Virtual Voices 2G User Guide

infocaller

## VIRTUAL VOICES 2G: User Guide

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### **Reserved Characters in Virtual Voices**

There are three predefined characters that cannot normally be used within a Virtual Voice statement. These entities are reserved by the language specification. These characters are:

Name	Character	Escape code
ampersand	&	&
less than sign	<	<
greater than sign	>	>

Because VIRTUAL VOICES uses these characters as part of its code, to use these symbols in VIRTUAL VOICES, you must *escape* the character when you use it. You use the escape code instead of the actual character, so it displays properly while still creating a valid VIRTUAL VOICES text. For example, the following sentence

We're using the lawyer at Peabody & Chambers, attorneys-at-law.

would be rendered in VIRTUAL VOICES as

We're using the lawyer at Peabody & amp; Chambers, attorneys-at-law.

# Supported Virtual Voice Tags

Infocaller supports the following VIRTUAL VOICES tags:

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Whispering (p. 24)	<amazon: effect="" name="whispered"></amazon:>

### Adding a Pause

#### <break>

To add a pause to your text, use the <br/>dreak> tag. You can set a pause based on strength (equivalent to<br/>the pause after a comma, a sentence, or a paragraph), or you can set it to a specific length of time in seconds or milliseconds. If you don't specify an attribute to determine the pause length, VIRTUAL VOICES uses the default, which is <br/>dreak strength="medium">, which adds a pause the length of a pause after a comma.

strength attribute values:

none:	No pause. Use ${\tt none}$ to remove a normally occurring pause, such as after a period.
x-weak:	Has the same strength as none, no pause.
weak:	Sets a pause of the same duration as the pause after a comma.
medium:	Has the same strength as weak.
strong:	Sets a pause of the same duration as the pause after a sentence.
x-strong:	Sets a pause of the same duration as the pause after a paragraph.

### time attribute values:

[number]s:	duration ation is 2		pause,	in	seconds.	The	maximum
[number]ms:	duration Lmum dura		1 ,		milliseco	onds.	. The

### For example:

Mary had a little lamb <break time="3s"/>Whose fleece was white as snow.

If you don't use an attribute with the break tag, the result varies depending on text:

- If there is no other punctuation next to the break tag, it creates a <break strength="medium"> (comma-length pause).
- If the tag is next to a comma, it upgrades the tag to a <break strength="strong"> (sentence-length pause).
- If the tag is next to a period, it upgrades the tag to <break strength="x-strong"> (paragraph-length pause).

## **Emphasizing Words**

### <emphasis>

To emphasize words, use the <emphasis> tag. Emphasizing words changes the speaking rate and volume. More emphasis makes VIRTUAL VOICES speak the text louder and slower. Less emphasis makes it speak quieter and faster. To specify the degree of emphasis, use the level attribute.

level attribute values:

Strong:Increases the volume and slows the speaking rate so that the<br/>speech is louder and slower.Moderate:Increases the volume and slows the speaking rate, but less than<br/>strong. Moderate is the default.Reduced:Decreases the volume and speeds up the speaking rate. Speech is<br/>softer and faster.

### Note

The normal speaking rate and volume for a voice falls between the  ${\tt moderate}$  and  ${\tt reduced}$  levels.

#### For example:

I already told you I <emphasis level="strong">really like</emphasis> that person.

# Specifying Another Language for Specific Words

### <lang>

Specify another language for a specific word, phrase, or sentence with the <lang> tag. Foreign languagewords and phrases are generally spoken better when they are enclosed within a pair of <lang> tags.

To specify the language, use the xml:lang attribute:

- English, British (en-GB)
- English, American (en-US)
- English, Welsh (en-GB-WSL)
- French (fr-FR)
- French, Canadian (fr-CA)
- German (de-DE)
- Italian (it-IT)
- Portuguese (pt-PT)
- Portuguese, Brazilian (pt-BR)
- Spanish (es-ES)
- Spanish, Mexican (es-MX)
- Spanish, US (es-US)

Unless you apply the <lang> tag, all the words in the input text are spoken in the language of the voice you have selected. If you apply the <lang> tag, the words are spoken in that language.

