6F 6E 65 20 64 61 74 65 3A 31 35 30 33 31 33 30 31 35 34 30 36 20 73 74 61 74 3A 55 4E 44 45 4C 49 56 20 65 72 72 3A 30 30 31 20 74 65 78 74 3A |
| TLV | | |
| Tag | higate_mobile_code | 14 08 |
| Length | 7 | 00 07 |
| Mobile Code | MCC=655 (South Africa) MNC=001 (Vodacom) | 36 35 35 30 30 31 00 |
| TLV | | |
| Tag | higate_toc | 14 09 |
| Length | 1 | 00 01 |
| TOC | OBS | 07 |
| TLV | | |
| Tag | higate_service | 14 0A |
| Length | 6 | 00 06 |
| Service | C3T01 | 43 33 54 30 31 00 |
| TLV | | |
| Tag | higate_acc_balance | 14 0F |
| Length | 8 | 00 08 |
| Account Balance | | FF FF FF FF FF F8 5E E0 |
| TLV | | |
| Tag | higate_balance | 14 11 |
| Length | 8 | 00 08 |
| Login Balance | | 00 00 00 00 00 00 34 E6 |
| TLV | | |
| Tag | higate_flags | 14 13 |
| Length | 4 | 00 04 |
| Flags | HIGATE_FLAG_SMS_DN_FINAL HIGATE_FLAG_OBS_AUTO_CONFIRM | 00 01 02 00 |
| TLV | | |
| Tag | higate_network_id | 14 14 |
| Length | 4 | 00 04 |
| NetworkID | 1 = Vodacom | 00 00 00 01 |
| TLV | | |
| Tag | higate_value | 14 15 |
| Length | 8 | 00 08 |
| Value | 1 cent | 00 00 00 00 00 00 00 01 |
| TLV | | |
| Tag | higate_result_code | 14 16 |
| Length | 4 | 00 04 |
| Result Code | 1 - FAILED | 00 00 00 06 |

| | | |
|----------------|----------------------------------|--|
| TLV | | |
| Tag | higate_result_text | 14 17 |
| Length | 33 | 00 21 |
| Result Text | [E501A0]Double Opt In : Declined | 5B 45 35 30 31 41 30 5D 44 6F 75 62 6C 65 20 4F 70 74 20 49 6E 20 3A 20 44 65 63 6C 69 6E 65 64 00 |
| TLV | | |
| Tag | higate_sub_code | 14 19 |
| Length | 4 | 00 04 |
| Sub Code | (Error code) | 80 00 01 0B |
| TLV | | |
| Tag | higate_reference_no | 14 1F |
| Length | 8 | 00 08 |
| Reference No | | 00 00 00 00 00 00 4F 7A |
| TLV | | |
| Tag | receipted_message_id | 00 1E |
| Length | | 00 1D |
| Message ID | 27767931435/20346/2888237077 | 32 37 37 36 37 39 33 31 34 33 35 2F 32 30 33 34 36 2F 32 38 38 38 32 33 37 30 37 37 00 |
| TLV | | |
| Tag | message_state | 04 27 |
| Length | 1 | 00 01 |
| State | 5 = UNDELIVERABLE | 05 |
| TLV | | |
| Tag | higate_src_address | 14 25 |
| Length | 1 | 00 01 |
| Source Address | - | 00 |

18.5.3 Example 3 – DOI Subscribe – User Accepts

In this example we repeat the same transaction but this time with the subscriber accepting the Opt IN request. Note that the result code is set to 4 (**RECEIPTED**) which indicates successful opt-in as well as successful billing

| DELIVER_SM (DN) | | |
|-------------------------|---|---|
| Field name | Field value | Field hexdump |
| Command length | | 00 00 01 40 |
| Command id | deliver_sm | 00 00 00 05 |
| Command status | 0=ESME_ROK | 00 00 00 00 |
| Sequence number | 1 | 00 00 00 05 |
| service_type | CMT | 43 4D 54 00 |
| source_addr_ton | Unknown | 00 |
| source_addr_npi | Unknown | 00 |
| source_addr | - | 00 |
| dest_addr_ton | International | 01 |
| dest_addr_npi | ISDN (E163/E164) | 01 |
| destination_addr | 27767931435 | 32 37 37 36 37 39 33 31 34 33 35 00 |
| esm_class | Short Message contains Intermediate Delivery Notification | 20 |
| protocol_id | (not used) | 00 |
| priority_flag | Level 0 | 00 |
| schedule_delivery_time | - | 00 |
| validity_period | - (SMSC default) | 00 |
| registered_delivery | SMSC Delivery Receipt requested where final delivery outcome is delivery success or failure | 00 |
| replace_if_present_flag | (not used) | 00 |
| data_coding | SMSC Default Alphabet | 00 |
| sm_default_msg_id | (not used) | 00 |
| sm_length | | 6A |
| short_message | id:2888237130 sub:001 dlvr:001 submit date:150313015515 done date:150313015515 stat:DELIVRD err:000 text: | 69 64 3A 32 38 38 38 32 33 37 31 33 30 20 73 75 62 3A 30 30 31 20 64 6C 76 72 64 3A 30 30 31 20 73 75 62 6D 69 74 20 64 61 74 65 3A 31 35 30 33 31 33 30 31 35 35 31 35 20 64 6F 6E 65 20 64 61 74 65 3A 31 35 30 33 31 33 30 31 35 35 31 35 20 73 74 61 74 3A 44 45 4C 49 56 52 44 20 65 72 72 3A 30 30 30 20 74 65 78 74 3A 74 3A |
| TLV | | |
| Tag | higate_mobile_code | 14 08 |
| Length | 7 | 00 07 |
| Mobile Code | MCC=655 (South Africa) MNC=001(Vodacom) | 36 35 35 30 30 31 00 |
| TLV | | |
| Tag | higate_toc | 14 09 |
| Length | 1 | 00 01 |
| TOC | OBS | 07 |
| TLV | | |
| Tag | higate_service | 14 0A |

| | | |
|-----------------|--|--|
| Length | 6 | 00 06 |
| Service | C3T01 | 43 33 54 30 31 00 |
| TLV | | |
| Tag | higate_acc_balance | 14 0F |
| Length | 8 | 00 08 |
| Account Balance | | FF FF FF FF FF F8 5E E0 |
| TLV | | |
| Tag | higate_balance | 14 11 |
| Length | 8 | 00 08 |
| Login Balance | | 00 00 00 00 00 00 34 D7 |
| TLV | | |
| Tag | higate_flags | 14 13 |
| Length | 4 | 00 04 |
| Flags | HIGATE_FLAG_SMS_DN_FINAL HIGATE_FLAG_OBS_AUTO_CONFIRM | 00 01 02 00 |
| TLV | | |
| Tag | higate_network_id | 14 14 |
| Length | 4 | 00 04 |
| NetworkID | 1 = Vodacom | 00 00 00 01 |
| TLV | | |
| Tag | higate_value | 14 15 |
| Length | 8 | 00 08 |
| Value | 1 cent | 00 00 00 00 00 00 00 01 |
| TLV | | |
| Tag | higate_result_code | 14 16 |
| Length | 4 | 00 04 |
| Result Code | 4 - RECEIPTED | 00 00 00 04 |
| TLV | | |
| Tag | higate_result_text | 14 17 |
| Length | 14 | 00 0E |
| Result Text | [E1A0]Success | 5B 45 31 41 30 5D 53 75 63 63 65 73 73 00 |
| TLV | | |
| Tag | higate_sub_code | 14 19 |
| Length | 4 | 00 04 |
| Sub Code | | 00 00 01 04 |
| TLV | | |
| Tag | higate_reference_no | 14 1F |
| Length | 8 | 00 08 |
| Reference No | | 00 00 00 00 00 00 4F 7B |
| TLV | | |
| Tag | receipted_message_id | 00 1E |
| Length | | 00 1D |
| Message ID | 27767931435/20347/2888237130 | 32 37 37 36 37 39 33 31 34 33 35 2F 32 30 33 34 37 2F 32 38 38 38 32 33 37 31 33 30 00 |
| TLV | | |
| Tag | message_state | 04 27 |

| | | |
|----------------|--------------------|-------|
| Length | 1 | 00 01 |
| State | 2 = DELIVERED | 02 |
| TLV | | |
| Tag | higate_src_address | 14 25 |
| Length | 1 | 00 01 |
| Source Address | - | 00 |

