



**TraiTel IVML**

**Interactive Voice Meta Language and API**

**Documentation**

**v1.0**

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## IVML XML Format

### **About:**

This document describes TraiTel Telecommunication's Interactive Voice Meta Language. This language allows programmers to easily create versatile, interactive voice menus that can fully integrate into any back-end.

There are two modes of operation for IVML: inbound initiation and outbound initiation. In *inbound* initiation, an IVML menu is played back after a call is received on a dedicated inbound number (DID). In *outbound* initiation, an HTTP request initiates a call to a specified outbound number, after which an IVML menu is played back. In both cases, the IVML menu is retrieved from a user-provided HTTP URL.

IVML must first be enabled in WebMessaging, under "Voice Settings", on the page "Manage Voice Menus". To create a new IVML Configuration, simply fill out the form entitled "Create new IVML connection". You will then be prompted for the URL from which your IVML XML instructions can be retrieved. Once the IVML connection is created, you may assign to it a DID, or configure it as an outbound IVML connection. Alternatively, you may create an IVML Configuration using the Account Management API; the API allows you to create, update and delete IVML Configurations via your application, in real-time.

IVML also includes an API that allows you to query current calls, route calls to alternate menus, or end calls.

The IVML XML Instruction document retrieved from your server must be a properly formatted XML document, following this structure. Functions are described further in this document.

```
<?xml version="1.0" encoding="UTF-8"?>
<menu>
<!-- Populate your menu with IVM Functions -->
</menu>
```

***Variables:***

The IVML language supports a simple set of variables. Each call is initialised with two per-programmed variables: “from” and “to”, containing the international telephone numbers used to initiate the call. Additional variables are created throughout the call using the “getdtmf” function. When this function is used, key presses are collected and stored in a named variable.

Variables are used in several functions in the IVML language. Specifically, the speech-to-text function “say”, the condition function “condition” and the outbound call function “call” make use of variables.

## Functions:

### <beep/>

Plays a single, short audible tone. Should be used prior to recording user data or gathering user digits. This function takes no parameters.

### <call/>

Calls the specified number(s). If this function *call* is preceded by an audio stream (non-blocking), the stream will continue playing while the call is ringing, until the call is answered. When a call is answered, the call is merged with the originating call. No further menu statements are executed. If the call is not successful, the call will proceed to the next statement.

Parameters	Values	Details
<i>Required parameters:</i>		
<i>number</i>		A single number to dial. Alternatively, a variable name containing a telephone number may be specified here. Numbers must be formatted in international format.
<b>OR</b>		
<i>numbers</i>		Multiple international phone numbers, separated by a comma. These numbers are called in parallel, until one call is answered.
<i>Optional parameters</i>		
<i>retrytime</i>	0,1,2...	If specified, will redial the number or numbers if no answer is received after the specified time, in seconds.
<i>maxtime</i>	0,1,2...	If a <i>retrytime</i> is specified, this value specifies the maximum time in seconds to retry the phone calls. After this time is reached, no further outbound calls are attempted and the menu will move on to the next statement.

## <condition/>

Executes a block of XML based on a variable/value comparison.

Parameters	Values	Details
<i>Required parameters:</i>		
<i>Variable</i>	<i>variable_name</i>	The variable with which to compare
<i>comparator</i>	<i>!=, NULL</i>	! : executes the block if the value does not match = : executes the block if the value matches exactly NULL : executes the block if the variable is empty
<i>value</i>		The value with which to compare

### Example:

```
<condition variable="dtmf" comparator="=" value="2">  
<say>You have entered option two.</say>  
</condition>
```

## <endcall/>

This function ends the active call. The menu processing will continue, however, allowing non-call functions (i.e. sendsms) to execute. This function takes no parameters.

## <exitmenu/>

This function ends the active call and exits the menu; no further functions are called.

## <getdtmf/>

Waits for and records into a variable, one or more DTMF key presses.

Parameters	Values	Details
<i>Required parameters:</i>		
<i>variable</i>	variable_name	Specify a name for the variable in which the DTMF result will be stored.
<i>Optional parameters:</i>		
<i>maxlen</i>	0,1,2....	If set to 0, inputs an unlimited number of tones. Otherwise, limits the recorded tones to the specified amount.
<i>timeout</i>	0,1,2...	Specifies the maximum number of seconds to wait for input from the user. Regardless of the recorded length, the recording stops after this number of seconds. Specify 0 for unlimited.
<i>Terminator</i>	#*0-9	If specified, will end the DTMF recording when the specified key is pressed. Only one terminating key may be specified.

## <icecast/>

Connects to an IceCast audio stream. This audio stream will play during the execution of a “call” function rather than playing the standard “ring tone”. This is especially useful if the “call” command is used with retries and a maximum time, to play, for example, a radio stream to the end-user.

Parameters	Values	Details
<i>Required parameters:</i>		
<i>src</i>	http://...	An HTTP URL where an icecast stream is available.

## <loadxml/>

Loads a new IVML XML Instruction document from the given URL.

