
Language Supplement



Speechify 3.0 for en-AU
(Australian English)

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Notice

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Table of Contents

1. Introduction

Overview	1
New and changed information	1
Getting started	2
Support services	2

2. Standard Text Normalization

Numbers	4
Cardinal numbers	4
Floating point digits	5
Negative numbers	5
Fractions	5
Zero-initial numbers	6
Numeric expressions	7
Dates	7
Days of the month	8
Times	9
Currency	10
Australian dollars	10
US dollars	11
Other dollars	11
Euros	12
Pounds	13
Negative currency	13
Thousands, millions, billions, and trillions	14
Floating point digits in currency expressions	14
Prenominal currency	15
Phone numbers	15
Mixed alphanumeric tokens	15
Abbreviations	16
Uppercase acronyms and tokens	17
E-mail addresses	18
URLs	19
File names and paths	19

Punctuation.....	20
Parentheses.....	20
Hyphen.....	21
Slash.....	21
 3. Embedded Tags	
Pronouncing numbers and years.....	23
English dates	24
Text locale tag.....	25
 4. Symbolic Phonetic Representations	
Vowels.....	27
Consonants.....	28
Syllable stress.....	29
Syllable boundary.....	30
Sample SPRs	30
 5. Phoneme marks	
 6. User Dictionaries	
Main dictionary.....	35
Valid main dictionary entries.....	36
Main dictionary examples	36
Abbreviation dictionary	37
Valid abbreviation dictionary entries	37
Abbreviation dictionary examples.....	37
Root dictionary	38
Allowable root dictionary entries.....	38
Root dictionary examples	38
 7. W3C SSML	



Introduction

Overview

This document contains language-specific reference information for application developers using SpeechWorks Speechify 3.0 and higher.

Speechify™ is a Text-To-Speech (TTS) system.

New and changed information

Information about installing voices has been moved from this supplement to the *Speechify User's Guide*.

There are small improvements throughout this document.

See the *Speechify Migration Guide* for a complete list of changes in Speechify 3.0.

Getting started

To get started, we recommend that you are familiar with the *Speechify User's Guide*, which provides comprehensive installation, programming, and reference information about the Speechify product. You should also review the release notes distributed with this product for the latest information, restrictions, and known problems.

Other documents in the Speechify documentation set:

- ❑ *Speechify E-Mail Pre-processor Developer's Guide* explains the types of input that the SpeechWorks E-mail Pre-processor handles, how it processes the messages, the modes that the application can take advantage of at runtime, the layout and use of the E-mail substitution dictionary, and provides the API function prototypes, types, error codes and constants.
- ❑ *Speechify Migration Guide* introduces several new features that have been added to Speechify 2.0 relative to Speechify 1.x releases.
- ❑ The *SpeechWorks Licensing Handbook* describes the process for getting licenses to run the Speechify software, details about configuring your license server, and related topics.
- ❑ There is a *Speechify Language Supplement* for each supported language.

Support services

To receive technical support from SpeechWorks International, Inc., use the following methods:

- ❑ Check the FAQs, visit the Knowledge Base, or ask a question at:

<http://techsupport.speechworks.com/>

- ❑ Ask for “technical support” at +1 617 428-4444



Standard Text Normalization

Speechify's text normalization is the component that interprets the input text and converts it into a sequence of fully spelled-out words. It encompasses digit conversion, abbreviation and acronym expansion, punctuation handling, and the interpretation of special characters such as currency symbols. It is this component of the system that is primarily responsible for an intelligent reading of text.

This chapter is a guide to the major features of Speechify's default text normalization, which applies unless overridden by a Main or Abbreviation Dictionary entry or an embedded tag. The *Speechify User's Guide* describes default normalization for all languages; below, the discussion describes behaviors specific to en-AU.

The processing is described in general terms as an aid to application developers in constructing Main and Abbreviation Dictionaries, custom pre-processors, and marked-up text. It is beyond the scope of this chapter to provide an exhaustive description of the entire set of sophisticated, context-sensitive text normalization rules used in Speechify, and you may therefore observe deviations from the generalizations provided here in specific instances.