For example, if you selected a voice in US English, VIRTUAL VOICES speaks the following in that voice without the French accent:

Je ne parle pas français.

If you use the <lang> tag, VIRTUAL VOICES speaks the sentence in the US English voice in American-accented French:

<lang xml:lang="fr-FR">Je ne parle pas français.</lang>.

Because a US English voice is not a native French voice, pronunciation is based on the native language, US English.For example, although perfect French pronunciation features an uvual trill /R/ in the word *français*, VIRTUAL VOICES US English voice pronounces this phoneme as the corresponding sound /r/.

If you use the Italian Male voice with the following text, VIRTUAL VOICES speaks the sentence with an Italian pronunciation:

Mi piace Bruce Springsteen.

If you use the same voice with the following <lang> tag, VIRTUAL VOICES pronounces Bruce Springsteen in Italian-accented English:

Mi piace <lang xml:lang="en-US">Bruce Springsteen.</lang>

## Adding a Pause Between Paragraphs

### 

To add a pause between paragraphs in your text, use the tag. Using this tag provides a longer pausethan native speakers usually place at commas or the end of a sentence. Use the tag to enclose the paragraph:

```
This is the first paragraph. There should be a pause after this text is spoken.This is the second paragraph.
```

This is equivalent to specifying a pause using <break strength="x-strong"/>.

## Controlling Volume, Speaking Rate, and Pitch

#### <prosody>

To control the volume, rate, or pitch of your selected voice, use the prosody tag.

Volume, speech rate, and pitch are dependent on the specific voice selected. In addition to differences between voices for different languages, there are differences between individual voices speaking the same language. Because of this, while attributes are similar across all languages, there are clear variations from language to language and no absolute value is available.

The prosody tag has three attributes, each of which has several available values to set the attribute. Each attribute uses the same syntax:

ody attribute="value">

volume

```
default: Resets volume to the default level for the current voice.
```

silent, x-soft, soft, medium, loud, x-loud: Sets the volume to a predefined value for the current voice.

+ndB, -ndB:

Changes volume relative to the current level. A value of +0dB means no change, +6dB means approximately twice the current volume, and -6dB means approximately half the current volume.

For example, you could set the volume for a passage as follows:

Sometimes it can be useful to <prosody volume="loud">increase the volume for a specific speech.</prosody>

Or you could set it this way:

And sometimes a lower volume <prosody volume="-6dB">is a more effective way of interacting with your audience.</prosody>

#### rate

```
    x-slow, slow, medium, fast, x-fast:
Sets the pitch to a predefined value for the selected voice.
    n%: A non-negative percentage change in the speaking rate. For
example, a value of 100% means no change in speaking rate, a
value of 200% means a speaking rate twice the default rate, and a
value of 50% means a speaking rate of half the default rate. This
value has a range of 20-200%.
```

For example, you could set the speech rate for a passage as follows:

```
For dramatic purposes, you might wish to <prosody rate="slow">slow up the speakingrate of your text.</prosody>
```

Or you could set it this way:

Although in some cases, it might help your audience to <prosody rate="85%">slow the speaking rate slightly to aid in comprehension.</pro>

#### pitch

default: Resets pitch to the default level for the current voice.

x-low, low, medium, high, x-high: Sets the pitch to a predefined value for the current voice.

+n% or -n%:

Adjusts pitch by a relative percentage. For example, a value of +0% means no baseline pitch change, +5% gives a little higher baseline pitch, and -5% results in a little lower baseline pitch.

For example, you could set the pitch for a passage as follows:

```
Do you like synthesized speech <prosody pitch="high">with a pitch that is higher than normal?</prosody>
```

#### Or you could set it this way:

```
Or do you prefer your speech <prosody pitch="-10%">with a somewhat lower pitch?</prosody> \ensuremath{\mathsf{Prosody}}\xspace
```

The <prosody> tag must contain at least one attribute, but can include more within the same tag.