Parameters	Values	Details
<i>Required parameters:</i>		
<i>src</i>	http://...	An HTTP URL where the XML menu will be retrieved.

## <play/>

Plays an audio recording. At the present time, only .mp3 formatted audio is accepted. The audio recording is retrieved from a specified HTTP URL.

Parameters	Values	Details
<i>Required parameters:</i>		
<i>src</i>	http://.....	The URL from which an audio file is downloaded.
<i>Optional parameters:</i>		
<i>cache</i>	true,false	Specifies whether the downloaded audio file can be stored and re-used in future calls.
<i>blocking</i>	true,false	If true, the audio playback may be interrupted by either a key press or a successful call connection.
<i>Loop</i>	0,1,2,....	If greater than 0, the audio playback will loop for the given number of times.

## <record/>

Records an audio clip from the current call. Recorded audio will only be returned in 'mp3' format at present. An audio clip may be returned either via HTTP POST, or via email.

Parameters	Values	Details
<i>Required parameters:</i>		
<i>dest</i>	http:// OR mailto:	Specifies either a recipient email address, or an HTTP URL to which the



recorded audio will be posted.

*Optional parameters:*

*maxlen*                      1,2...

The maximum length of the recording in seconds. The default value if none is provided, or if an invalid length is provided, is two minutes (120 s).

*terminator*                \*#0-9A

Specifies a single DTMF key press that can be used to mark the end of the recording. Specify 'A' to allow any key press to end the recording. If this parameter is excluded, the recording will always record to the maxlen value, or otherwise abort if the call ends.

**<say></say>**

This function uses a text-to-speech engine to convert the provided text or variable into audio. The resulting audio is played out onto the active call.

**Usage:**

**<say>**Text to read**</say>**

Parameters	Values	Details
<i>Optional parameters:</i>		
<i>voice</i>	male,female	Selects a text-to-speech voice
<i>blocking</i>	true,false	Non-blocking speech may be interrupted by a key-press or a call connection.
<i>Variable</i>	variable_name	Specify a variable to be read out by the text-to-speech engine

### <sendsms></sendsms>

Sends a text message.

#### Usage:

<sendsms>Text to send</sendsms>

Parameters	Values	Details
<i>Required parameters:</i>		
to	international number	Specifies the recipient number in international format. Variable names may be used.

### <stopicecast/>

Stops a previously launched IceCast stream, or looping audio file. This function should be used after a failed “call” statement, to abort the audio stream playback. This function takes no parameters.

### <wait/>

Pauses the call indefinitely. Streaming audio (icecast) or a looping audio file will continue to play. This function should be used to keep a call active until an API Redirect is sent, triggering the launch of a new menu.

## IVML API

### **About:**

The IVML API allows you to query and alter live calls in real-time, as well as initiate outbound IVML calls.

All requests are submitted to the following URL:

*<http://api.traitel.com/ivml.pl>*

An alternate URL is available should the primary API gateway fail to respond:

*<http://api2.traitel.com/ivml.pl>*

HTTPS is optional on both gateways.

Each API call requires at minimum, the following three parameters:

<i>user</i>	Your TraiTel username
<i>pass</i>	Your TraiTel password
<i>mode</i>	The desired action to perform. See below.

Each API call will respond with a standard HTTP header, followed by either an error message, or a positive indication and the queried information. All newlines in the body of HTTP responses are represented by the character: \n

All API errors will appear in the following manner:

*Error 012: Human-Readable Error Message*

All API successes will display on a single line:

Ok

followed by the query output.

There are two possible errors on a global scale:

*Error 001: Service Unavailable.*

Meaning: This API gateway cannot process your request at this time.

*Error 002: Authentication failed.*

Meaning: The provided credentials are invalid.

### ***Modes of Operation Overview:***

The following values are valid for the *mode* variable:

*querycalls* Provides a CSV list of all active IVML calls from this account.

*initiatecall* Initiates an Outbound IVML call.

*endcall* Ends a live IVML call.

*redirectcall* Redirects a live IVML call to another IVML menu.

## ***Modes of Operation:***

### **querycalls**

Provides a CSV list of all active IVML calls from this account.

## **Parameters**

*none*

## **Errors:**

*none*

## **Success:**

Ok

Call-ID,IVML-ID,Start-Time,Duration,State,Direction,DID,Number,CalledParty

*CSV Data...*

The *Duration* column is in seconds.

The *Direction* column will contain one of: inbound, outbound

The *State* column will be one of the following:

*connecting* The call is not yet answered (applicable to outbound only).

*menu* The call is connected and the IVML menu is being played back.

*voicecall* The call is connected to a live voice call with a third party.

*queue* The outbound call has not started.

The *DID* column represents the DID dialled for an inbound IVML menu.

The *Number* column represents the telephone number of the connected party. For inbound IVML this is the Caller's ID; for outbound IVML this is the number dialled.

The *CalledParty* column represents the telephone number of the third party connected to the call when the call is in *voicecall* state.

