

# *Exotic Systems*

## **HTTP2CALL API Specification Document Version 2**

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# 1. HTTP2CALL Applications

The HTTP2CALL API is suitable for automated call generation from applications with low call volumes of less than 5 calls per minute or less than 100 calls per hour. Typical applications of the HTTP2CALL API include:

- a reminder service, for example to inform a person of an outstanding bill including the outstanding amount,
- a call back service, in response to lead from a website,
- a fully featured IVR service for a small business without a PABX, or
- to provide a customised IVR service to preferred or VIP customers.

For high call volumes over a short period of time (e.g. for mass call marketing) please use the high volume automated calling service.

## 2. Version 1 API Specification

Version 1 is a simple API that plays the specified audio message to the called number.

### 2.1 URL Format

```
https://call.3g.co.za:44443/h2c/call
```

Protocol: HTTPS

Hostname: call.3g.co.za

Port: 44443

Authentication: Basic HTTP username and password

HTTP Methods: GET and POST

### 2.2 Parameters

- **callid:** mandatory parameter  
A 3 to 36 alphanumeric callid. No other characters are allowed. Can be used to identify the call.
- **callnum:** mandatory parameter  
A 11 digit numeric destination telephone number starting with 27. Only calls to South African numbers are allowed.
- **msg:** mandatory parameter  
An audio message to be played to the receiver for the call. This field accepts a 5 to 500 character alphanumeric value, including `^_°` and `^±°`. To play multiple audio files, the file names must be separated by `%26`. Audio filenames are case sensitive.

Parameters can be submitted by using either a HTTP GET or a HTTP POST Method. When submitting data with a HTTP GET, try to keep the URL length under 2048 characters.

## 2.3 Examples

- 2.3.1 `https://call.3g.co.za:44443/h2c/call?callid=JaneSimpson&callnum=27841231234&msg=walks-into-bar-mail`  
HTTP GET example, to make a call to 27841231234 and play the audio file “walks-into-bar-mail”.
- 2.3.2 `https://call.3g.co.za:44443/h2c/call?callid=JaneSimpson&callnum=27841231234&msg=severe%26storm%26warning%26with%26hail%26digits/at%26digits/3%26digits/oclock`  
HTTP GET example, to make a call to 27841231234 and play multiple audio files with a storm warning message.
- 2.3.3 `curl -k -d "callid=JohnExpire\  
&callnum=27841231234\  
&msg=your%26account-balance-is%26digits/5%26digits/70%26digits/8%26and%26your%26service%26will-expire%26tomorrow-night" \  
https://username:password@call.3g.co.za:44443/h2c/call`  
HTTP POST example with curl to play multiple audio files in sequence.

On successful submission of the parameters a Status value is returned. If no errors are present, then a system generated “Call Reference” is generated with a unique reference number. The “Call Reference” can have up to 26 alphanumeric characters.

A Status value of zero indicates that no errors are present. Non-zero Status values indicate an error. The returned Status value can be interpreted as follows:

1 = callid error  
2 = callnum error  
4 = msg error  
8 = system configuration error

Where multiple errors exist a Boolean OR is applied. A Status value of 6, therefore indicates a callnum input error and a msg input error.

An example of the HTML encoded output on successful submission:

Status: 0  
Call Reference: H2C20160117002607933962409

Calls after successful submission will be initiated within a period of 5 minutes.

On completion of the call, a result file is generated. The result file name consists of the call reference with a “.txt” prefix. For example:  
H2C20160117002607933962409.txt. These files will be automatically deleted if they are more than 7 days old.

## 2.4 Call Results

The result file is a comma separated file with the following format:

CALLREF, CALLID, DESTNUM, MSG, DURATION, RELCAUSE, CALLCOST

CALLREF: The Unique Call Reference generated during submission.

CALLID: The callid provided

DESTNUM: The destination number called. Note, this number has been changed to national format, where the 27 prefix has been replaced by 0.

MSG: The audio message that was played.

DURATION: Call duration measured from call answer to call end.

RELCAUSE: Reason the call was released. A value of 16 indicates that the call was successfully answered. Any other value generally indicates an error.

CALLCOST: Cost of the Call in South African Rands excluding VAT.

## 3. Version 2 API Specification

Version 2 of the API supports complex IVR interactions, and is capable responding to different DTMF inputs, playing audio messages and bridging two calls.