18.5.4 Example 4 – Recurring Billing Transaction

The next example shows a recurring billing transaction for the service we opted in to previously. The format is almost the same as before apart from the **FIRST** keyword that is no absent from the *higate_subscription_data2* TLV. It is important to not include the **FIRST** keyword as this would incur a delay because the transaction is submitted to the DOI system again which is not necessary as the user is already subscribed.

| SUBMIT_SM | | |
|-------------------------|----------------------------|-------------------------------------|
| Field name | Field value | Field hexdump |
| Command length | | 00 00 00 B7 |
| Command id | SUBMIT_SM | 00 00 00 04 |
| Command status | ESME_ROK | 00 00 00 00 |
| Sequence number | 1 | 00 00 00 01 |
| service_type | CMT | 43 4D 54 00 |
| source_addr_ton | | 00 |
| source_addr_npi | | 01 |
| source_addr | | 00 |
| dest_addr_ton | | 01 |
| dest_addr_npi | | 01 |
| destination_addr | 27767931435 | 32 37 37 36 37 39 33 31 34 33 35 00 |
| esm_class | | 00 |
| protocol_id | | 00 |
| priority_flag | | 00 |
| schedule_delivery_time | | 00 |
| validity_period | | 00 |
| registered_delivery | | 01 |
| replace_if_present_flag | | 00 |
| data_coding | | 00 |
| sm_default_msg_id | | 00 |
| sm_length | | 06 |
| short_message | SILENT | 53 49 4C 45 4E 54 |
| TLV | | |
| Tag | higate_toc | 14 09 |
| Length | 1 | 00 01 |
| TOC | OBS | 07 |
| TLV | | |
| Tag | higate_reference_no | 14 1F |
| Length | 8 | 00 08 |

| | | |
|-----------------------|--|--|
| ESME Reference Number | | 00 00 00 00 00 00 4F 7C |
| TLV | | |
| Tag | higate_billing_identification_2 | 14 22 |
| Length | | 00 20 |
| | RxSeqNo:0.Value:1.Type:Mobile | 80 52 78 53 65 71 4E 6F 3A 30 0A 56 61 6C 75 65 3A 31 0A 54 79 70 65 3A 4D 6F 62 69 6C 65 0A 0A |
| TLV | | |
| Tag | higate_subscription_data_2 | 14 23 |
| Length | | 00 41 |
| | Started:2015-03-13 10:11:12 Category:ExampleWeekly Trigger: | 14 23 00 41 53 74 61 72 74 65 64 3A 32 30 31 35 2D 30 33 2D 31 33 20 31 30 3A 31 31 3A 31 32 0D 0A 43 61 74 65 67 6F 72 79 3A 45 78 61 6D 70 6C 65 57 65 65 6B 6C 79 0D 0A 54 72 69 67 67 65 72 3A 0D 0A 0D 0A |
| TLV | | |
| Tag | higate_flags | 14 13 00 04 |
| Length | 4 | 00 04 |
| Flags | 0 | 00 00 02 00 |

Read the *submit_sm* response:

| SUBMIT_SM_RESP | | |
|-----------------------|------------------------------|--|
| Field name | Field value | Field hexdump |
| Command length | 45 | 00 00 00 2D |
| Command id | submit_sm_resp | 80 00 00 04 |
| Command status | 0=ESME_ROK | 00 00 00 00 |
| Sequence number | 1 | 00 00 00 01 |
| Message id | 27767931435/20348/2888237156 | 32 37 37 36 37 39 33 31 34 33 35 2F 32 30 33 34 38 2F 32 38 38 38 32 33 37 31 35 36 00 |

Read the *deliver_sm*:

Final delivery notification indicating successful billing.

| DELIVER_SM (DN) | | |
|------------------------|------------------|-------------------------------------|
| Field name | Field value | Field hexdump |
| Command length | | 00 00 01 40 |
| Command id | deliver_sm | 00 00 00 05 |
| Command status | 0=ESME_ROK | 00 00 00 00 |
| Sequence number | 1 | 00 00 00 03 |
| service_type | CMT | 43 4D 54 00 |
| source_addr_ton | Unknown | 00 |
| source_addr_npi | Unknown | 00 |
| source_addr | - | 00 |
| dest_addr_ton | International | 01 |
| dest_addr_npi | ISDN (E163/E164) | 01 |
| destination_addr | 27767931435 | 32 37 37 36 37 39 33 31 34 33 35 00 |

| | | |
|-------------------------|---|---|
| esm_class | Short Message contains Intermediate Delivery Notification | 20 |
| protocol_id | (not used) | 00 |
| priority_flag | Level 0 | 00 |
| schedule_delivery_time | - | 00 |
| validity_period | - (SMSC default) | 00 |
| registered_delivery | SMSC Delivery Receipt requested where final delivery outcome is delivery success or failure | 00 |
| replace_if_present_flag | (not used) | 00 |
| data_coding | SMSC Default Alphabet | 00 |
| sm_default_msg_id | (not used) | 00 |
| sm_length | | 6A |
| short_message | id:2888237156 sub:001 dlvr:001 submit date:150313015805 done date:150313015805 stat:DELIVRD err:000 text: | 69 64 3A 32 38 38 38 32 33 37 31 35 36 20 73 75 62 3A 30 30 31 20 64 6C 76 72 64 3A 30 30 31 20 73 75 62 6D 69 74 20 64 61 74 65 3A 31 35 30 33 31 33 30 31 35 38 30 35 20 64 6F 6E 65 20 64 61 74 65 3A 31 35 30 33 31 33 30 31 35 38 30 35 20 73 74 61 74 3A 44 45 4C 49 56 52 44 20 65 72 72 3A 30 30 30 20 74 65 78 74 3A |
| TLV | | |
| Tag | higate_mobile_code | 14 08 |
| Length | 7 | 00 07 |
| Mobile Code | MCC=655 (South Africa) MNC=001 (Vodacom) | 36 35 35 30 30 31 00 |
| TLV | | |
| Tag | higate_toc | 14 09 |
| Length | 1 | 00 01 |
| TOC | OBS | 07 |
| TLV | | |
| Tag | higate_service | 14 0A |
| Length | 6 | 00 06 |
| Service | C3T01 | 43 33 54 30 31 00 |
| TLV | | |
| Tag | higate_acc_balance | 14 0F |
| Length | 8 | 00 08 |
| Account Balance | | FF FF FF FF FF F8 5E E0 |
| TLV | | |
| Tag | higate_balance | 14 11 |
| Length | 8 | 00 08 |
| Login Balance | | 00 00 00 00 00 00 34 C8 |
| TLV | | |
| Tag | higate_flags | 14 13 |
| Length | 4 | 00 04 |
| Flags | HIGATE_FLAG_SMS_DN_FINAL HIGATE_FLAG_OBS_AUTO_CONFIRM | 00 01 02 00 |
| TLV | | |
| Tag | higate_network_id | 14 14 |
| Length | 4 | 00 04 |
| NetworkID | 1 = Vodacom | 00 00 00 01 |

| | | |
|----------------|------------------------------|--|
| TLV | | |
| Tag | higate_value | 14 15 |
| Length | 8 | 00 08 |
| Value | 1 cent | 00 00 00 00 00 00 00 01 |
| TLV | | |
| Tag | higate_result_code | 14 16 |
| Length | 4 | 00 04 |
| Result Code | 1 - Receipted | 00 00 00 04 |
| TLV | | |
| Tag | higate_result_text | 14 17 |
| Length | 14 | 00 0E |
| Result Text | [E1A0]Success | 5B 45 31 41 30 5D 53 75 63 63 65 73 73 00 |
| TLV | | |
| Tag | higate_sub_code | 14 19 |
| Length | 4 | 00 04 |
| Sub Code | 0 | 00 00 01 04 |
| TLV | | |
| Tag | higate_reference_no | 14 1F |
| Length | 8 | 00 08 |
| Reference No | | 00 00 00 00 00 00 4F 7C |
| TLV | | |
| Tag | receipted_message_id | 00 1E |
| Length | | 00 1D |
| Message ID | 27767931435/20348/2888237156 | 32 37 37 36 37 39 33 31 34 33 35 2F 32 30 33 34 38 2F 32 38 38 38 32 33 37 31 35 36 00 |
| TLV | | |
| Tag | message_state | 04 27 |
| Length | 1 | 00 01 |
| State | 2 = DELIVERED | 02 |
| TLV | | |
| Tag | higate_src_address | 14 25 |
| Length | 1 | 00 01 |
| Source Address | - | 00 |

18.5.5 Example 5 – DOI Terminate Subscription

At some point a subscriber might want to unsubscribe from a service. When an unsubscribe request is received the subscription needs to be terminated.