Each morning when I wake up, <prosody volume="loud" rate="x-slow">I speak quite slowly and deliberately until I have my coffee.</prosody>

It can also be combined with nested tags, as follows:

```
<prosody rate="85%">Sometimes combining attributes <prosody pitch="-10%">can
change the impression your audience has of a voice</prosody> as well.</prosody>
```

### Adding a Pause Between Sentences

<s>

To add a pause between lines or sentences in your text, use the <s> tag. Using this tag has the same effect as:

- Ending a sentence with a period (.)
- Specifying a pause with <break strength="strong"/>

Unlike the <break> tag, the <s> tag encloses the sentence. This is useful for synthesizing speech that is organized in lines, rather than sentence, such as poetry.

In the following example, the  $<_{S}>$  tag creates a short pause after both the first and second sentences. The final sentence has no  $<_{S}>$  tag, but it is also followed by a short pause because it ends with a period.

```
<s>Mary had a little lamb</s>
<s>Whose fleece was white as snow</s>
And everywhere that Mary went, the lamb was sure to go.
```

## Controlling How Special Types of Words Are Spoken

#### <say-as>

Use the <say-as> tag with the interpret-as attribute to tell VIRTUAL VOICES how to say certaincharacters, words, and numbers. This enables you to provide additional context to eliminate any ambiguity on how VIRTUAL VOICES should render the text.

The say-as tag uses one attribute, <interpret-as>, which uses a number of possible available values. Each uses the same syntax:

<say-as interpret-as="value">[text to be interpreted]</say-as>

The following values are available with interpret-as:

information.

characters	or spell-out: Spells out each letter of the text, as in a-b-c.
cardinal or	number: Interprets the numerical text as a cardinal number, as in 1,234.
ordinal:	Interprets the numerical text as an ordinal number, as in 1,234th.
digits:	Spells out each digit individually, as in 1-2-3-4.
fraction:	Interprets the numerical text as a fraction. This works for both common fractions such as $3/20$ , and mixed fractions, such as $2 \frac{1}{2}$ . See below for more information.
unit:	Interprets a numerical text as a measurement. The value should be either a number or a fraction followed by a unit with no space in between as in 1/2inch, or by just a unit, as in 1meter.
date:	Interprets the text as a date. The format of the date must be specified with the format attribute. See below for more information.
time:	Interprets the numerical text as duration, in minutes and seconds, as in 1'21".
address:	Interprets the text as part of a street address.
expletive:	"Beeps out" the content included within the tag.
telephone:	Interprets the numerical text as a 7-digit or 10-digit telephone number, as in 2025551212. You can also use this value for handle telephone extensions, as in 2025551212x345. See below for more

#### Fractions

VIRTUAL VOICES interprets values within the say-as tag that have the interpret-as="fraction" attribute as common fractions. The following is the syntax for fractions:

Fraction

Syntax: cardinal number/cardinal number, such as 2/9.

For example: <say-as interpret-as="fraction">2/9</say-as>is pronounced "two ninths."

• Non-negative Mixed Number

Syntax: cardinal number+cardinal number/cardinal number, such as 3+1/2.

For example, <say-as interpret-as="fraction">3+1/2</say-as> is pronounced "three and a half."

Note

There must be a + between the "3" and the "1/2". VIRTUAL VOICES doesn't support a mixed number without the +, such as "3 1/2".

#### Dates

When interpret-as is set to date, you also need to indicate the format of the date. This uses the following syntax:

<say-as interpret-as="date" format="format">[date]</say-as>

For example:

```
I was born on <say-as interpret-as="date" format="mdy">12-31-1900</say-as>.
```

The following formats can be used with the date attribute.

- mdy: Month-day-year.
- dmy: Day-month-year.
- ymd: Year-month-day.
- md: Month-day.
- dm: Day-month.
- ym: Year-month.
- my: Month-year.
- d: Day.
- m: Month.
- y: Year.

yyyymmdd: Year-month-day. If you use this format, you can make VIRTUAL VOICES skip parts of the date using question marks.

For example, VIRTUAL VOICES renders the following as "September 22nd":

```
<say-as interpret-as="date">????0922</say-as>
```

Format is not needed.

