

# **SMS Gateway Manual**

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## Introduction

This document specifies the basic communication interface that shall be used to communicate with Bigfoot’s SMS Gateway service. The web application service will use HTTP/1.1 POST, as it’s primary communication conduit.

## Bigfoot SMS Gateway Client Communication

### Terminologies

#### SMS

Characters intended for text display in the Message are encoded by the ETSI GSM 03.38 character set, and are limited to the characters available in the said character set. A sample list can be found below and a list of available character encoding can also be found at <http://www.unicode.org/Public/MAPPINGS/ETSI/GSM0338.TXT>. For UCS2 Characters, The Unicode Standard can be viewed at <http://www.unicode.org>.

#### Characters used by ETSI GSM 03.38 default alphabet

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
00	ø	é	§	¥	è	é	ù	ì	ò	ç	☒	Ø	ø	☐	À	Á
10	Δ	_	Φ	Γ	Λ	Ω	Π	Ψ	Σ	Θ	Ξ	☒	Æ	æ	ß	É
20	☐	!	"	#	¤	§	&	'	(	)	*	+	,	-	.	/
30	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
40	ı	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
50	P	Q	R	S	T	U	V	W	X	Y	Z	Ă	Ö	Ń	Ü	Ş
60	ı	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
70	p	q	r	s	t	u	v	w	x	y	z	ä	ö	ñ	ü	à

Different types of handsets hardware and mobile service carriers support different character sets. Bigfoot, unfortunately, cannot determine the specific character transmission and display capabilities for any particular handset; text messages are not guaranteed to be displayed correctly. However, many handsets and mobile service carriers, particularly those used outside the United States are capable of transmitting and displaying ETSI GSM 03.38 characters. In most cases, these characters are transmitted and are displayed correctly.

## Text Messages

Text messages of more than 160 characters are split into multiple SMS transmissions of 160 characters each. If the message must be split in a particular place (between words, for example), then the calling application must submit it into multiple messages, split in the proper place.

## Flash Messages

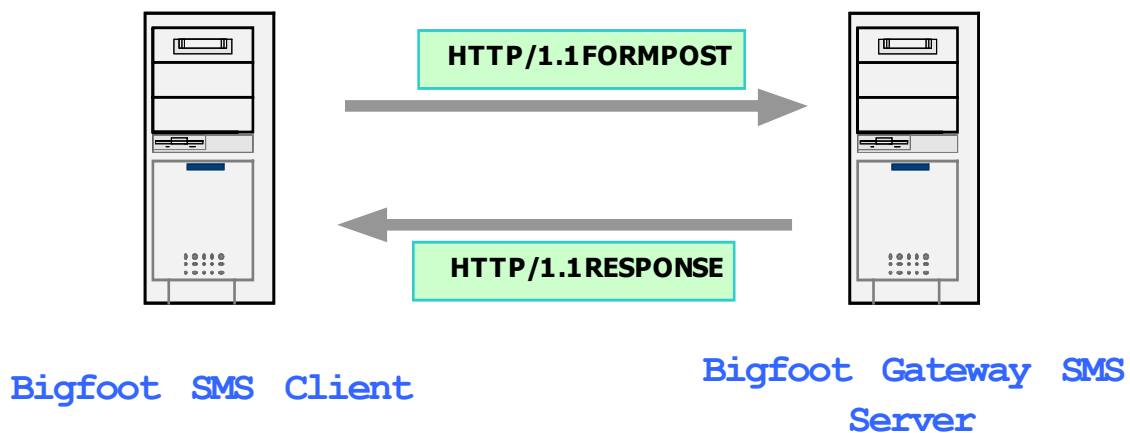
Text messages can be sent as a flash SMS message (class 0 messages). These messages appear on the handset immediately, and are not stored to memory. Flash capabilities are dependent on the handset's manufacturer and model. Results on hardware that is not flash-capable are undefined.

To send a flash message, prepend the "\ " character to the text message. The complete contents of the text attribute must match this regular expression:

`^\?[\x00-\x7F]+`

Text messages of more than 160 characters (including the prepended "\ ") are split into multiple flash SMS transmissions of 160 characters each. If the message must be split in a particular place (between words, for example), then the calling application must submit it into multiple messages, split in the proper place. The first message is sent as a flash SMS, and all subsequent messages are sent as standard SMS.