Note the use of the STOP keyword in the *higate_subscription_data2* TLV which forces termination of the subscription. Also note that although a value is specified the system will set the value to 0 as no billing transaction will be done.

| SUBMIT_SM | | |
|-------------------------|--|--|
| Field name | Field value | Field hexdump |
| Command length | | 00 00 00 BE |
| Command id | SUBMIT_SM | 00 00 00 04 |
| Command status | ESME_ROK | 00 00 00 00 |
| Sequence number | 1 | 00 00 00 01 |
| service_type | CMT | 43 4D 54 00 |
| source_addr_ton | | 00 |
| source_addr_npi | | 01 |
| source_addr | | 00 |
| dest_addr_ton | | 01 |
| dest_addr_npi | | 01 |
| destination_addr | 27767931435 | 32 37 37 36 37 39 33 31 34 33 35 00 |
| esm_class | | 00 |
| protocol_id | | 00 |
| priority_flag | | 00 |
| schedule_delivery_time | | 00 |
| validity_period | | 00 |
| registered_delivery | | 01 |
| replace_if_present_flag | | 00 |
| data_coding | | 00 |
| sm_default_msg_id | | 00 |
| sm_length | | 06 |
| short_message | SILENT | 53 49 4C 45 4E 54 |
| TLV | | |
| Tag | higate_toc | 14 09 |
| Length | 1 | 00 01 |
| TOC | OBS | 07 |
| TLV | | |
| Tag | higate_reference_no | 14 1F |
| Length | 8 | 00 08 |
| ESME Reference Number | | 00 00 00 00 00 00 4F 7A |
| TLV | | |
| Tag | higate_billing_identification_2 | 14 22 |
| Length | | 00 22 |
| | [0x80] RxSeqNo:0 Value:500 Type:Mobile | 80 52 78 53 65 71 4E 6F 3A 30 0A 56 61 6C 75 65 3A 35 30 30 0A 54 79 70 65 3A 4D 6F 62 69 6C 65 0A 0A |

| TLV | | |
|--------|--|--|
| Tag | higate_subscription_data_2 | 14 23 |
| Length | | 00 46 |
| | Started:2015-03-13 10:11:12 STOP Category:ExampleWeekly Trigger: | 53 74 61 72 74 65 64 3A 32 30 31 35 2D 30 33 2D 31 33 20 31 30 3A 31 31 3A 31 32 20 53 54 4F 50 0D 0A 43 61 74 65 67 6F 72 79 3A 45 78 61 6D 70 6C 65 57 65 65 6B 6C 79 0D 0A 54 72 69 67 67 65 72 3A 0D 0A 0D 0A |
| TLV | | |
| Tag | higate_flags | 14 13 00 04 |
| Length | 4 | 00 04 |
| Flags | 0 | 00 00 00 00 |

18.6 VSR

The following examples show how to interface with the Integrat Voucher Repository.

The operation of voucher transactions are discussed in detail in the **Intarget Higate Concepts** document.

18.6.1 Example 1 – Successful Issue

Sending a *submit_sm* (VSR)

The following example shows a voucher being requested and the voucher being issued by the subscriber. The following TLVs are important to note:

TLV higate_reference_no

Similar to OBS transactions all voucher transactions must contain a unique reference number. This is not only important to avoid duplicate voucher being issued but is also the only way to match delivery notification of the voucher SMS back to the originating VSR transaction.

TLV higate_toc

The TOC should always be set to VSR (9)

The *short_message* field contains the XML document describing the voucher being issued.

| SUBMIT_SM | | |
|-------------------------|-------------|-------------------------------------|
| Field name | Field value | Field hexdump |
| Command length | | 00 00 01 37 |
| Command id | SUBMIT_SM | 00 00 00 04 |
| Command status | ESME_ROK | 00 00 00 00 |
| Sequence number | 1 | 00 00 00 04 |
| service_type | CMT | 43 4D 54 00 |
| source_addr_ton | | 00 |
| source_addr_npi | | 01 |
| source_addr | | 00 |
| dest_addr_ton | | 01 |
| dest_addr_npi | | 01 |
| destination_addr | 27767931435 | 32 37 37 36 37 39 33 31 34 33 35 00 |
| esm_class | | 00 |
| protocol_id | | 00 |
| priority_flag | | 00 |
| schedule_delivery_time | | 00 |
| validity_period | | 00 |
| registered_delivery | | 01 |
| replace_if_present_flag | | 00 |
| data_coding | | 00 |
| sm_default_msg_id | | 00 |

| | | |
|-----------------------|---|--|
| sm_length | | E5 |
| short_message | <Txn> <Voucher> <Name>AirtimeTest</Name> <FaceValue>500</FaceValue> <Instruction>Thanks for using Whizz! To redeem your {FACEVALUE} airtime voucher dial { RDCODE}</Instruction> <Source/> <Payload/> </Voucher> </Txn> | 3C 54 78 6E 3E 0D 0A 3C 56 6F 75 63 68 65 72 3E 0D 0A 09 3C 4E 61 6D 65 3E 41 69 72 74 69 6D 65 54 65 73 74 3C 2F 4E 61 6D 65 3E 0D 0A 09 3C 46 61 63 65 56 61 6C 75 65 3E 35 30 30 3C 2F 46 61 63 65 56 61 6C 75 65 3E 0D 0A 09 3C 49 6E 73 74 72 75 63 74 69 6F 6E 3E 54 68 61 6E 6B 73 20 66 6F 72 20 75 73 69 6E 67 20 57 68 69 7A 7A 21 20 54 6F 20 72 65 64 65 65 6D 20 79 6F 75 72 20 7B 46 41 43 45 56 41 4C 55 45 7D 20 61 69 72 74 69 6D 65 20 76 6F 75 63 68 65 72 20 64 69 61 6C 20 7B 52 44 43 4F 44 45 7D 3C 2F 49 6E 73 74 72 75 63 74 69 6F 6E 3E 0D 0A 09 3C 53 6F 75 72 63 65 2F 3E 0D 0A 09 3C 50 61 79 6C 6F 61 64 2F 3E 0D 0A 3C 2F 56 6F 75 63 68 65 72 3E 0D 0A 3C 2F 54 78 6E 3E 0D 0A |
| TLV | | |
| Tag | higate_reference_no | 14 1F |
| Length | 8 | 00 08 |
| ESME Reference Number | | 00 00 00 00 00 00 4F 9C |
| TLV | | |
| Tag | higate_service | 14 0A |
| Length | 1 | 00 06 |
| Service Code | C3T01 | 43 33 54 30 31 00 |
| TLV | | |
| Tag | higate_toc | 14 09 |
| Length | 1 | 00 01 |
| TOC | VSR | 09 |
| TLV | | |
| Tag | higate_flags | 14 13 |
| Length | 4 | 00 04 |
| Flags | 0 | 00 00 00 00 |

Read the *submit_sm* response:

| SUBMIT_SM_RESP | | |
|-----------------|------------------------------|---|
| Field name | Field value | Field hexdump |
| Command length | 45 | 00 00 00 2D |
| Command id | submit_sm_resp | 80 00 00 04 |
| Command status | 0=ESME_ROK | 00 00 00 00 |
| Sequence number | 1 | 00 00 00 04 |
| Message id | 27767931435/20380/2895454267 | 32 37 37 36 37 39 33 31 34 33 35 2F 32 30 33 38 30 2F 32 38 39 35 34 35 34 32 36 37 00 |