Definitions of symbols

Symbols used in the tables in this chapter are:

Symbol	Meaning
d or d (in recognized format column)	digit
a (in recognized format column)	lowercase letter
A (in recognized format column)	uppercase letter
<i>n</i> (in recognized format column)	a number
mm/dd/yy	month/day/year

Symbol	Meaning
hh:mm:ss	hour:minute:second
, (in text expansion examples)	pause and/or comma-like phrase break

Numbers

Cardinal numbers

Numbers are read as ordinary cardinal numbers by default. For example:

Example	Expansion
123	one hundred twenty three
25678	twenty five thousand six hundred
25,678	seventy eight

There are a few exceptions to this. Four-digit numbers with no thousands separator are pronounced as years by default. For example:

Example	Expansion
1200	twelve hundred
1984	nineteen eighty-four
2000	two thousand
2112	twenty-one twelve

Three-digit numbers are read in a shortened form, omitting the word “hundred,” in certain special contexts. For example:

Example	Expansion
I-494	ay four ninety four
Interstate 290	interstate two ninety

Four-digit numbers with no thousands separator are pronounced as years by default.

Example	Expansion
1200	twelve hundred
1984	nineteen eighty-four
2000	two thousand
2112	twenty-one twelve

Floating point digits

Recognized format	Example	Expansion
<i>n.n</i>	16.01	sixteen point zero one
<i>.n</i>	.345	point three four five

Negative numbers

Recognized format	Example	Expansion
<i>-n</i>	-37	minus thirty-seven

Fractions

Fraction characters are expanded as follows:

Fraction character	Example	Expansion
$\frac{1}{4}$	$\frac{1}{4}$	one fourth
	$3 \frac{1}{4}$	three and one fourth
$\frac{1}{2}$	$\frac{1}{2}$	one half
	$3 \frac{1}{2}$	three and a half

Fraction character	Example	Expansion
$\frac{3}{4}$	$\frac{3}{4}$	three fourths
	$3\frac{3}{4}$	three and three fourths

Other fractions are ambiguous (e.g., $\frac{1}{2}$ can mean one half, one over two, one out of two, January first, and so on), and are interpreted as fractions only when occurring in a mixed number or in another disambiguating context.

Example	Expansion
$2\frac{1}{2}$	two and a half
$4\frac{1}{3}$	four and one third
He ate $\frac{3}{8}$ of an apple	he ate three eighths of an apple
$-\frac{5}{16}$	minus five sixteenths
$\frac{1}{4}$ km	one fourth kilometer
$\frac{2}{3}$ tsp salt	two thirds teaspoon salt

Zero-initial numbers

Numbers beginning with 0 are spoken digit by digit.

Example	Expansion
02319	zero two three one nine

Numeric expressions

Dates

The following table shows the formats that Speechify recognizes as dates. In the table, parentheses enclose optional elements, and *mon* designates a three-letter month abbreviation.

Recognized format	Example
(m)m/(d)d/(yy)yy	1/10/1984
(m)m-(d)d-(yy)yy	02-23-86
(d)d/(m)m/(yy)yy	10/25/88
(d)d-(m)m-(yy)yy	5-5-1991
(d)d-mon-(yy)yy	25-Aug-01
yyyy-mon-(d)d	2002-Apr-03

Many dates in English are ambiguous between the *mdy* (month-day-year) format used in the US, and the *dmy* (day-month-year) format used in Great Britain, Australia, and elsewhere. For example, the date 1/10/1984 is normally read as January tenth, 1984, in the US, and as October first, 1984, in Australia and Great Britain. This ambiguity exists regardless of which Speechify voice is reading a text, because a voice can be used to read a text from a locale other than its native locale.

Speechify produces a fully expanded date reading of dates that are not ambiguous. This includes a full expansion for the month and an ordinal reading of the day. For example:

Input	Expansion
12/31/1956	december thirty-first, nineteen fifty-six
15/04/2001	april fifteenth, two thousand and one
5/5/1991	may fifth, nineteen ninety-one
2002-Apr-01	april first, two thousand and two

In addition, when a date is fully expanded, a two-digit year is interpreted according to the following rules:

Two-digit year	Interpretation
00–09	2000–2009
10–29	10–29 (neutral as to century)
30–99	1930–1999

For example:

Input	Expansion
2/23/86	february twenty-third, nineteen eighty-six
5/17/03	may seventeenth, two thousand and three
25-Aug-01	august twenty-fifth, two thousand and one

Speechify also gives a fully expanded date reading when a date or text locale tag has been used to specify date format (see “English dates” on [page 24](#) and “Text locale tag” on [page 25](#)).