## Establishing Connection with Bigfoot SMS Gateway Server



*Figure 1. Bigfoot SMS Gateway Client Communications*

There are two ways to establish a network connection with Bigfoot SMS Server in order to transmit the submission to the Bigfoot SMS System for distribution. Connections are made through the following URLs:

1. For sending message: <http://msggateway.bigfoot.com:8080/services/msggateway>
2. For requesting the validity of originator number: <http://msggateway.bigfoot.com:8080/services/originator>

Note: It is recommended that the connection should always be made to the symbolic DNS name for the Bigfoot SMS Server rather than to the IP Address. The IP address associated with the server name is subject to change without prior notice.

## Submissions to Bigfoot SMS Gateway Server

Submissions are transmitted to the Bigfoot SMS Service in an HTTP POST request. The interface for composing the request is the responsibility of the *Bigfoot SMS Gateway Client Application*. Submissions sent to the Bigfoot SMS Gateway Server must conform to the specified Form Attributes and must follow the HTTP Sequence shown below.

### Form Attributes

The HTTP POST request must contain the attributes that are defined here. These fields are required to send SMS, validate originator numbers and inquire for remaining balance.

#### For Sending Messages

The attribute values may not begin with leading spaces, linefeed characters, or quotation marks.

Element/Attribute name	Meaning
<code>'username'</code>	Provider's Bigfoot SMS username for authentication.
<code>'password'</code>	Provider's Bigfoot SMS password for authentication.
<code>'test_mode'</code>	Attribute specifying whether to execute delivery of message. When test mode is on, all authentication, validation, and parsing steps are performed, but the message is not to be sent to the Handsets and the Provider's account is not to be debited for Messages contained in this Submission. The value should be "yes" or "no".
<code>'type'</code>	Type of the SMS message. Currently supports parameters such as: "GSM0338", "UCS2", "RTTTL", "Binary" and "text".
<code>'text'</code>	Message Body to be transmitted to the specified destination number.
<code>'numbers'</code>	Can be multiple destination number separated by a comma (,). Numeric access numbers for the destination Handset, including relevant country codes, area codes, and city codes. No spaces or non-numeric characters may appear in the number attribute. Numbers fields must be between 6 and 14 digits, inclusive.
<code>'originator'</code>	Can be alphanumeric. Numeric will be checked against registered originator numbers, including relevant country codes, area codes, and city codes. No spaces or non-numeric characters may appear in the number attribute. Number fields must be between 6 and 14 digits, inclusive.
<code>'version'</code>	The protocol version of this application. Current protocol version is 1.0.

## For Requesting the Validity of Originator/Balance Inquiry

These fields should be accomplished to be able to request for the validity of the originator or to inquire for remaining balance.

Element/Attribute Name	Meaning
<b>Username</b>	The handle registered
<b>Password</b>	The corresponding password of the handle.
<b>Version</b>	The version (current version is 1.0)

## HTTP Sequence

- After establishing a network connection to the Bigfoot SMS Gateway Server. The Bigfoot SMS Gateway Client Application transmits the HTTP POST request.
- As earlier mentioned, the request URI for the HTTP POST request are:
  - For sending messages: **/services/smsgateway**
  - For requesting the validation of the originator number: **/services/originator**
- The request must contain the following HTTP headers:
  - Host: **sms.bigfoot.com**
  - Port: **8080**
  - Content-type: **application/x-www-form-urlencoded**
  - Content-length: **xxx**

Notes:

(Replace xxx with the length of the HTTP POST body) Additional headers included in the HTTP POST request are discarded and do not adversely affect system function.

The HTTP POST request body consists of a few attributes as shown in the preceding tables.

After sending the request, the Bigfoot SMS Gateway Client Application does not close the network connection, but instead leaves it open to enable receiving of response from the Bigfoot SMS Gateway Server.