Read the *deliver_sm*:
Intermediate status notification

| DELIVER_SM (DN) | | |
|-----------------|-------------|---------------|
| Field name | Field value | Field hexdump |
| Command length | | 00 00 01 39 |
| Command id | | 00 00 00 05 |

| | | |
|-------------------------|--|--|
| Command status | 0=ESME_ROK | 00 00 00 00 |
| Sequence number | 1 | 00 00 00 95 |
| service_type | CMT | 43 4D 54 00 |
| source_addr_ton | | 00 |
| source_addr_npi | | 00 |
| source_addr | | 00 |
| dest_addr_ton | | 01 |
| dest_addr_npi | | 01 |
| destination_addr | 27767931435 | 32 37 37 36 37 39 33 31 34 33 35 00 |
| esm_class | | 20 |
| protocol_id | | 00 |
| priority_flag | | 00 |
| schedule_delivery_time | | 00 |
| validity_period | | 00 |
| registered_delivery | | 00 |
| replace_if_present_flag | | 00 |
| data_coding | | 00 |
| sm_default_msg_id | | 00 |
| sm_length | | 6A |
| short_message | id:2895454267 sub:001 dlvr:001 submit date:150323112650 done date:150323112650 stat:ENROUTE err:000 text: | 69 64 3A 32 38 39 35 34 35 34 32 36 37 20 73 75 62 3A 30 30 31 20 64 6C 76 72 64 3A 30 30 31 20 73 75 62 6D 69 74 20 64 61 74 65 3A 31 35 30 33 32 33 31 31 32 36 35 30 20 64 6F 6E 65 20 64 61 74 65 3A 31 35 30 33 32 33 31 31 32 36 35 30 20 73 74 61 74 3A 45 4E 52 4F 55 54 45 20 65 72 72 3A 30 30 30 20 74 65 78 74 3A |
| TLV (14 08) | | |
| Tag | higate_mobile_code | 14 08 |
| Length | | 00 07 |
| | MCC=655 (South Africa) MNC=001(Vodacom) | 36 35 35 30 30 31 00 |
| TLV | | |
| Tag | higate_toc | 14 09 |
| Length | | 00 01 |
| TOC | VSR | 09 |
| TLV | | |
| Tag | higate_service | 14 0A |
| Length | | 00 06 |
| Service | C3T01 | 43 33 54 30 31 00 |
| TLV | | |
| Tag | higate_acc_balance | 14 0F |
| Length | | 00 08 |
| Account Balance | | FF FF FF FF FF F8 65 00 |
| TLV | | |
| Tag | higate_balance | 14 11 |
| Length | | 00 08 |
| Login Balance | | 00 00 00 00 00 00 06 F6 |
| TLV | | |

| | | |
|----------------|------------------------------|--|
| Tag | higate_flags | 14 13 |
| Length | | 00 04 |
| Flags | HIGATE_FLAG_SMS_DN_FINAL | 00 01 00 00 |
| TLV | | |
| Tag | higate_network_id | 14 14 |
| Length | | 00 04 |
| NetworkID | 1 = Vodacom | 00 00 00 01 |
| TLV | | |
| Tag | higate_value | 14 15 |
| Length | | 00 08 |
| | | 00 00 00 00 00 00 01 F4 |
| TLV | | |
| Tag | higate_result_code | 14 16 |
| Length | | 00 04 |
| Result Code | QUEUED | 00 00 00 01 |
| TLV | | |
| Tag | higate_result_text | 14 17 |
| Length | | 00 07 |
| Result Text | Queued | 51 75 65 75 65 64 00 |
| TLV | | |
| Tag | higate_sub_code | 14 19 |
| Length | | 00 04 |
| Sub Code | | 00 00 00 00 |
| TLV | | |
| Tag | higate_reference_no | 14 1F |
| Length | | 00 08 |
| Reference No | | 00 00 00 00 00 00 4F 9C |
| TLV | | |
| Tag | receipted_message_id | 00 1E |
| Length | | 00 1D |
| Message ID | 27767931435/20380/2895454267 | 32 37 37 36 37 39 33 31 34 33 35 2F 32 30 33 38 30 2F 32 38 39 35 34 35 34 32 36 37 00 |
| TLV | | |
| Tag | message_state | 04 27 |
| Length | | 00 01 |
| State | ENROUTE | 01 |
| TLV | | |
| Tag | higate_src_address | 14 25 |
| Length | | 00 01 |
| Source Address | | 00 |

Read the *deliver_sm*:

NOTE: This delivery notification is not for the VSR transaction but for the SMS created by the voucher repository. Note that it has a different Higate sequence number in the *message_id* but contains the same *higate_reference_no* and the

TOC is set to 1 (SMS). From this point we can expect more delivery notifications for both the VSR and SMS parts of the transaction.

| DELIVER_SM (DN) | | |
|-------------------------|---|---|
| Field name | Field value | Field hexdump |
| Command length | | 00 00 01 5B |
| Command id | | 00 00 00 05 |
| Command status | 0=ESME_ROK | 00 00 00 00 |
| Sequence number | 1 | 00 00 00 96 |
| service_type | CMT | 43 4D 54 00 |
| source_addr_ton | | 00 |
| source_addr_npi | | 00 |
| source_addr | | 00 |
| dest_addr_ton | | 01 |
| dest_addr_npi | | 01 |
| destination_addr | 27767931435 | 32 37 37 36 37 39 33 31 34 33 35 00 |
| esm_class | | 20 |
| protocol_id | | 00 |
| priority_flag | | 00 |
| schedule_delivery_time | | 00 |
| validity_period | | 00 |
| registered_delivery | | 00 |
| replace_if_present_flag | | 00 |
| data_coding | | 00 |
| sm_default_msg_id | | 00 |
| sm_length | | 7E |
| short_message | id:2895454269 sub:001 dlvr:001 submit date:150323112651 done date:150323112651 stat:ENROUTE err:000 text:Thanks for using Whi | 69 64 3A 32 38 39 35 34 35 34 32 36 39 20 73 75 62 3A 30 30 31 20 64 6C 76 72 64 3A 30 30 31 20 73 75 62 6D 69 74 20 64 61 74 65 3A 31 35 30 33 32 33 31 31 32 36 35 31 20 64 6F 6E 65 20 64 61 74 65 3A 31 35 30 33 32 33 31 31 32 36 35 31 20 73 74 61 74 3A 45 4E 52 4F 55 54 45 20 65 72 72 3A 30 30 30 20 74 65 78 74 3A 54 68 61 6E 6B 73 20 66 6F 72 20 75 73 69 6E 67 20 57 68 69 |
| TLV (14 08) | | |
| Tag | higate_mobile_code | 14 08 |
| Length | | 00 07 |
| | MCC=655 (South Africa) MNC=001(Vodacom) | 36 35 35 30 30 31 00 |
| TLV | | |
| Tag | higate_toc | 14 09 |
| Length | | 00 01 |
| TOC | SMS | 01 |
| TLV | | |
| Tag | higate_service | 14 0A |
| Length | | 00 06 |
| Service | C3T01 | 43 33 54 30 31 00 |
| TLV | | |
| Tag | higate_acc_balance | 14 0F |

| | | |
|-----------------|------------------------------|--|
| Length | | 00 08 |
| Account Balance | | FF FF FF FF FF F8 65 00 |
| TLV | | |
| Tag | higate_balance | 14 11 |
| Length | | 00 08 |
| Login Balance | | 00 00 00 00 00 00 06 F6 |
| TLV | | |
| Tag | higate_flags | 14 13 |
| Length | | 00 04 |
| Flags | - | 00 00 00 00 |
| TLV | | |
| Tag | higate_network_id | 14 14 |
| Length | | 00 04 |
| NetworkID | 1 = Vodacom | 00 00 00 01 |
| TLV | | |
| Tag | higate_value | 14 15 |
| Length | | 00 08 |
| | | 00 00 00 00 00 00 00 00 |
| TLV | | |
| Tag | higate_result_code | 14 16 |
| Length | | 00 04 |
| Result Code | SUBMITTED | 00 00 00 02 |
| TLV | | |
| Tag | higate_result_text | 14 17 |
| Length | | 00 0A |
| Result Text | Submitted | 53 75 62 6D 69 74 74 65 64 00 |
| TLV | | |
| Tag | higate_sub_code | 14 19 |
| Length | | 00 04 |
| Sub Code | | 00 00 00 00 |
| TLV | | |
| Tag | higate_reference_no | 14 1F |
| Length | | 00 08 |
| Reference No | | 00 00 00 00 00 00 4F 9C |
| TLV | | |
| Tag | receipted_message_id | 00 1E |
| Length | | 00 1D |
| Message ID | 27767931435/20380/2895454269 | 00 1E 00 1D 32 37 37 36 37 39 33 31 34 33 35 2F 32 30 33 38 30 2F 32 38 39 35 34 35 34 32 36 39 00 |
| TLV | | |
| Tag | message_state | 04 27 |
| Length | | 00 01 |
| State | ENROUTE | 01 |
| TLV | | |
| Tag | higate_src_address | 14 25 |

| | | |
|----------------|-------------|-------------------------------------|
| Length | | 00 0C |
| Source Address | 27820048062 | 32 37 38 32 30 30 34 38 30 36 32 00 |

Read the *deliver_sm*:

Final status notification for the VSR transaction.