In all other cases, Speechify reads dates numerically, to prevent an inaccurate rendering. In this case, two-digit years are read neutrally as to century. For example:

Input	Expansion
3/4/02	three four oh two
9/5/1956	nine five nineteen fifty-six

Days of the month

Days of the month are converted to ordinal numbers. For example:

Input	Expansion
October 25, 1988	october twenty-fifth, nineteen ninety-eight
Friday, Jan. 10	friday, january tenth
Dec. 22-25	december twenty-second to twenty-fifth
August 1, 2, and 3	august first, second, and third
23 Feb 1986	february twenty-third nineteen eighty-six
He arrived on May 5.	he arrived on may fifth.

Times

In the following table, parentheses enclose optional elements. Note that times delimited by periods are interpreted as times only if an am/pm marker follows. Seconds, if included, are not pronounced.

Recognized format	Example	Expansion
(h)h:mm	12:01	twelve oh one
	14:52	fourteen fifty-two
	9:00	nine o'clock
	08:35	eight thirty-five
(h)h:mm am/pm marker (see next column for am/pm marker formats)	10:30am	ten thirty ay emm
	10:30AM	
	10:30 am	
	10:30 AM	
	10:30 a.m.	
	10:30 A.M.	
(h)h:mm am/pm marker (see next column for am/pm marker formats)	10.00pm	ten pea emm
	10.00PM	
	10.00 pm	
	10.00 PM	
	10.00 p.m.	
	10.00 P.M.	
(h)h:mm:ss	8:23:34	eight twenty-three
(h)h:mm.ss am/pm marker	9.14.14 pm	nine fourteen pea emm

Currency

Australian dollars

Dollar expressions with no explicit nationality indicator are read neutrally as *dollars*. If Australian dollars are specified explicitly, they are read as such.

Recognized format	Example	Expansion
$\$n$	\$100	one hundred dollars
$n\$$	100\$	
$\$An$	\$A100	one hundred australian dollars
$\$AU n$	\$AU100	
$\$AUS n$	\$AUS100	
$A\$n$	A\$100	
$AU\$n$	AU\$100	
$AUS\$n$	AUS\$100	
$\$nAU$	\$100AU	
$\$nAUS$	\$100AUS	
$\$n AU$	\$100 AU	
$\$n AUS$	\$100 AUS	
$nAUD$	100AUD	
$n AUD$	100 AUD	

Any of the formats above may include cents. Examples:

Example	Expansion
\$0.50	fifty cents
\$.50	
\$5.10	five dollars and ten cents
$\$AU 5.10$	five australian dollars and ten cents
$AUS\$5.10$	
$\$5.10AUS$	
$5.10AUD$	
$5.10 AUD$	

US dollars

Recognized format	Example	Expansion
$\$USn$	$\$US100$	one hundred you ess dollars
$US\$n$	$US\$100$	
$\$nUS$	$\$100US$	
$nUSD$	$100USD$	
$n\ USD$	$100\ USD$	
$n\ (US\$)$	$100\ (US\$)$	

Any of the formats above may include cents. Examples:

Example	Expansion
$\$0.50$	fifty cents
$\$.50$	
$\$5.10$	five dollars and ten cents
$\$US5.10$	five you ess dollars and ten cents
$US\$5.10$	
$\$5.10US$	
$5.10USD$	
$5.10\ USD$	
$5.10\ (US\$)$	