## Sample Codes

### A. Decoding – Nokia Logo

```
Package com.bigfoot.sms.io;

import java.io.*;
import org.apache.commons.codec.binary.*;

public class NokiaLogoParser
{
    private File operatorLogoFile = null;

    public NokiaLogoParser(String logoPath)
    {
        this.operatorLogoFile = new File(logoPath);

        if (!this.operatorLogoFile.exists())
        {
            throw new RuntimeException("Nokia operator logo file " + logoPath +
                " doesn't exist.");
        }
    }

    public String[] getMessagesBody() throws Exception
    {
        String[] messages = new String[2];

        FileInputStream fis = new FileInputStream(this.operatorLogoFile);
        int available = fis.available();
        byte[] contents = new byte[available];

        fis.read(contents);

        String hex = new String(Hex.encodeHex(contents));

        String firstBody = "0B05041582000000030102013021F3540A" + hex.substring(0, 246);
        String secondBody = "0B0504158200000003010202" + hex.substring(247);

        messages[0] = firstBody;
        messages[1] = secondBody;

        return messages;
    }
}
```

## Sample Message Sending

### A. HTML Form

```
<html>
<head>
</head>
<body>
<form name="sendtext" method="post"
action="http://q200gateway.quios.com:80">
<input type="text" name="username" value="test@bigfoot.com">
<input type="password" name="password" value="testpassword">
<input type="text" name="version" value="1.0">
<input type="text" name="test_mode" value="no">
<input type="text" name="type" value="GSM0338">
<input type="text" name="text" value="test">
<input type="text" name="numbers" value="44 7775 671 676,44 7789 743
266">
<input type="text" name="originator" value="+639173276873">
</form>
</body>
</html>
```

## B. PERL

```
use HTTP::Request;
use LWP::UserAgent;
use HTTP::Request::Common qw(POST);

$ua = LWP::UserAgent->new;

# you should put @quios.com as prefix
my $username = 'username@quios.com';
my $password = 'yourpassword';
my $type = 'GSM0338';
my $test_mode = 'no';
my $originator='test';
my $text = 'Hello world';
my $version = '1.0';
# separated by comma
my $numbers = "639164408740, 123123";

$response = $ua->request(POST
"http://q200gateway.quios.com/services/smsgateway",
    ['username' => $username,
     'password' => $password,
     'text' => => $text,
     'test_mode' => $test_mode,
     'numbers' => $numbers,
     'originator' => $originator,
     'type' => $text,
     'version' => $version
    ]);

if ($response->is_success)
{
    #handle if http success error
    print $response->content();
}
else
{
    # if http request is successful
    print $response->error_as_HTML;
}
```

## Sample Bulk Message Sending

1. Compose an XML with the following format:

```
<!-- Bigfoot Bulk Sending DTD -->
<?xml version="1.0"?>
<!ELEMENT bulk-sms
(originator, username, password, test-mode, type, message, d+)>

<!ELEMENT originator PCDATA #REQUIRED>
<!ELEMENT username PCDATA #REQUIRED>
<!ELEMENT password PCDATA #REQUIRED>
<!ELEMENT test-mode (on | off) off>
<!ELEMENT type PCDATA #REQUIRED>
<!ELEMENT message CDATA #REQUIRED>
<!ELEMENT d CDATA #REQUIRED>
```

Example:

Note: You cannot send bulk SMS with numeric originator

```
<?xml version=1.0?>
<bulk-sms>
  <originator>fwang</originator>
  <username>username@bigfoot.com</username>
  <password>yourpassword</password>
  <test-mode>off</test-mode>
  <type>GSM0338</type>
  <message>This is a message</message>
  <!-- destinations here -->
  <d>1234567812</d>
  <d>639174408740</d>
  <d>87349123234</d>
</bulk-sms>
```

2. Upload it to <http://smsgateway.bigfoot.com/services20/bulksmsupload>.

```
HTTP method: POST
ENCTYPE="multipart/form-data" accept-charset="utf-8"
```

The parameters are:

username (text), password (text), bulksmsfile (file)

## Request Flow

The pseudo-code below shows the logic by which a Bigfoot SMS Gateway Client's request is processed.

```
if PARAMETERS == good
  if VERSION == 1.0
    if AUTHENTIC USER
      if TESTMODE
        if SMS OK
          return OK
        else
          return ERROR CODES
      else
        if HAS CREDIT
          if SMS OK
            DEBIT ACCOUNT
            LOG TRANSACTION
            return OK
          else
            return ERROR CODES
        else
          return ERROR CODES
    else
      return ERROR CODES
  else
    return ERROR CODES
else
  return ERROR CODES
```