### Telephone

VIRTUAL VOICES attempts to interpret the text you provide correctly based on the text's formatting even without the <say-as> tag. For example, if your text includes "202-555-1212," VIRTUAL VOICES interprets it as a 10-digit telephone number and says each digit individually, with a brief pause for each dash. In this case, you don't need to use <say-as interpret-as="telephone">. However, if you provide thetext "2025551212" and want VIRTUAL VOICES to say it as a phone number, you would specify <say-as interpret-as="telephone">.

The logic for interpreting each element is language-specific. For example, US and UK English differ in how phone numbers are pronounced (in UK English, sequences of the same digit are grouped together, as in "double five" or "triple four"). To see the difference, test the following example with a US voice and with a UK voice:

Richard's number is <say-as interpret-as="telephone">2122241555</say-as>

# Improving Pronunciation by Specifying Parts of Speech

<w>

You can use the <w> tag to customize the pronunciation of words by specifying the word's part of speech or alternate meaning. This is done using the role attribute.

This tag uses the following syntax:

<w role="attribute">text</w>

The following values can be used for the role attribute:

To specify the part of speech:

amazon:VB: interprets the word as a verb (present simple).

amazon:VBD: interprets the word as past tense verb.

amazon:DT: interprets the word as a determiner.

amazon:IN: interprets the word as a proposition.

amazon:JJ: interprets the word as an adjective.

amazon:NN: interprets the word as a noun.

For example, depending on its part of speech, the US English pronunciation of the word "read" varies based on the tag:

The word <say-as interpret-as="characters">read</say-as> may be interpreted as either the present simple form <w role="amazon:VB">read</w>, or the past participle form <w role="amazon:VBD">read</w>.

To specify a specific meaning:

amazon:DEFAULT:

uses the default sense of the word.

amazon:SENSE 1:

uses the non-default sense of the word when present. For example, the noun "bass" is pronounced differently depending on its meaning. The default meaning is the lowest part of the musical range. The alternate meaning is a species of freshwater fish, also called "bass" but pronounced differently. Using <w role="amazon:SENSE\_1">bass</w> role=sentently. Using <w

This difference in pronunciation and meaning can be heard if you synthesize the following:

Depending on your meaning, the word <say-as interpret-as="characters">bass</say-as> may be interpreted as either a musical element: bass, or as its alternative meaning, a freshwater fish <w role="amazon:SENSE\_1">bass</w>.

### Note

Some languages may have a different selection of supported parts of speech.

### Adding the Sound of Breathing

#### <amazon:breath> and <amazon:auto-breaths>

Natural-sounding speech includes both correctly spoken words and breathing sounds. By adding breathing sounds to synthesized speech, you can make it sound more natural. The <amazon:breath>and <amazon:auto-breaths> tags provide breaths. You have the following options:

Manual mode:

you set the location, length, and volume of a breath sound within the text

Automated mode:

VIRTUAL VOICES automatically inserts breathing sounds into the speech output

Mixed mode:

both you and VIRTUAL VOICES add breathing sounds

### Manual Mode

In manual mode, you place the <amazon:breath/> tag in the input text where you want to locate a breath. You can customize the length and volume of breaths with the duration and volume attributes, respectively:

duration:	Controls the length of the breath. Valid values are: default, x-short,
	short, medium, long, x-long. The default value is medium.

volume: Controls how loud breathing sounds. Valid values are: default, x-soft, soft, medium, loud, x-loud. The default value is medium.

### Note

The exact length and volume of each attribute value is dependent on the specific VIRTUAL VOICES voice used.

To set a breath sound using the defaults, use <amazon:breath/> without attributes.

For example, to use attributes to set the duration and volume for a breath to medium, you would set theattributes as follows:

Sometimes you want to insert only <amazon:breath duration="medium" volume="x-loud"/>a single breath.

To use the defaults, you would just use the tag:

Sometimes you need <amazon:breath/>to insert one or more average breathes <amazon:breath/> so that the text sounds correct.