Other dollars

Nationality	Recognized format		
Canadian dollars	$\$Cn$	$CDN\$n$	$\$n\ CDN$
	$\$CANn$	$\$nCAN$	$nCDN$
	$\$CADn$	$\$nCAD$	$n\ CDN$
	$\$CDNn$	$\$nCDN$	$n\ (CAN\$)$
	$C\$n$	$\$n\ CAN$	$n\ (CAD\$)$
	$CAN\$n$	$\$n\ CAD$	$n\ (CDN\$)$
	$CAD\$n$		
Hong Kong dollars	$\$HKn$	$\$nHK$	$nHKD$
	$HK\$n$	$\$n\ HK$	$n\ HKD$

Nationality	Recognized format		
Singapore dollars	$\$ \$ n$	$n \$ \text{SGD}$	$n \$ \text{SGD}$
	$\$ \$ n$		
New Zealand dollars	$\$ \text{NZ} n$	$\text{NZ} \$ n$	
	$\$ \text{NZD} n$	$\text{NZD} \$ n$	$\$ n \text{NXD}$

All of the formats shown above may include subunits, read as cents. A few examples:

Example	Expansion
$\$ \text{US} 25.39$	twenty-five you ess dollars and thirty-nine cents
$\text{US} \$ 25.39$	
$\$ 11.20 \text{CDN}$	eleven canadian dollars and twenty cents
$\text{CAN} \$ 11.20$	

Euros

Recognized format	Example	Expansion
$\text{EUR } n$	$\text{EUR } 100$	one hundred euros
$\text{EUR} n$	$\text{EUR} 100$	
$n \text{EUR}$	100EUR	
$n \text{EUR}$	100EUR	
$\text{€ } n$	$\text{€ } 100$	
$\text{€} n$	$\text{€} 100$	
$n \text{€}$	100€	
$n \text{€}$	100€	

The euro formats shown above may include subunits (cents). Examples:

Example	Expansion
$\text{EUR } 5.10$	five euros and ten cents
$\text{EUR} 5.10$	
5.10EUR	
5.10EUR	
$\text{€ } 5.10$	
$\text{€} 5.10$	

Pounds

Recognized format	Example	Expansion
£ <i>n</i>	£ 100	one hundred pounds
£ <i>n</i>	£100	
£STG <i>n</i>	£STG 100	one hundred pounds sterling
£STG <i>n</i>	£STG100	
£Stg <i>n</i>	£Stg 100	
£Stg <i>n</i>	£Stg100	
£stg <i>n</i>	£stg 100	
£stg <i>n</i>	£stg100	

The pound formats shown above may include subunits (pence). Examples:

Example	Expansion
£ 5.10	five pounds and ten pence
£5.10	
£STG 5.10	five pounds sterling and ten pence
£STG5.10	
£Stg 5.10	
£Stg5.10	
£stg 5.10	
£stg5.10	

Negative currency

Negative currency values can be denoted with a minus sign immediately preceding the number. For example:

Example	Expansion
\$-10.00	minus ten dollars
-100HKD	minus one hundred hong kong dollars
£Stg -34	minus thirty-four pounds sterling

Thousands, millions, billions, and trillions

Thousands, millions, billions, and trillions may be explicitly denoted with the appropriate word or abbreviation. Full words may be all lowercase, all uppercase, or capitalized. The following table shows pounds, but any of the supported currency types and formats is possible. The number *n* may include floating point digits.

Recognized format	Example	Expansion
$\$n$ thousand	\$10 thousand	ten thousand dollars
$\$n$ -thousand	\$4.5-thousand prize	four point five thousand dollar prize
$\$n$ million	\$5.5 million	five point five million dollars
$\$nM$	\$5.5M	
$\$mn$	\$5.5m	
$\$mn$	\$5.5mn	
$\$n$ -million	\$4-million-a-year profit	four million dollar a year profit
$\$n$ billion	\$1.039 billion	one point zero three nine billion dollars
$\$nb$	\$1.039b	
$\$nbn$	\$1.039bn	
$\$n$ -billion	\$1-billion goal	one billion dollar goal
$\$n$ trillion	\$17.67 trillion	seventeen point six seven trillion dollars
$\$ntn$	\$17.67tn	
$\$n$ -trillion	\$3.2-trillion debt	three point two trillion dollar debt

Floating point digits in currency expressions

Any currency type may have floating point digits rather than subunits. For example:

Example	Expansion
\$100.345	one hundred point three four five dollars
£10.1	ten point one pounds
\$A5.5	five point five australian dollars

Prenominal currency

When it can be determined with confidence that a currency expression modifies a following noun, the currency word is singular.