| DELIVER_SM (DN) | | |
|-------------------------|---|---|
| Field name | Field value | Field hexdump |
| Command length | | 00 00 01 51 |
| Command id | | 00 00 00 05 |
| Command status | 0=ESME_ROK | 00 00 00 00 |
| Sequence number | 1 | 00 00 00 97 |
| service_type | CMT | 43 4D 54 00 |
| source_addr_ton | | 00 |
| source_addr_npi | | 00 |
| source_addr | | 00 |
| dest_addr_ton | | 01 |
| dest_addr_npi | | 01 |
| destination_addr | 27767931435 | 32 37 37 36 37 39 33 31 34 33 35 00 |
| esm_class | | 04 |
| protocol_id | | 00 |
| priority_flag | | 00 |
| schedule_delivery_time | | 00 |
| validity_period | | 00 |
| registered_delivery | | 00 |
| replace_if_present_flag | | 00 |
| data_coding | | 00 |
| sm_default_msg_id | | 00 |
| sm_length | | 6A |
| short_message | id:2895454267 sub:001 dlvr:001 submit date:150323112651 done date:150323112651 stat:DELIVRD err:000 text: | 69 64 3A 32 38 39 35 34 35 34 32 36 37 20 73 75 62 3A 30 30 31 20 64 6C 76 72 64 3A 30 30 31 20 73 75 62 6D 69 74 20 64 61 74 65 3A 31 35 30 33 32 33 31 31 32 36 35 31 20 64 6F 6E 65 20 64 61 74 65 3A 31 35 30 33 32 33 31 31 32 36 35 31 20 73 74 61 74 3A 44 45 4C 49 56 52 44 20 65 72 72 3A 30 30 30 20 74 65 78 74 3A |
| TLV (14 08) | | |
| Tag | higate_mobile_code | 14 08 |
| Length | | 00 07 |
| | MCC=655 (South Africa) MNC=001(Vodacom) | 36 35 35 30 30 31 00 |
| TLV | | |
| Tag | higate_toc | 14 09 |
| Length | | 00 01 |
| TOC | VSR | 09 |
| TLV | | |
| Tag | higate_service | 14 0A |
| Length | | 00 06 |

| | | |
|-----------------|--------------------------------|--|
| Service | C3T01 | 43 33 54 30 31 00 |
| TLV | | |
| Tag | higate_acc_balance | 14 0F |
| Length | | 00 08 |
| Account Balance | | FF FF FF FF FF F8 65 00 |
| TLV | | |
| Tag | higate_balance | 14 11 |
| Length | | 00 08 |
| Login Balance | | 00 00 00 00 00 00 06 F6 |
| TLV | | |
| Tag | higate_flags | 14 13 |
| Length | | 00 04 |
| Flags | HIGATE_FLAG_SMS_DN_FINAL | 00 01 00 00 |
| TLV | | |
| Tag | higate_network_id | 14 14 |
| Length | | 00 04 |
| NetworkID | 1 = Vodacom | 00 00 00 01 |
| TLV | | |
| Tag | higate_value | 14 15 |
| Length | | 00 08 |
| | | 00 00 00 00 00 00 01 F4 |
| TLV | | |
| Tag | higate_result_code | 14 16 |
| Length | | 00 04 |
| Result Code | RECEIPTED | 00 00 00 04 |
| TLV | | |
| Tag | higate_result_text | 14 17 |
| Length | | 00 1F |
| Result Text | Success. SMS SeqNo(2895454269) | 53 75 63 63 65 73 73 2E 20 53 4D 53 20 53 65 71 4E 6F 28 32 38 39 35 34 35 34 32 36 39 29 00 |
| TLV | | |
| Tag | higate_sub_code | 14 19 |
| Length | | 00 04 |
| Sub Code | | 00 00 00 00 |
| TLV | | |
| Tag | higate_reference_no | 14 1F |
| Length | | 00 08 |
| Reference No | | 00 00 00 00 00 00 4F 9C |
| TLV | | |
| Tag | receipted_message_id | 00 1E |
| Length | | 00 1D |
| Message ID | 27767931435/20380/2895454267 | 32 37 37 36 37 39 33 31 34 33 35 2F 32 30 33 38 30 2F 32 38 39 35 34 35 34 32 36 37 00 |
| TLV | | |
| Tag | message_state | 04 27 |

| | | |
|----------------|--------------------|-------|
| Length | | 00 01 |
| State | DELIVERED | 02 |
| TLV | | |
| Tag | higate_src_address | 14 25 |
| Length | | 00 01 |
| Source Address | | 00 |

Read the *deliver_sm*:

Final status notification for the SMS transaction

| DELIVER_SM (DN) | | |
|-------------------------|---|---|
| Field name | Field value | Field hexdump |
| Command length | | 00 00 01 5B |
| Command id | | 00 00 00 05 |
| Command status | 0=ESME_ROK | 00 00 00 00 |
| Sequence number | 1 | 00 00 00 99 |
| service_type | CMT | 43 4D 54 00 |
| source_addr_ton | | 00 |
| source_addr_npi | | 00 |
| source_addr | | 00 |
| dest_addr_ton | | 01 |
| dest_addr_npi | | 01 |
| destination_addr | 27767931435 | 32 37 37 36 37 39 33 31 34 33 35 00 |
| esm_class | | 04 |
| protocol_id | | 00 |
| priority_flag | | 00 |
| schedule_delivery_time | | 00 |
| validity_period | | 00 |
| registered_delivery | | 00 |
| replace_if_present_flag | | 00 |
| data_coding | | 00 |
| sm_default_msg_id | | 00 |
| sm_length | | 7E |
| short_message | id:2895454269 sub:001 dlvr:001 submit date:150323112651 done date:150323112651 stat:DELIVRD err:000 text:Thanks for using Whi | 69 64 3A 32 38 39 35 34 35 34 32 36 39 20 73 75 62 3A 30 30 31 20 64 6C 76 72 64 3A 30 30 31 20 73 75 62 6D 69 74 20 64 61 74 65 3A 31 35 30 33 32 33 31 31 32 36 35 31 20 64 6F 6E 65 20 64 61 74 65 3A 31 35 30 33 32 33 31 31 32 36 35 31 20 73 74 61 74 3A 44 45 4C 49 56 52 44 20 65 72 72 3A 30 30 30 20 74 65 78 74 3A 54 68 61 6E 6B 73 20 66 6F 72 20 75 73 69 6E 67 20 57 68 69 |
| TLV (14 08) | | |
| Tag | higate_mobile_code | 14 08 |
| Length | | 00 07 |
| | MCC=655 (South Africa) MNC=001(Vodacom) | 36 35 35 30 30 31 00 |
| TLV | | |
| Tag | higate_toc | 14 09 |

| | | |
|-----------------|--------------------------|-------------------------------|
| Length | | 00 01 |
| TOC | SMS | 01 |
| TLV | | |
| Tag | higate_service | 14 0A |
| Length | | 00 06 |
| Service | C3T01 | 43 33 54 30 31 00 |
| TLV | | |
| Tag | higate_acc_balance | 14 0F |
| Length | | 00 08 |
| Account Balance | | FF FF FF FF FF F8 65 00 |
| TLV | | |
| Tag | higate_balance | 14 11 |
| Length | | 00 08 |
| Login Balance | | 00 00 00 00 00 00 06 F6 |
| TLV | | |
| Tag | higate_flags | 14 13 |
| Length | | 00 04 |
| Flags | HIGATE_FLAG_SMS_DN_FINAL | 00 00 00 00 |
| TLV | | |
| Tag | higate_network_id | 14 14 |
| Length | | 00 04 |
| NetworkID | 1 = Vodacom | 00 00 00 01 |
| TLV | | |
| Tag | higate_value | 14 15 |
| Length | | 00 08 |
| | | 00 00 00 00 00 00 00 00 |
| TLV | | |
| Tag | higate_result_code | 14 16 |
| Length | | 00 04 |
| Result Code | RECEIPTED | 00 00 00 04 |
| TLV | | |
| Tag | higate_result_text | 14 17 |
| Length | | 00 07 |
| Result Text | Receipted | 52 65 63 65 69 70 74 65 64 00 |
| TLV | | |
| Tag | higate_sub_code | 14 19 |
| Length | | 00 04 |
| Sub Code | | 00 00 00 00 |
| TLV | | |
| Tag | higate_reference_no | 14 1F |
| Length | | 00 08 |
| Reference No | | 00 00 00 00 00 00 4F 9C |
| TLV | | |
| Tag | receipted_message_id | 00 1E |
| Length | | 00 1D |

| | | |
|----------------|------------------------------|--|
| Message ID | 27767931435/20380/2895454269 | 32 37 37 36 37 39 33 31 34 33 35 2F 32 30 33 38 30 2F 32 38 39 35 34 35 34 32 36 39 00 |
| TLV | | |
| Tag | message_state | 04 27 |
| Length | | 00 01 |
| State | DELIVERED | 02 |
| TLV | | |
| Tag | higate_src_address | 14 25 |
| Length | | 00 0C |
| Source Address | 27820048062 | 32 37 38 32 30 30 34 38 30 36 32 00 |