## initiatecall

Initiates an outbound IVML call. This function allows you to either use an existing IVML configuration (pre-programmed either via WebMessaging or otherwise via the Account Management API)

### Parameters

<i>number</i>	Required	The telephone number to dial. Must be presented in international format excluding any symbols (i.e. +, (, ), -...)
<i>ivmlid</i>	Optional	The IVML Configuration ID to use. This value can be obtained from WebMessaging or via the Account Management API.
<i>launchurl</i>	Optional	If an existing IVML-ID is not provided, a URL may be provided here. The IVML service will obtain the IVML XML Instructions from the given URL.
<i>resulturl</i>	Optional	If an existing IVML-ID is not provided, a URL may be provided here. The IVML service will submit call status updates to this URL.

### Errors:

*Error 103: Invalid URL.*

Occurs when either URL values are invalid.

*Error 104: Invalid IVML-ID.*

Occurs when the IVML Configuration ID provided does not exist.

*Error 105: No IVML Configuration specified.*

Occurs when both the ivmlid value and launchurl value are invalid or missing. At least one must be provided.

*Error 106: Invalid number.*

Occurs when the provided number is invalid or unroutable.

**Success:**

Ok

*Call-ID*

The *Call-ID* assigned to the outbound call is returned. This ID may be used to reference result information sent to the ResultURL. Additionally, this ID may be used to modify or end the call using this API.

**endcall**

Ends an IVML call. This function may only be used on IVML calls in the 'menu' state. (see *querycalls*). Calls in the *connecting* state and calls in the *voicecall* state may not be modified.

**Parameters:**

callid            Required    The Call-ID as reported by *querycalls*

**Errors:**

*Error 101: Invalid Call-ID.*

Occurs when the Call-ID provided is invalid or does not exist.

*Error 102: Invalid call state.*

Occurs when the requested call is not in *menu* state and cannot be modified.

**Success:**

Ok

## redirectcall

Ends an IVML call. This function may only be used on IVML calls in the 'menu' state. (see *querycalls*). Calls in the *connecting* state and calls in the *voicecall* state may not be modified.

### Parameters:

callid	Required	The Call-ID as reported by <i>querycalls</i>
launchurl	Required	The URL from which new IVML XML instructions may be obtained for this call.

### Errors:

*Error 101: Invalid Call-ID.*

Occurs when the Call-ID provided is invalid or does not exist.

*Error 102: Invalid call state.*

Occurs when the requested call is not in *menu* state and cannot be modified.

*Error 103: Invalid URL.*

Occurs when a URL provided is invalid.

### Success:

Ok



## Launch URL and Result URL

### About:

When creating an IVML configuration or launching an Outbound IVML call, a LaunchURL must be provided. This URL will be used by the IVML service to obtain the IVML XML instructions for each call.

A second optional URL, the ResultURL, will be used by the IVML Service to send status updates for ongoing and completed IVML calls.

Both URLs will be accessed using HTTP "GET". Parameters pertinent to the current call will be provided in the request to allow for menu customisation.

### ***LaunchURL:***

The LaunchURL is retrieved under the following conditions:

- an inbound call was received by the IVML service and the DID is associated with an existing IVML Configuration, or
- an outbound call was initiated via the IVML API and the LaunchURL was included in the outbound API request either directly, or by referencing an IVML Configuration ID.

The IVML Service will append the following parameters to the request:

<i>did</i>	For inbound calls, the DID that was called to initiate the IVML call
<i>number</i>	For inbound calls: the Caller-ID of the calling party. For outbound calls: the telephone number dialled.
<i>ivmlid</i>	The IVML Configuration ID being used, if any.
<i>username</i>	Your TraiTel username.
<i>callid</i>	The Call ID associated with the call.

## **ResultURL:**

The ResultURL will be retrieved under the following conditions:

- An IMVL call ended.
- An Outbound IVML call connected successfully.
- An IVML call was connected to a third party caller via a <call> statement
- An IVML call was redirected via an API call.

The IVML service will append the following parameters to the request:

<i>did</i>	For inbound calls, the DID that was called to initiate the IVML call
<i>number</i>	For inbound calls: the Caller-ID of the calling party. For outbound calls: the telephone number dialed.
<i>ivmlid</i>	The IVML Configuration ID being used, if any.
<i>username</i>	Your TraiTel username.
<i>callid</i>	The Call ID associated with the call.
<i>state</i>	One of: menu: the call is in IVML menu playback voicecall: the call is connected to a party after a <call> statement. finished: the call is ended redirected: the call was redirected to a new IVML menu
<i>cause</i>	Included only when a call is in the <i>finished</i> state. One of: ivmlend: The IVML menu reached the end or <endcall> ivmlhup: The party connected to the IVML menu hung up. remotehup: When in <i>voicecall</i> , the third party hung up apiend: The call was ended by the IVML API xmlerror: The IVML XML document received is invalid. launchurl Included only when the call is redirected; indicates the new URL used.