Example	Expansion
Tom has \$500 in the bank.	tom has five hundred dollars in the bank.
Tom won a \$500 prize.	tom won a five hundred dollar prize.

Phone numbers

Recognized phone numbers are read out digit by digit, with pauses in the locations indicated by commas in the Expansion column below.

Recognized format	Example	Expansion
dddd dddd	1234 5678	one two three four, five six seven eight
dd dddd dddd	03 1234 5678	oh three, one two three four, five six seven eight
(dd) dddd dddd	(03) 1234 5678	
(dd)dddd dddd	(03)1234 5678	

Mixed alphanumeric tokens

Mixed alphanumeric sequences are either spelled, divided into words, or in special cases read as whole words. For example:

Example	Expansion
55th	fifty-fifth
1930s	nineteen thirties
3RD	third
VOS34	vee oh ess thirty-four
32XC	thirty-two eks cee
J2EE	jay two ee ee
Group12	group twelve

Example	Expansion
24hour	twenty-four hour
12min	twelve minutes

Abbreviations

Ambiguity in abbreviations

There are two types of ambiguity in abbreviations. The first type of ambiguous abbreviation has more than one possible expansion; e.g., St. stands for either street or saint. The second type of ambiguous abbreviation can be either a whole word or an abbreviated form: for example, “in.” is either the word “in” or the abbreviation for “inches.” Speechify employs a set of context-sensitive rules to disambiguate the first type of ambiguous abbreviation.

A token of the second type is interpreted as an abbreviation only in specific disambiguating contexts. For example, when the abbreviation ends in a period, and the following word begins with a lowercase letter, it is interpreted as an abbreviation. For example:

Input	Expansion
There are 5 in. of snow on the ground.	there are five inches of snow on the ground.
Put 5 in. Then take 3 out.	put five in. then take three out.

Periods in abbreviations

Note that abbreviations do not necessarily end in a period:

Input	Expansion
We met Mr Smith yesterday.	we met mister smith yesterday.

Once the abbreviation is expanded, if it ended in a final period it must be determined whether or not the period also indicates a sentence end:

Input	Expansion
There are 5 ft. of snow on the ground.	there are five feet of snow on the ground.
It snowed 5 ft. The next day it all melted.	it snowed five feet. the next day it all melted.

Measure abbreviations are expanded to singular or plural depending on the value of a preceding number or other disambiguating context. In the absence of a disambiguating context, they default to a plural expansion. For example:

Input	Expansion
There are 5 in. of snow on the ground.	there are five inches of snow on the ground.
There is 1 in. of snow on the ground.	there is one inch of snow on the ground.
There are 1.1 in. of snow on the ground.	there are one point one inches of snow on the ground.
How many cm. are in a km?	how many centimeters are in a kilometer?
cm.	centimeters

Uppercase acronyms and tokens

Uppercase acronyms and other tokens written in uppercase are either read out letter by letter, read as a whole word, or given an idiosyncratic interpretation. Examples:

Example	Pronunciation
TTS	tee tee ess
CMU	cee emm you
CIA	cee eye ay
UNICEF	unicef
NYSE	new york stock exchange

A possessive suffix can be attached to an acronym without interfering with the ordinary acronym processing. For example:

Input	Expansion
CMU's	cee emm you's
UNICEF's	unicef's

E-mail addresses

An e-mail address is divided into two portions, a username and a domain name, separated by a @. A phrase break is inserted following the user name. Symbols in the e-mail address are read as follows:

Symbol	Expansion
@	at
.	dot
-	dash
_	underscore

Username

The user name is spelled out character by character, unless word boundaries are indicated unambiguously. Sequences of two and three letters are always spelled out. Digit sequences are read digit by digit. Examples:

User name	Expansion
bruce_smith	bruce underscore smith
john.jones	john dot jones
star-chaser	star dash chaser
steve5050	steve five zero five zero
red	ar ee dee
rfrmac	ar eff ar emm ay cee

Domain name

Two- and three-letter domain and country extensions are either read as words or spelled out, following standard convention. The host name is read as a single word, unless word boundaries are indicated unambiguously. Examples:

Host name	Expansion
access1.net	access one dot net
hawaii.rr.com	hawaii dot ar ar dot com
cornell.edu	cornell dot ee dee you
amazon.co.uk	amazon dot cee oh dot you kay

URLs

A token beginning with `www.` or `http://` or `ftp://` is interpreted as a URL. A phrase break is inserted following `http://` or `ftp://`, and the `://` are not pronounced.