18.6.2 Example 2 – Voucher GET

In the next example a vouchers is requested but instead of sending this voucher to the subscriber it is returned to the application. Note the use of the GET action in the XML document.

```

<Txn>
<Voucher>
  <Action>Get</Action>
  <Name>AirtimeTest</Name>
  <FaceValue>500</FaceValue>
  <Instruction>Thanks for using Whizz! To redeem your {FACEVALUE} airtime voucher dial
{RDCODE}</Instruction>
  <Source/>
  <Payload/>
</Voucher>
</Txn>

```

Sending a *submit_sm* (VSR):

| SUBMIT_SM | | |
|------------------|-------------|-------------------------------------|
| Field name | Field value | Field hexdump |
| Command length | | 00 00 01 4F |
| Command id | SUBMIT_SM | 00 00 00 04 |
| Command status | ESME_ROK | 00 00 00 00 |
| Sequence number | 1 | 00 00 00 05 |
| service_type | CMT | 43 4D 54 00 |
| source_addr_ton | | 00 |
| source_addr_npi | | 01 |
| source_addr | | 00 |
| dest_addr_ton | | 01 |
| dest_addr_npi | | 01 |
| destination_addr | 27767931435 | 32 37 37 36 37 39 33 31 34 33 35 00 |
| esm_class | | 00 |
| protocol_id | | 00 |
| priority_flag | | 00 |

| | | |
|-------------------------|--|--|
| schedule_delivery_time | | 00 |
| validity_period | | 00 |
| registered_delivery | | 01 |
| replace_if_present_flag | | 00 |
| data_coding | | 00 |
| sm_default_msg_id | | 00 |
| sm_length | | FD |
| short_message | <Txn> <Voucher> <Action>Get</Action> <Name>AirtimeTest</Name> <FaceValue>500</FaceValue> <Instruction>Thanks for using Whizz! To redeem your {FACEVALUE} airtime voucher dial {RDCODE}</Instruction> <Source/> <Payload/> </Voucher> </Txn> | 3C 54 78 6E 3E 0D 0A 3C 56 6F 75 63 68 65 72 3E 0D 0A 09 3C 41 63 74 69 6F 6E 3E 47 65 74 3C 2F 41 63 74 69 6F 6E 3E 20 0D 0A 09 3C 4E 61 6D 65 3E 41 69 72 74 69 6D 65 54 65 73 74 3C 2F 4E 61 6D 65 3E 0D 0A 09 3C 46 61 63 65 56 61 6C 75 65 3E 35 30 30 3C 2F 46 61 63 65 56 61 6C 75 65 3E 0D 0A 09 3C 49 6E 73 74 72 75 63 74 69 6F 6E 3E 54 68 61 6E 6B 73 20 66 6F 72 20 75 73 69 6E 67 20 57 68 69 7A 7A 21 20 54 6F 20 72 65 64 65 65 6D 20 79 6F 75 72 20 7B 46 41 43 45 56 41 4C 55 45 7D 20 61 69 72 74 69 6D 65 20 76 6F 75 63 68 65 72 20 64 69 61 6C 20 7B 52 44 43 4F 44 45 7D 3C 2F 49 6E 73 74 72 75 63 74 69 6F 6E 3E 0D 0A 09 3C 53 6F 75 72 63 65 2F 3E 0D 0A 09 3C 50 61 79 6C 6F 61 64 2F 3E 0D 0A 3C 2F 56 6F 75 63 68 65 72 3E 0D 0A 3C 2F 54 78 6E 3E 0D 0A |
| TLV | | |
| Tag | higate_reference_no | 14 1F |
| Length | 8 | 00 08 |
| ESME Reference Number | | 00 00 00 00 00 00 4F 9D |
| TLV | | |
| Tag | higate_service | 14 0A |
| Length | 1 | 00 06 |
| Service Code | C3T01 | 43 33 54 30 31 00 |
| TLV | | |
| Tag | higate_toc | 14 09 |
| Length | 1 | 00 01 |
| TOC | VSR | 09 |
| TLV | | |
| Tag | higate_flags | 14 13 |
| Length | 4 | 00 04 |
| Flags | 0 | 00 00 00 00 |

Read the *submit_sm* response:

| SUBMIT_SM_RESP | | |
|-----------------|------------------------------|---|
| Field name | Field value | Field hexdump |
| Command length | 45 | 00 00 00 2D |
| Command id | submit_sm_resp | 80 00 00 04 |
| Command status | 0=ESME_ROK | 00 00 00 00 |
| Sequence number | 1 | 00 00 00 05 |
| Message id | 27767931435/20381/2895455078 | 32 37 37 36 37 39 33 31 34 33 35 2F 32 30 33 38 31 2F 32 38 39 35 34 35 35 30 37 38 00 |

Read the *deliver_sm*:

If a voucher was issued successfully a MO transaction is created to return the voucher information back to the application. This MO transaction has a TOC of VSR (9) and contains the issued voucher in the short_message field. Note the reference number in the XML document matches the reference number in the originating VSR transaction. It is important to note that this is an entirely separate transaction from the VSR request transaction.

| DELIVER_SM (DN) | | |
|-------------------------|---|---|
| Field name | Field value | Field hexdump |
| Command length | | 00 00 01 3B |
| Command id | | 00 00 00 05 |
| Command status | 0=ESME_ROK | 00 00 00 00 |
| Sequence number | 1 | 00 00 00 9C |
| service_type | CMT | 43 4D 54 00 |
| source_addr_ton | | 01 |
| source_addr_npi | | 01 |
| source_addr | 270000000000 | 32 37 30 30 30 30 30 30 30 30 00 |
| dest_addr_ton | | 01 |
| dest_addr_npi | | 01 |
| destination_addr | 27820048062 | 32 37 38 32 30 30 34 38 30 36 32 00 |
| esm_class | | 00 |
| protocol_id | | 00 |
| priority_flag | | 00 |
| schedule_delivery_time | | 00 |
| validity_period | | 00 |
| registered_delivery | | 00 |
| replace_if_present_flag | | 00 |
| data_coding | | 00 |
| sm_default_msg_id | | 00 |
| sm_length | | 7E |
| short_message | <Txn> <RefNo>20381</RefNo> <Instruction> Thanks for using Whizz! To redeem your R5.00 airtime voucher dial *100*1234567890110295# </Instruction> </Txn> <i>*Note line breaks inserted for clarity</i> | 92 3C 54 78 6E 3E 3C 52 65 66 4E 6F 3E 32 30 33 38 31 3C 2F 52 65 66 4E 6F 3E 3C 49 6E 73 74 72 75 63 74 69 6F 6E 3E 54 68 61 6E 6B 73 20 66 6F 72 20 75 73 69 6E 67 20 57 68 69 7A 7A 21 20 54 6F 20 72 65 64 65 65 6D 20 79 6F 75 72 20 52 35 2E 30 30 20 61 69 72 74 69 6D 65 20 76 6F 75 63 68 65 72 20 64 69 61 6C 20 2A 31 30 30 2A 31 32 33 34 35 36 37 38 39 30 31 31 30 32 39 35 23 3C 2F 49 6E 73 74 72 75 63 74 69 6F 6E 3E 3C 2F 54 78 6E 3E |
| TLV | | |
| Tag | higate_sequence_no | 14 21 |
| Length | 8 | 00 08 |
| | 96289296 | 00 00 00 00 05 BD 42 10 |
| TLV (14 08) | | |
| Tag | higate_mobile_code | 14 08 |
| Length | 7 | 00 07 |
| | MCC=655 (South Africa) | 36 35 35 30 30 31 00 |

| | | |
|-----------------|---------------------|-------------------------|
| | MNC=001(Vodacom) | |
| TLV | | |
| Tag | higate_toc | 14 09 |
| Length | 1 | 00 01 |
| TOC | VSR | 09 |
| TLV | | |
| Tag | higate_service | 14 0A |
| Length | 6 | 00 06 |
| Service | C3T01 | 43 33 54 30 31 00 |
| TLV | | |
| Tag | higate_acc_balance | 14 0F |
| Length | 8 | 00 08 |
| Account Balance | | FF FF FF FF FF F8 65 00 |
| TLV | | |
| Tag | higate_balance | 14 11 |
| Length | 8 | 00 08 |
| Login Balance | | 00 00 00 00 00 00 06 DA |
| TLV | | |
| Tag | higate_flags | 14 13 |
| Length | 4 | 00 04 |
| Flags | - | 00 00 00 00 |
| TLV | | |
| Tag | higate_network_id | 14 14 |
| Length | | 00 04 |
| NetworkID | 1 = Vodacom | 00 00 00 01 |
| TLV | | |
| Tag | higate_adult_rating | 14 0E |
| Length | 1 | 00 01 |
| Rating Code | ADULT_NONE | 00 |
| TLV | | |
| Tag | higate_sent_time | 14 18 |
| Length | 4 | 00 04 |
| Time | | 55 0F DD 09 |
| TLV | | |
| Tag | higate_to_tag | 14 1B |
| Length | 4 | 00 04 |
| Tag | 216 | 32 31 36 00 |
| TLV | | |
| Tag | higate_value | 14 1C |
| Length | 8 | 00 08 |
| Sub Code | 0 | 00 00 00 00 00 00 00 00 |