## Responses from Bigfoot SMS Gateway Server

Upon submission to the Bigfoot SMS Gateway Server, the submission undergoes a series of validity checks in the following order: form parameter checking, authentication, and number message evaluation. For a validity check result, the Bigfoot SMS Gateway Client Application receives a single response. Although the validity checks occur in the order described below, responses are returned in an indeterminate order depending on the severity and nature of the error. After transmitting the response, the Bigfoot SMS Gateway Server closes the network connection.

The server currently supports responses (text/plain) in the following manner:

- Response Code
- Response Detail List

The response code will allow the client to determine the response detail list.

The following are the possible responses the Bigfoot SMS Server provides:

### **Response to Timeout**

If the Bigfoot SMS Gateway Server timeouts, no response is returned to the Bigfoot SMS Gateway Client Application, no SMS messages are transmitted to Handsets, the Provider account is not debited and the Bigfoot SMS Server does not close the network connection.

The Bigfoot SMS Gateway Client Application may optionally test the network connection while awaiting a response from the Bigfoot SMS Server.

No explicit indication of success or failure is sent to the Bigfoot SMS Gateway Client Application.

### **Response to Authentication Failure**

If the server responds before timing out, username/password authentication is performed.

The username and password are case sensitive. Authentication failure results from any of the following conditions:

- Username field is blank
- Password given does not authenticate against given username

In the event of authentication failure, the entire submission is rejected, no SMS messages are transmitted to Handsets, and the Provider account is not debited.

### **Response to Message Success/Failure**

If the authentication and parsing are successful, the Bigfoot SMS Gateway Server will send the message to the handsets.

A single response is returned, containing success or failure information for each device indicated in the Submission. The Provider account is debited for successful messages, which are transmitted to Handsets immediately after being evaluated.

After transmitting the response, the Bigfoot SMS Server closes the network connection to the Bigfoot SMS Gateway Client Application.

Successful delivery of the SMS message to the Handset is indicated by the following return codes.

**Success/Failure Return Codes**

Return/Response Code	Meaning
0	Success
1	Failure

In the event of failure, the entire submission is rejected, no SMS messages are transmitted to the handsets, and the provider's account is not debited.

**Response Samples**

**Response from Sending SMS Message**

Example of response data stream received from Bigfoot SMS Gateway.

- Success actual stream:

09162329295,0,370,30

Destination	Success or Failure	Balance	Charge
09162329295	0 – means success	370 units	30 units

- Failure actual stream:

01242344132,1,1, "Unknown IP Address"

Destination	Success or Failure	Failed Code	Other
6309162329295	1 – means failure	1 – General Failure	Discretionary field.

**Response from Sending Message to Multiple Destination**

6309162329295,0,370,30<LF>

6309193443838,0,400,20<LF>

0124234413212,1,1, "Unknown IP Address"<LF>

**Response from Validation of Registered Originators**

The following will try to illustrate some of the possible responses the server will set forth, when the response is set to "text/plain".

If member ID 'Frank' registered 3 originator numbers to <http://sms.bigfoot.com/index.php?pages=signup> the response should be:

Username	Valid Originator Numbers Returned
Frank	06309172329295<CRLF> 06309173443838<CRLF> 022122234123 <CR LF>

Response actual stream after synchronizing:

06309172329295<CR LF>

06309173443838<CR LF>

022122234123<CR LF>

For failed synchronization of originator request, only 1 digit is returned that indicates the failed code:

Username	Failed Code
Frank	1 – Handle does not exist

Failed response stream for failed synchronization is = 1

Here is a summary of possible failed responses from requesting originator number.

Failed Code	Description.
1	Handle does not exist.
2	User name and password do no match.
4	No valid originators.
8	Unsupported version requested.
16	Some required fields are missing.

## Summary of Failed Codes

Here are possible error response codes that Bigfoot SMS Gateway client can receive from Bigfoot SMS Gateway Server in events of failure.