You can add individual breathing sounds within a passage, as follows:

```
<amazon:breath duration="long" volume="x-loud"/> <prosody rate="120%"> <prosody volume="loud"> Wow! <amazon:breath duration="long" volume="loud"/> </prosody> That was quite fast <amazon:breath duration="medium" volume="x-loud"/>. I almost beat my personal best time on thistrack. </prosody>
```

### Automated Mode

In automated mode, you use the <amazon:auto-breaths> tag to tell VIRTUAL VOICES to automatically create breathing noises at appropriate intervals. You can set the frequency of the intervals, their volume, and their duration. Place the </amazon:auto-breaths> tag at the beginning of the text that you want to apply automated breathing to and then close the tag at the end.

#### Note

Unlike the manual mode tag, <amazon:breath/>, the <amazon:autobreaths> tag requires a closing tag (</amazon:auto-breaths>).

You can use the following optional attributes with the <amazon:auto-breaths> tag:

volume:	Controls how loud the breathing sounds. Valid values are: default, x-soft, soft, medium, loud, x-loud. The default value is medium.
frequency:	Controls how often breathing sounds occur in the text. Valid values are: default, x-low, low, medium, high, x-high. The default value is medium.
duration:	Controls the length of the breath. Valid values are: default, x-short, short, medium, long, x-long. The default value is medium.

By default, the frequency of breathing sounds depends on the input text. However, breathing sounds often occur after commas and periods.

The following examples show how to use the <amazon:auto-breaths> tag. To decide which options to use for your content, copy the applicable examples to the VIRTUAL VOICES console and listen to the differences.

Using automated mode without optional parameters:

<amazon:auto-breaths>VIRTUAL VOICES is a service that turns text into lifelike
speech, allowing you to create applications that talk and build entirely new
categories of speech-enabled products. VIRTUAL VOICES is a text-to-speech service
that uses advanced deep learning technologies to synthesize speech that sounds
like a human voice. With dozens of lifelike voices across a variety of languages,
you can select the ideal voice and buildspeech-enabled applications that work in
many different countries.</amazon:auto-breaths>

Using automated mode with volume control. The unspecified parameters (duration and frequency) are set to the default values (medium).

<amazon:auto-breaths volume="x-soft">Amazon Polly is a service that turns text intolifelike speech, allowing you to create applications that talk and build entirely newcategories of speech-enabled products. Amazon Polly is a text-tospeech service, that usesadvanced deep learning technologies to synthesize speech that sounds like a human voice. With dozens of lifelike voices across a variety of languages, you can select the ideal voice andbuild speech-enabled applications that work in many different countries.</amazon:auto-breaths>

Using automated mode with frequency control. The unspecified parameters (duration and volume) are set to the default values (medium).

<amazon:auto-breaths frequency="x-low">Amazon Polly is a service that turns text into lifelike speech, allowing you to create applications that talk and build entirely new categories of speech-enabled products. Amazon Polly is a text-tospeech service, that uses advanced deep learning technologies to synthesize speech that sounds like a human voice. Withdozens of lifelike voices across a variety of languages, you can select the ideal voice andbuild speech-enabled applications that work in many different countries.

Using automated mode with multiple parameters. For the unspecified Duration parameter, VIRTUAL VOICES uses the default value (medium).

<amazon:auto-breaths volume="x-loud" frequency="x-low">Amazon Polly is a service that turns text into lifelike speech, allowing you to create applications that talk and buildentirely new categories of speech-enabled products. Amazon Polly is a text-to-speech service, that uses advanced deep learning technologies to synthesize speech that sounds like a humanvoice. With dozens of lifelike voices across a variety of languages, you can select the idealvoice and build speechenabled applications that work in many different countries.

# Speaking Softly

<amazon:effect phonation="soft">

To specify that input text should be spoken in a softer-than-normal voice, use the *<amazon:effect phonation="soft">* tag.