Symbols in a URL are expanded as follows:

Symbol	Expansion
/	URL-final: not expanded (otherwise: slash)
.	dot
-	dash
_	underscore

Each slash-delimited segment of the URL is expanded as follows: Two- and three-letter domain and country extensions are either read as words or spelled out, following standard conventions. Each remaining segment is read as a single word, unless word boundaries are indicated unambiguously. Examples:

URL	Expansion
<code>http://www.lobin.freemove.co.uk/sarahs-price/page001.html</code>	aitch tee tee pee, double you double you double you dot lobin dot freemove dot cee oh dot you kay slash sarahs dash price slash page zero zero one dot aitch tee em ell
<code>www.serbia-info.com/news/</code>	double you double you double you dot serbia dash info dot com slash news

File names and paths

Symbols in paths are expanded as follows:

Symbol	Expansion
/	URL-final: not expanded (otherwise: slash)
\	URL-final: not expanded (otherwise: backslash)
:	colon
.	dot

Symbol	Expansion
-	dash
_	underscore

Each slash-delimited segment of a pathname is read as a single word, unless word boundaries are unambiguously indicated. Common filename extensions are read as a word or spelled out, following standard conventions. Examples:

Pathname	Expansion
C:\docs\my_book\chapter12.doc	cee colon backslash docs backslash my underscore book backslash chapter twelve dot doc
/product/release/speechify-3-0-0/release-notes.txt	slash product slash release slash speechify dash three dash oh dash oh slash release dash notes dot tee eks tee

Punctuation

Punctuation generally triggers a phrase break, except in a limited set of special cases that are determined on a language-specific basis. Examples of these are:

Input	Expansion
He lives in Boston, Massachusetts.	he lives in boston massachusetts.
That is a very, very old building.	that is a very very old building.
John won't come, either.	john won't come either.
SpeechWorks International, Inc.	speechworks international incorporated.
Drive D: is full.	drive dee is full.

Parentheses

Parentheses generally trigger a phrase break:

Input	Expansion
Tom (my son) and Susan (my daughter)	Tom, my son, and Susan, my daughter

The phrase break does not happen in a very limited set of special cases.

Input	Expansion
book(s)	books
getText()	get text

Hyphen

The hyphen is read neutrally as “dash” unless it can be disambiguated with a high degree of confidence. Examples:

Input	Expansion
mid-90s	mid nineties
A-1	ay one
32-bit	thirty-two bit
-7	minus seven
April 3-4	April third to fourth
pp. 35-40	pages thirty-five to forty
1974-1975	nineteen seventy-four to nineteen seventy-five
2-3 inches	two to three inches
3-2	three dash two (because it could be “3 to 2”; “3 minus 2”; or “3 2”)

Slash

A slash is read as “slash” unless the following word is a unit of measure, when the slash is read as “per,” or when the entire token is a familiar expression.

Input	Expansion
Sydney/Melbourne	sydney slash melbourne
cm/sec	centimeters per second
he/she	he or she



Embedded Tags

Embedded tags are special codes that can be inserted into input text to customize Speechify's behavior in a variety of ways. The *Speechify User's Guide* describes the Speechify tag format and functionality. Below is the description of a tag that is specific to Australian English.

Pronouncing numbers and years

In Australian English, a four digit numeric sequence with no internal commas or trailing decimal digits, like *1984*, can be interpreted either as a year (*nineteen eighty four*) or as a quantity (*one thousand nine hundred eighty four*). Speechify applies the year interpretation by default, as in:

Input	Pronunciation
He was born in May 1945.	He was born in May nineteen forty five.