### 3.1 URL Format

<https://call.3g.co.za:44443/h2c/call>

Protocol: HTTPS

Hostname: call.3g.co.za

Port: 44443

Authentication: Basic HTTP username and password

HTTP Methods: GET and POST

### 3.2 Parameters

- **callid:** mandatory parameter  
A 3 to 36 alphanumeric callid. No other characters are allowed. Can be used to identify the call.
- **callnum:** mandatory parameter  
A 11 digit numeric destination telephone number starting with 27. Only calls to South African numbers are allowed.
- **calldur:** optional parameter.  
A numeric value, specifying the maximum allowed duration for a call in seconds, from 60 to 600 inclusive. Default value = 300.
- **msg0:** mandatory parameter  
The initial audio message to be played to the receiver of the call. This field accepts a 5 to 500 character alphanumeric value, including `^_°` and `^±°`. To play multiple audio files, the file names must be separated by `%26`. If sub-directories are used then `%2F` must be used after the sub-directory name, for example `^from%2Fmenu°`. Audio filenames are case sensitive. If one or more `act0_<digit>` parameters are specified then the playback of `msg0` will be interrupted by a DTMF input and the system will continue execution of the next step. If no `act0_<digit>` parameters are specified then `msg0` cannot be interrupted by a DTMF input.
- **msg:** Deprecated. Use `msg0`
- **msg<X>:** mandatory parameter if `msg<X>` is the value of `act<X>_<digit>` or `act<X>_invalid`  
An audio message to be played to the receiver for the call. `<X>` may be a value from 1 to 9. The field requirements are the same as `msg0`. If one or more `act<X>_<digit>` parameters are specified then the playback of `msg<X>` will be interrupted by a DTMF input and the system will continue execution of the next step. If no `act<X>_<digit>` parameters are specified then `msg<X>` cannot be interrupted by a DTMF input.
- **act<X>\_<digit>:** optional parameter  
Action to be taken when DTMF `<digit>` input is received while `msg<X>` is played. `<digit>` may be 0 to 9 or `*`. Acceptable values may include another audio message `msg<Y>`, a 11 digit numeric telephone number starting with 27, or `@hangup@` to end a call. There is no default value.
- **act<X>\_invalid:** optional parameter  
Action to be taken when an incorrect DTMF input is received or no input is received for `msg<X>`. The acceptable values are the same as `act<X>_<digit>` above. If a value is defined for one or more digit actions, `act<X>_<digit>`, then the default value is `msg<X>` (i.e. `msg<X>` is replayed), otherwise the default value is `@hangup@` (i.e. end the call if no DTMF actions are defined).
- **act<X>\_timeout:** optional parameter  
Maximum time to wait for a DTMF digit after playing `msg<X>`, from 1 to 60 inclusive. If a value is defined for one or more digit actions, `act<X>_<digit>`, then the default value is 10.
- **act<X>\_attempts:** optional parameter

The number of attempts to obtain a valid DTMF input for msg<X>, from 1 to 5 inclusive. If an incorrect DTMF input is received or no DTMF input is received before act<X>\_timeout, then msg<X> is repeated by the number of times defined by this parameter. If a value is defined for one or more digit actions, act<X>\_<digit>, then the default value is 3.

Parameters can be submitted by using either a HTTP GET or a HTTP POST Method. When submitting data with a HTTP GET, try to keep the URL length under 2048 characters.

### 3.3 Examples

3.3.1 `https://call.3g.co.za:44443/h2c/call?callid=JohnExpire&callnum=27841231234&msg0=your%26account-balance-is%26digits/5%26digits/70%26digits/8%26and%26your%26service%26will-expire%26tomorrow-night`  
HTTP GET example, to make a call to 27841231234 and play multiple audio files in sequence.

3.3.2 `https://call.3g.co.za:44443/h2c/call?callid=CallCentre&callnum=27841231234&msg0=pls-hold-while-try&act0_invalid=27101300013&calldur=600`  
HTTP GET example to play the “please hold while we try to connect you” audio message followed by a call to 27101300010. Both calls are then bridged.