Read the *deliver_sm*:

Final status notification for the original VSR transaction.

| DELIVER_SM (DN) | | |
|-------------------------|--|--|
| Field name | Field value | Field hexdump |
| Command length | | 00 00 01 3A |
| Command id | | 00 00 00 05 |
| Command status | 0=ESME_ROK | 00 00 00 00 |
| Sequence number | 1 | 00 00 00 9D |
| service_type | CMT | 43 4D 54 00 |
| source_addr_ton | | 00 |
| source_addr_npi | | 00 |
| source_addr | | 00 |
| dest_addr_ton | | 01 |
| dest_addr_npi | | 01 |
| destination_addr | 27767931435 | 32 37 37 36 37 39 33 31 34 33 35 00 |
| esm_class | | 04 |
| protocol_id | | 00 |
| priority_flag | | 00 |
| schedule_delivery_time | | 00 |
| validity_period | | 00 |
| registered_delivery | | 00 |
| replace_if_present_flag | | 00 |
| data_coding | | 00 |
| sm_default_msg_id | | 00 |
| sm_length | | 6A |
| short_message | i id:2895455078 sub:001 dlvr:001 submit date:150323112947 done date:150323112947 stat:DELIVRD err: | 69 64 3A 32 38 39 35 34 35 35 30 37 38 20 73 75 62 3A 30 30 31 20 64 6C 76 72 64 3A 30 30 31 20 73 75 62 6D 69 74 20 64 61 74 65 3A 31 35 30 33 32 33 31 31 32 39 34 37 20 64 6F 6E 65 20 64 61 74 65 3A 31 35 30 33 32 33 31 31 32 39 34 37 20 73 74 61 74 3A 44 45 4C 49 56 52 44 20 65 72 72 3A 30 |
| TLV (14 08) | | |
| Tag | higate_mobile_code | 14 08 |
| Length | | 00 07 |
| | MCC=655 (South Africa) MNC=001 (Vodacom) | 36 35 35 30 30 31 00 |
| TLV | | |
| Tag | higate_toc | 14 09 |
| Length | | 00 01 |
| TOC | SMS | 01 |
| TLV | | |
| Tag | higate_service | 14 0A |
| Length | | 00 06 |
| Service | C3T01 | 43 33 54 30 31 00 |
| TLV | | |

| | | |
|-----------------|------------------------------|--|
| Tag | higate_acc_balance | 14 0F |
| Length | | 00 08 |
| Account Balance | | FF FF FF FF FF F8 65 00 |
| TLV | | |
| Tag | higate_balance | 14 11 |
| Length | | 00 08 |
| Login Balance | | 00 00 00 00 00 00 06 DA |
| TLV | | |
| Tag | higate_flags | 14 13 |
| Length | | 00 04 |
| Flags | HIGATE_FLAG_SMS_DN_FINAL | 00 01 00 00 |
| TLV | | |
| Tag | higate_network_id | 14 14 |
| Length | | 00 04 |
| NetworkID | 1 = Vodacom | 00 00 00 01 |
| TLV | | |
| Tag | higate_value | 14 15 |
| Length | | 00 08 |
| Value | | 00 00 00 00 00 01 F4 |
| TLV | | |
| Tag | higate_result_code | 14 16 |
| Length | | 00 04 |
| Result Code | RECEIPTED | 00 00 00 04 |
| TLV | | |
| Tag | higate_result_text | 14 17 |
| Length | | 00 07 |
| Result Text | Success | 53 75 63 63 65 73 73 00 |
| TLV | | |
| Tag | higate_sub_code | 14 19 |
| Length | | 00 04 |
| Sub Code | | 00 00 00 00 |
| TLV | | |
| Tag | higate_reference_no | 14 1F |
| Length | | 00 08 |
| Reference No | | 00 00 00 00 00 00 4F 9D |
| TLV | | |
| Tag | receipted_message_id | 00 1E |
| Length | | 00 1D |
| Message ID | 27767931435/20381/2895455078 | 32 37 37 36 37 39 33 31 34 33 35 2F 32 30 33 38 31 2F 32 38 39 35 34 35 35 30 37 38 00 |
| TLV | | |
| Tag | message_state | 04 27 |
| Length | 1 | 00 01 |
| State | DELIVERED | 02 |
| TLV | | |

| | | |
|----------------|--------------------|-------|
| Tag | higate_src_address | 14 25 |
| Length | 1 | 00 01 |
| Source Address | - | 00 |

18.6.3 Example 3 – Duplicate Reference Number Used

The following example shows the deliver notification for a voucher transaction where a duplicate reference number was used.

Note that unlike OBS transaction where duplicate reference numbers are indicated by a status code in the *submit_sm_rsp* message, VSR transactions are failed after being submitted successfully because the voucher system and not the SMSC enforces the duplicate restriction.

Read the *deliver_sm* (Only TLVs shown):

| | | |
|--------------|------------------------------|--|
| TLV | | |
| Tag | higate_toc | 14 09 |
| Length | 1 | 00 01 |
| TOC | VSR | 09 |
| TLV | | |
| Tag | higate_result_code | 14 16 |
| Length | 4 | 00 04 |
| Result Code | FAILED | 00 00 00 06 |
| TLV | | |
| Tag | higate_result_text | 14 17 |
| Length | 23 | 00 18 |
| Result Text | [E803A0]Duplicate RefNo | 5B 45 38 30 33 41 30 5D 44 75 70 6C 69 63 61 74 65 20 52 65 66 4E 6F 00 |
| TLV | | |
| Tag | higate_sub_code | 14 19 |
| Length | 4 | 00 04 |
| Sub Code | 0 | 00 00 00 00 |
| TLV | | |
| Tag | higate_reference_no | 14 1F |
| Length | 8 | 00 08 |
| Reference No | | 00 00 00 00 00 00 4F 9D |
| TLV | | |
| Tag | receipted_message_id | 00 1E |
| Length | | 00 1D |
| Message ID | 27767931435/20381/2895455375 | 00 1E 00 1D 32 37 37 36 37 39 33 31 34 33 35 2F 32 30 33 38 31 2F 32 38 39 35 34 35 35 33 37 35 00 |
| TLV | | |
| Tag | message_state | 04 27 |
| Length | 1 | 00 01 |
| State | 5 = UNDELIVERABLE | 05 |
| TLV | | |
| Tag | higate_src_address | 14 25 |

| | | |
|----------------|---|-------|
| Length | 1 | 00 01 |
| Source Address | - | 00 |

18.6.4 Example 4 – Invalid Voucher Name

Typically a client will have access to a specific type or group of vouchers specified by the *Voucher.Name* parameter. If an invalid name is specified the following TLVs are returned for the VSR transaction:

Example XML:

```
<Txn>
<Voucher>
  <Name>IncorrectVoucherName</Name>
  <FaceValue>500</FaceValue>
  <Instruction>Thanks for using Whizz! To redeem your {FACEVALUE} airtime voucher dial
{RDCODE}</Instruction>
  <Source/>
  <Payload/>
</Voucher>
</Txn>
```