Failed Code	Meaning
1	A generic failure code when a more specific error indication is not available.
2	Some attributes are missing.
4	Password does not authenticate against the user handle.
8	Provider has exceeded the authorized number of messages for a particular time period.
16	Provider does not have enough credit balance.
32	Unsupported test mode – if test mode is not provided.
64	Version number requested is not supported.
128	Wrong number length code – number of characters in handset is not equal to 11. The country codes used for USA and Canada is 1
256	The Originator number does not match with the registered user handle.

## Response Definitions

Response Definitions generated from SMS Submissions, Registered Originators Queries and Balance Inquiries.

### A. Message Sending Response Definition

```

<response> ::= <response_code> {<CR_LF><response_code>}
<response_code> ::= <destination_number>
                  <delimiter>
                  <success> | <failure>;

<success> ::= '0' <delimiter><balance><delimiter><charge>;
<balance> ::= <integer>;
<charge> ::= <integer>;
<failure> ::= '1' <delimiter> ;
                  <failed_code>
                  {<delimiter> <failed_code>}

<failed_code> ::= <general_failure>|<user_password_mismatch>|
                  <account_check_failure>|<message_limit_exceeded>|
                  <wrong_number_length>|<invalid_originator>|
                  <missing_attribute>|<unsupported_version> ;

<general_failure> ::= '1' <delimiter> <string>;
<missing_attribute> ::= '2'
                  <delimiter>
                  <quote>
                  'USERNAME' | 'PASSWORD' |
                  'TEXT' | 'ORIGINATOR' |
                  'NUMBERS' | 'METHOD' | 'VERSION'
                  <quote>

<user_password_mismatch> ::= '4';
<message_limit_exceeded> ::= '8';
<account_check_failure> ::= '16' <delimiter><balance><delimiter><charge>;
<unsupported_test_mode> ::= '32';
<unsupported_version> ::= '64' <delimiter> <string>
<wrong_number_length> ::= '128' <delimiter><string>;
<invalid_originator > ::= '256' <delimiter><string>;
                  <delimiter> <string> ;

<integer> ::= /* positive integer */ ;
<string> ::= /* character string */ ;
<delimiter> ::= ','
<quote> ::= '\"';
<cr_lf> ::= CR LF;

```

## **B. The Originator Synchronization Response Definition**

```

<originator_synchronize_request> ::= <originator_number>
                                     { <originator_number> <cr_lf > } | <failed_code>;
<failed_code> ::= <handle_do_not_exist> | <handle_password_mismatch> |
                  <originator_do_not_match> | <missing_attribute> |
                  <service_not_available> | <unsupported_version> |
                  <service_not_available>
<handle_do_not_exist> ::= '1';
<handle_password_mismatch> ::= '2';
<originator_do_not_match> ::= '4';
<unsupported_version> ::= '8';
<missing_attribute> ::= '16';
<service_not_available> ::= '32';
<originator_number> ::= <numeric> /* the originator number */
<cr_lf> ::= CR LF

```

## **C. Balance Inquiry Response Definition**

```

<response> ::= <response_code> { <CR_LF> <response_code> }
<response_code> ::= <success> | <failure>
<success> ::= <username><delimiter><response_code><delimiter><balance>;

```

**<FAILURE> ::= <USERNAME\_NOT\_FOUND> | <MISSING\_ATTRIBUTE> |**

```

    <service_not_available> ;
<username_do_not_exist> ::= '1';
<username_password_mismatch> ::= '2';
<missing_attribute> ::= '4';
<service_not_available> ::= '8';

```

## Tasks and Procedures

Tasks	Procedure	Remarks
Configuring SiteScope with robot monitoring in sending SMS	<p>Post a request using this format:</p> <p>POST /servives/smsgateway HTTP/1.1</p> <p><b>Host:</b> smsgateway.bigfoot.com:80</p> <p><b>Content-Type:</b> application/x-www-form-urlencoded; charset="utf-8"?username=jang_mang@bigfoot&amp;password=mteam&amp;test_mode=yes&amp;type=text&amp;text=This+is+just+a+test%0D%0A+++&amp;numbers=639164408740&amp;originator=bigfoottest&amp;version=1.0&amp;flash=no&amp;private=no&amp;reply_allowed=no</p>	<p><b>Sample Expected data:</b></p> <p>39164408740,0,671,0</p> <p><b>Format Caption:</b></p> <p>recipient-number,success-code 1 or 0, current-number-of-credits,the-number-of-credits-deducted</p>