3.3.3 `curl -k -d "callid=CustomerService\  
&calldur=600\  
&callnum=27841231234\  
&msg0=for-sales%26press-1%26for-tech-support%26press-2%26for-a-list-of%26users%26press-star\  
&act0_1=27101300013\  
&act0_2=msg1\  
&act0_*=msg2\  
&act0_invalid=msg5\  
&act0_attempts=1\  
&msg1=there-is-no-customer-support%26goodbye\  
&msg2=for%26brian%26press-1%26for%26charlotte%26press-2%26for%26mike%26press-3%26for%26main-menu%26press-0\  
&act2_1=msg3\  
&act2_2=27101300053\  
&act2_3=msg4\  
&act2_0=msg0\  
&act2_timeout=5\  
&act2_attempts=4\  
&act2_invalid=27101300013\  
&msg3=pls-hold-while-try\  
&act3_invalid=27101300013\  
&msg4=do-not-disturb%26mike%26goodbye\  
&msg5=option-is-invalid\  
&act5_invalid=msg0" \  
https://username:password@call.3g.co.za:44443/h2c/call`  
HTTP POST example with curl to play an IVR prompt, followed by multiple actions based on the user input. Figure 1 is an illustration of the IVR interaction.

On successful submission of the parameters a Status value is returned. If no errors are present, then a system generated “Call Reference” is generated with a unique reference number. The “Call Reference” can have up to 26 alphanumeric characters.

A Status value of zero indicates that no errors are present. Non-zero Status values indicate an error. The returned Status value can be interpreted as follows:

- 1 = callid error
- 2 = callnum error

4 = msg<X> error  
8 = system configuration error  
16 = calldur error  
32 = act<X>\_<digit> error  
64 = act<X>\_invalid error  
128 = act<X>\_timeout error  
256 = act<X>\_attempts error

Where multiple errors exist a Boolean OR is applied. A Status value of 6, therefore indicates a callnum input error and an error with one of the msg<X> parameters.

An example of the HTML encoded output on successful submission:

Status: 0  
Call Reference: H2C20160117002607933962409

Calls after successful submission will be initiated within a period of 5 minutes.

On completion of the call, a result file is generated. The result file name consists of the call reference with a ".txt" prefix. For example: H2C20160117002607933962409.txt. These files will be automatically deleted if they are more than 7 days old.

### **3.4 Call Results**

The result file is a comma separated file with the following format:

CALLREF, CALLID, DESTNUM, MSG\_SEQ, DURATION, RELCAUSE, CALLCOST, INPUT

CALLREF: The Unique Call Reference generated during submission.

CALLID: The callid provided

DESTNUM: The destination number called. Note, this number has been changed to national format, where the 27 prefix has been replaced by 0.

MSG\_SEQ: The audio messages played and the sequence in which they were played.

DURATION: Call duration measured from call answer to call end.

RELCAUSE: Reason the call was released. A value of 16 indicates that the call was successfully answered. Any other value generally indicates an error.

CALLCOST: Cost of the Call in South African Rands excluding VAT.

DISPOSITION: Lists the call disposition, as either ANSWERED, NO ANSWER, BUSY or FAILED.

INPUT: Lists DTMF user input received or input timeouts (T).

If two calls bridged, then the result file will contain two lines, one for each call.

### **3.5 Compatibility**

Verison 2 of the API is compatible Version 1. If no Version 2 specific parameters are present, then version 1 of the API will be used.