Read the *deliver_sm* (Only TLVs shown):

| TLV | | |
|--------------|------------------------------|--|
| Tag | higate_toc | 14 09 |
| Length | 1 | 00 01 |
| TOC | VSR | 09 |
| TLV | | |
| Tag | higate_result_code | 14 16 |
| Length | 4 | 00 04 |
| Result Code | FAILED | 00 00 00 06 |
| TLV | | |
| Tag | higate_result_text | 14 17 |
| Length | 28 | 00 1C |
| Result Text | Unknown or disabled voucher | 55 6E 6B 6E 6F 77 6E 20 6F 72 20 64 69 73 61 62 6C 65 64 20 76 6F 75 63 68 65 72 00 |
| TLV | | |
| Tag | higate_sub_code | 14 19 |
| Length | 4 | 00 04 |
| Sub Code | 0 | 00 00 00 00 |
| TLV | | |
| Tag | higate_reference_no | 14 1F |
| Length | 8 | 00 08 |
| Reference No | | 00 00 00 00 00 00 4F 9E |
| TLV | | |
| Tag | receipted_message_id | 00 1E |
| Length | | 00 1D |
| Message ID | 27767931435/20382/2895457026 | 32 37 37 36 37 39 33 31 34 33 35 2F 32 30 33 38 32 2F 32 38 39 35 34 35 37 30 32 36 00 |

| TLV | | |
|----------------|--------------------|-------|
| Tag | message_state | 04 27 |
| Length | 1 | 00 01 |
| State | 5 = UNDELIVERABLE | 01 |
| TLV | | |
| Tag | higate_src_address | 14 25 |
| Length | 1 | 00 01 |
| Source Address | - | 00 |

18.6.5 Example 5 – Invalid XML

In the case where invalid XML is contained in the VSR request the following response is received.

Example XML:

```
<Txn>
<Voucher>
  <Name>AirtimeTest</Name>
  <FaceValue>500</FaceValue>
  <Instruction>Thanks for using Whizz! To redeem your {FACEVALUE} airtime voucher dial
{RDCODE}</Instruction>
```

Read a *deliver_sm* (Only TLVs shown):

| TLV | | |
|--------------|----------------------|-------------------------|
| Tag | higate_toc | 14 09 |
| Length | 1 | 00 01 |
| TOC | VSR | 09 |
| TLV | | |
| Tag | higate_result_code | 14 16 |
| Length | 4 | 00 04 |
| Result Code | FAILED | 00 00 00 06 |
| TLV | | |
| Tag | higate_result_text | 14 17 |
| Length | 7 | 00 07 |
| Result Text | Failed | 46 61 69 6C 65 64 00 |
| TLV | | |
| Tag | higate_sub_code | 14 19 |
| Length | 4 | 00 04 |
| Sub Code | 0 | 00 00 00 00 |
| TLV | | |
| Tag | higate_reference_no | 14 1F |
| Length | 8 | 00 08 |
| Reference No | | 00 00 00 00 00 00 4F A1 |
| TLV | | |
| Tag | receipted_message_id | 00 1E |
| Length | | 00 1D |

| | | |
|----------------|------------------------------|--|
| Message ID | 27767931435/20385/2895459329 | 00 1D 32 37 37 36 37 39 33 31 34 33 35 2F 32 30 33 38 35 2F 32 38 39 35 34 35 39 33 32 39 00 |
| TLV | | |
| Tag | message_state | 04 27 |
| Length | 1 | 00 01 |
| State | 5 = UNDELIVERABLE | 01 |
| TLV | | |
| Tag | higate_src_address | 14 25 |
| Length | 1 | 00 01 |
| Source Address | - | 00 |

18.6.6 Example 6 – No Stock

In the case where there are no stock of the voucher being requested the following response is received:

Read a *deliver_sm* (Only TLVs shown):

| | | |
|--------------|------------------------------|--|
| TLV | | |
| Tag | higate_toc | 14 09 |
| Length | 1 | 00 01 |
| TOC | VSR | 09 |
| TLV | | |
| Tag | higate_result_code | 14 16 |
| Length | 4 | 00 04 |
| Result Code | FAILED | 00 00 00 06 |
| TLV | | |
| Tag | higate_result_text | 14 17 |
| Length | 27 | 00 1B |
| Result Text | [E801A0]No Stock Available | 5B 45 38 30 31 41 30 5D 4E 6F 20 53 74 6F 63 6B 20 41 76 61 69 6C 61 62 6C 65 00 |
| TLV | | |
| Tag | higate_sub_code | 14 19 |
| Length | 4 | 00 04 |
| Sub Code | 0 | 00 00 00 00 |
| TLV | | |
| Tag | higate_reference_no | 14 1F |
| Length | 8 | 00 08 |
| Reference No | | 00 00 00 00 00 00 4F A2 |
| TLV | | |
| Tag | receipted_message_id | 00 1E |
| Length | | 00 1D |
| Message ID | 27767931435/20386/2895463256 | 32 37 37 36 37 39 33 31 34 33 35 2F 32 30 33 38 36 2F 32 38 39 35 34 36 33 32 35 36 00 |
| TLV | | |
| Tag | message_state | 04 27 |
| Length | 1 | 00 01 |

| | | |
|----------------|--------------------|-------|
| State | 5 = UNDELIVERABLE | 01 |
| TLV | | |
| Tag | higate_src_address | 14 25 |
| Length | 1 | 00 01 |
| Source Address | - | 00 |

18.6.7 Example 7 – Invalid Action

In the case where an invalid action is specified the following response is received:

Read a *deliver_sm* (Only TLVs shown):

| | | |
|----------------|------------------------------|--|
| TLV | | |
| Tag | higate_toc | 14 09 |
| Length | 1 | 00 01 |
| TOC | VSR | 09 |
| TLV | | |
| Tag | higate_result_code | 14 16 |
| Length | 4 | 00 04 |
| Result Code | FAILED | 00 00 00 06 |
| TLV | | |
| Tag | higate_result_text | 14 17 |
| Length | 15 | 00 0F |
| Result Text | Invalid Action | 49 6E 76 61 6C 69 64 20 41 63 74 69 6F 6E 00 |
| TLV | | |
| Tag | higate_sub_code | 14 19 |
| Length | 4 | 00 04 |
| Sub Code | 0 | 00 00 00 00 |
| TLV | | |
| Tag | higate_reference_no | 4F A3 |
| Length | 8 | 00 08 |
| Reference No | | 00 00 00 00 00 00 4F 7F |
| TLV | | |
| Tag | receipted_message_id | 00 1E |
| Length | | 00 1D |
| Message ID | 27767931435/20351/2888238605 | 00 1E 00 1D 32 37 37 36 37 39 33 31 34 33 35 2F 32 30 33 38 37 2F 32 38 39 35 34 36 34 33 33 31 00 |
| TLV | | |
| Tag | message_state | 04 27 |
| Length | 1 | 00 01 |
| State | 5 = UNDELIVERABLE | 01 |
| TLV | | |
| Tag | higate_src_address | 14 25 |
| Length | 1 | 00 01 |
| Source Address | - | 00 |

18.6.8 Example 8 – Insufficient Credit

In the case where there are not sufficient credit to issue a voucher the following response is received. Note that voucher credits are managed separately from Higate transaction credits.

Read a *deliver_sm* (Only TLVs shown):

| TLV | | |
|----------------|------------------------------|--|
| Tag | higate_toc | 14 09 |
| Length | 1 | 00 01 |
| TOC | VSR | 07 |
| TLV | | |
| Tag | higate_result_code | 14 16 00 04 00 00 00 06 |
| Length | 4 | 00 04 |
| Result Code | FAILED | 00 00 00 06 |
| TLV | | |
| Tag | higate_result_text | 14 17 |
| Length | 30 | 00 14 |
| Result Text | Insufficient Credit | 49 6E 73 75 66 66 69 63 69 65 6E 74 20 43 72 65 64 69 74 00 |
| TLV | | |
| Tag | higate_sub_code | 14 19 |
| Length | 4 | 00 04 |
| Sub Code | 0 | 00 00 00 00 |
| TLV | | |
| Tag | higate_reference_no | 14 1F |
| Length | 8 | 00 08 |
| Reference No | | 00 00 00 00 00 00 4F 89 |
| TLV | | |
| Tag | receipted_message_id | 00 1E |
| Length | | 00 1D |
| Message ID | 27825421554/20361/2895093151 | 00 1E 00 1D 32 37 38 32 35 34 32 31 35 35 34 2F 32 30 33 36 31 2F 32 38 39 35 30 39 33 31 35 31 00 |
| TLV | | |
| Tag | message_state | 04 27 |
| Length | 1 | 00 01 |
| State | 5 = UNDELIVERABLE | 05 |
| TLV | | |
| Tag | higate_src_address | 14 25 |
| Length | 1 | 00 01 |
| Source Address | - | 00 |