## FAQ (Frequently Asked Questions)

1. Is there a limit to the number of messages sent on SMS blast?
2. Does the SMS Gateway support logos and ringtone features?
3. What does the error message 256 mean?
4. What should be the standard POST request format and how are they done?
5. How to send a Flash Message?
6. How to Query remaining credits?
7. Is there a limit to the number of messages that can be sent?
8. How are network connections to Bigfoot SMS system made?
9. Is RTTTL (Ringing Tone Text Transfer Language) supported by SMS Gateway?
10. Is there a URI on the server to test the gateway services?
11. Can SMS Logs be viewed through the API?
12. How many Unicode characters are sent per segment?
13. How to write sample strings using the API?

### Message Limit on SMS Blast

- There is no limit to the number of messages that can be sent when one uses SMS blast.

### Logos, Ringtones, Icons, Picture Messages

- Ringtones, logos, icons and picture messages etc. are fully supported as long as they are properly encoded and is in the correct 8-bit binary format.

### Error Messages

- The error message 256 means "Originator number does not match with the registered user handle". This means that the user must first register the user handle. Other error messages are shown in the client API. Click on the site below.

<http://msgateway.bigfoot.com/services>

### Standard POST request format

- Requests are posted on this site  
<http://msgateway.bigfoot.com/services/msgateway>
- The post request should follow this format  
username=test&password=test&test\_mode=no&type=text&text=Your+message+here...%0D%>0A+++&numbers=639164408740&originator=testoriginator&version=1.0
- An example is:  
username=pjheller@bigfoot.com&password=password&test\_mode=yes&type=text&text=Your+message+here+&numbers=1234555512&originator=pjheller&version=1.0

### Sending Flash Messages

- To send a flash message, prepend the "\" character to the text message. The complete contents of the text attribute must match this regular expression: `^\? [\x00-\x7F]+`

### Querying the remaining credits on an account

- To query the remaining credits on a certain account. The user must post an HTTP Post request in this format  
<http://q200gateway.quios.com/services/balance?username=yourUsername@quios.com&password=yourPassword>

### Limit to the number of messages that can be sent

- There is to limit on the number of messages that can be sent.

### Connecting to Bigfoot SMS System

- Connections are made through the following URLs:  
For sending messages: <http://msgateway.bigfoot.com/services/msgateway>  
For requesting the validity of originator numbers:  
<http://msgateway.bigfoot.com/services/originator>

It is recommended that the connection should always be made to the symbolic DNS name for the Bigfoot SMS Server rather than to the IP Address.

### RTTTL

- SMS Gateway supports RTTTL (Ringtone Text Transfer Language) format to acquire ringtones.

### Sample test website for Gateway Services

- Quios: <http://q200gateway.quios.com/services>
- Bigfoot: <http://msgateway.bigfoot.com/services>

### SMS Logs

- This feature has not been specified in the requirement document. Message Logs could not be viewed in the API and clients are advised to create their own message logs.

### Number of Unicode Characters per segment

- For ordinary text messaging, the number of characters allowed per message is 160. However, when one uses UCS2 or Unicode characters, the number of characters allowed is 70 per message. When one inputs 160-character Unicode message, this message will be divided into three segments thus sending three messages.

### Sample String in Unicode

- The first step is to URL encode it with UTF-8.
- For example: the text "Hår på hodet" when encoded in UTF-8 will become "H%E5r+p%E5+hodet".
- URL encoding function is available in most programming languages.

In Java:

```
String str = java.util.URLEncoder("Hår på hodet", "UTF8")
```

In PHP:

```
urlencode(utf8_encode("Hår på hodet"))
```

For ASP.Net:

See <http://msdn.microsoft.com/library/default.asp?url=/library/en-us/cpref/html/frlrfssystemwebhttpserverutilityclassurlencodetopic.asp>

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