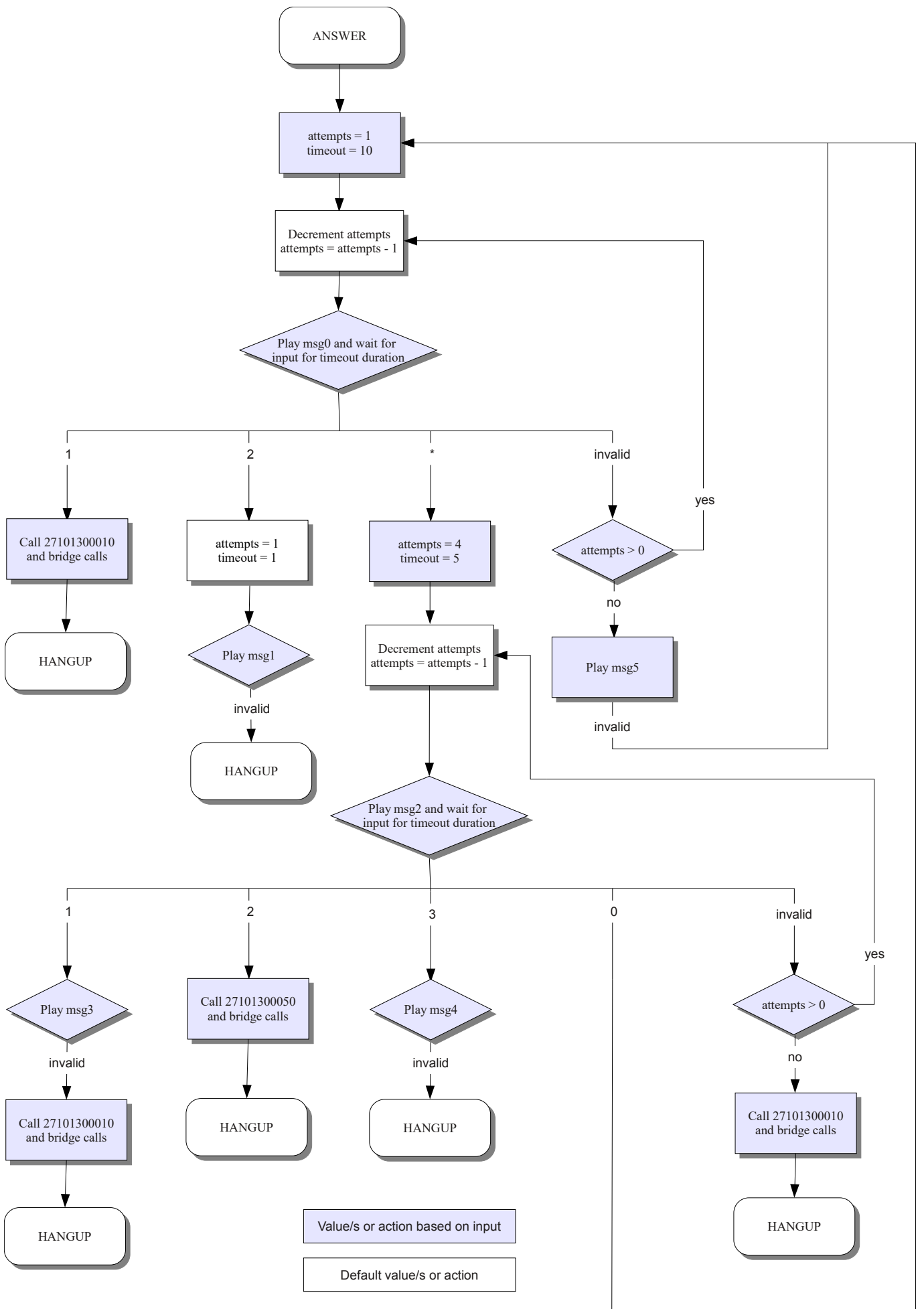


Figure 1: Flow Chart for Example 3.3.3

## 4. Audio Files

Audio files to be played are to be provided in advance. The required format is a .wav file with the following specification: RIFF (little-endian) data, WAVE audio, Microsoft PCM, 16 bit, mono 8000 Hz.

## 5. Call Release Values

- 0 - Cause not defined
- 1 - Unallocated (unassigned) number
- 2 - No route to specified transmit network
- 3 - No route to destination
- 5 - Misdialed trunk prefix (national use)
- 6 - Channel unacceptable
- 7 - Call awarded and being delivered in an established channel
- 14 - QoR: ported number
- 16 - Normal Clearing
- 17 - User busy
- 18 - No user responding
- 19 - No answer from user (user alerted)
- 20 - Subscriber absent
- 21 - Call Rejected
- 22 - Number changed
- 23 - Redirected to new destination
- 26 - Non-selected user clearing
- 27 - Destination out of order
- 28 - Invalid number format
- 29 - Facility rejected
- 30 - Response to STATUS ENQUIRY
- 31 - Normal, unspecified
- 34 - No circuit/channel available
- 38 - Network out of order
- 41 - Temporary failure
- 42 - Switching equipment congestion
- 43 - Access information discarded
- 44 - Requested circuit/channel not available
- 50 - Requested facility not subscribed
- 52 - Outgoing call barred
- 54 - Incoming call barred
- 57 - Bearer capability not authorized
- 58 - Bearer capability not presently available
- 65 - Bearer capability not implemented
- 66 - Channel type not implemented
- 69 - Requested facility not implemented
- 81 - Invalid call reference value
- 88 - Incompatible destination
- 95 - Invalid message unspecified
- 96 - Mandatory information element is missing
- 97 - Message type non-existent or not implemented
- 98 - Message not compatible with call state or message type non-existent or not implemented
- 99 - Information element nonexistent or not implemented
- 100 - Invalid information element contents
- 101 - Message not compatible with call state
- 102 - Recover on timer expiry
- 111 - Protocol error, unspecified
- 127 - Interworking, unspecified



## **6. Reports**

Daily and month to date summary reports can be emailed on a daily basis.