This uses the syntax:

<amazon:effect phonation="soft">text</amazon:effect>

For example, you might use this tag with the US voice as follows:

This is Matthew speaking in my normal voice. <amazon:effect phonation="soft">Thisis Matthew speaking in my softer voice.</amazon:effect>

# Controlling Timbre

#### <amazon:effect vocal-tract-length>

Timbre is the tonal quality of a voice that helps you tell the difference between voices, even when they have the same pitch and loudness. One of the most important physiological features that contributes tospeech timbre is the length of the vocal tract. The vocal tract is a cavity of air that spans from the top of the vocal folds up to the edge of the lips.

To control the timbre of output speech in VIRTUAL VOICES, use the vocal-tractlength tag. This taghas the effect of changing the length of the speaker's vocal tract, which sounds like a change in the speaker's size. When you increase the vocaltract-length, the speaker sounds physically bigger. When you decrease it, the speaker sounds smaller. You can use this tag with any of the voices in the VIRTUAL VOICES Text-to-Speech portfolio.

To change timbre, use the following values:

+n% or -n%:

- Adjusts the vocal tract length by a relative percentage change in the current voice. For example, +4% or -2%. Valid values range from +100% to -50%. Values outside this range are clipped. For example, +111% sounds like +100% and -60% sounds like -50%.
- n%: Changes the vocal tract length to an absolute percentage of the tract length of the current voice. For example, 110% or 75%. An absolute value of 110% is equivalent to a relative value of +10%. An absolute value of 100% is the same as the default value for the current voice.

The following example shows how to change the vocal tract length to change timbre:

```
This is my original voice, without any modifications.

<amazon:effect vocal-tract-length="+15%"> Now, imagine that I am much bigger.

</amazon:effect>

<amazon:effect vocal-tract-length="-15%">Or, perhaps you prefer my voice when I'm

very small. </amazon:effect>

You can alsocontrol the timbre of my voice by making minor adjustments.

<amazon:effect vocal-tract-length="+10%"> For example, by making me sound just a

little bigger. </amazon:effect>

<amazon:effectvocal-tract-length="-10%"> Or, making me sound only somewhat

smaller. </amazon:effect>
```

### Combining Multiple Tags

You can combine the vocal-tract-length tag with any other VIRTUAL VOICES tag that is supported by VIRTUAL VOICES. Because timbre (vocal tract length) and pitch are closely connected, you might get the best results by using both the vocal-tract-length and the <prosody pitch> tags. To produce the most realistic voice, we recommend that you use different percentages of change for the two tags. Experimentwith various combinations to get the results you want.

The following example shows how to combine tags.

The pitch and timbre of a person's voice are connected in human speech. <amazon:effect vocal-tract-length="-15%"> If you are going to reduce the vocal tract length,</amazon:effect> <amazon:effect vocal-tract-length="-15%"> <prosody pitch="+20%"> you might consider increasing the pitch, too. </prosody></amazon:effect> <amazon:effect vocal-tract-length="+15%"> If you choose to lengthen the vocal tract, </amazon:effect> <amazon:effect vocal-tract-length="+15%"> <prosody pitch="-10%">you might also want to lower the pitch. </prosody></amazon:effect>

### Whispering

<amazon:effect name="whispered">

This tag indicates that the input text should be spoken in a whispered voice rather than as normalspeech. This can be used with any of the voices in the VIRTUAL VOICES Text-to-Speech portfolio.

This uses the following syntax:

<amazon:effect name="whispered">text</amazon:effect>

### For example:

```
<amazon:effect name="whispered">If you make any noise, </amazon:effect>she said,
<amazon:effect name="whispered">they will hear us.</amazon:effect>
```

In this case, the synthesized speech spoken by the character is whispered, but the phrase "she said" isspoken in the normal synthesized speech of the selected VIRTUAL VOICES voice.

You can enhance the "whispered" effect by slowing down the prosody rate by up to 10%, depending on the effect you want.

For example:

When any voice is made to whisper, <amazon:effect name="whispered"><prosody rate="-10%">the sound is slower and quieter than normal speech</prosody></amazon:effect>

When generating speech marks for a whispered voice, the audio stream must also include the whispered voice to ensure that the speech marks match the audio stream.