To override or restore the default year interpretation, use the following tags:

Year mode tag	Description
\iny0	Quantity interpretation.
\iny1	Year interpretation (default).

For example:

Input	Pronunciation
In May \ny0 1945 people emigrated.	In May one thousand nine hundred forty five people emigrated.

Each tag remains in effect until the interpretation is toggled by the use of the other tag (or until the end of the speak request). For example:

Input	Pronunciation
\ny0 1945 \ny1 people emigrated in 1945.	One thousand nine hundred forty five people emigrated in nineteen forty five.

English dates

Use the date tag to specify the format of an immediately following date. This tag allows you to specify the order of the month and day elements in a date, so that month names can replace the neutral numeric reading.

Date tag	Description
\date:dmy	The following text is a date in day, month, year order.
\date:mdy	The following text is a date in month, day, year order.

For example:

Input	Pronunciation
\date:dmy 3/4/1998	april third, nineteen ninety-eight
\date:mdy 3/4/1998	march fourth, nineteen ninety-eight



NOTE

- ❑ The date tag applies only to the immediately following token. If that token is not a date, the tag is ignored.
- ❑ The date tag works correctly only if the following date is in a recognized date format. (See “Dates” on [page 7](#) for details on recognized formats.) The date tag cannot be used to force a date reading of other date formats.
- ❑ You can specify the default interpretation of dates within an entire document with the text locale tag.
- ❑ The date tag overrides a default specification from a text locale tag for the immediately following token.
- ❑ If the format specified in a date tag is inconsistent with the contents of the date, the tag is ignored. In this example, the “21” cannot refer to a month:

Input	Pronunciation
<code>\!date:dmy 4/21/1958</code>	april fourth, nineteen fifty-eight

Text locale tag

Use the locale tag at the beginning of a document to specify the locale of that document’s origin. This tag currently controls default date formats.

Locale tag	Description
<code>\!locale:US</code>	Assume all dates are mdy format.
<code>\!locale:GB</code>	Assume all dates are dmy format.
<code>\!locale:AU</code>	Assume all dates are dmy format.

Note that the date tag can override the locale tag for a single date. The default setting resumes following that date. For example:

Input	Pronunciation
<code>\!locale:US 3/4/1998,</code> <code>\!date:dmy 5/6/1984, and</code> <code>7/8/1981</code>	march fourth, nineteen ninety-eight, june fifth, nineteen eighty- four, and july eighth, nineteen eighty-one



Symbolic Phonetic Representations

The following tables show the inventory of available symbols for use in en-AU Symbolic Phonetic Representations (SPRs). Use this chapter in conjunction with the SPR information found in the *Speechify User's Guide*.

Each sound symbol is accompanied by examples illustrating typical spellings of the sound in actual words, with the letters representing the given sound bolded. Due to dialectal differences, the SPR examples shown may not always agree with your own pronunciations.

Vowels

The following table includes the en-AU symbols for vowels.

Symbol	Example words
i	see , speak , believe
I	pick , ill , fear
e	cake , pain
E	hedge , let , fair
A	back , had
H	mug , son
R	hurt , farmer
u	zoo , truth
U	took , put , tour

Symbol	Example words
o	both, oak
c	law , court , hall , water
@	rod , cough
a	path , father , car
x	sofa, alone , fear, tour , fair
X	roses, hint
Y	life , try , light , feisty
O	toil , boy
W	out , cow

Consonants

The following table includes the en-AU symbols for consonants.

Symbol	Example words
b	bad , sob
C	chip , witch
d	dip , had
D	this , breathe
f	field , if , graph
g	good , bug
G	sing , finger
h	hot , hero
J	judge , huge
k	kill , make , back
l	low , hall
L	cattle , bottle , curdle
m	man , hum , summer

Symbol	Example words
n	n ever, sun n , win n er
N	driven N , didn't N
p	p it, ri p
r	bor r ow, ra k e
s	seal, miss s , ceil ing
S	s hip, wi s h
t	t ip, pe t
T	t hing, Be th
v	v ase, sa v e
w	w ear, qu ic k
y	y es, Austr alia
z	z ip, pha s e
Z	treas u re, reg im e

Syllable stress

You can mark syllables for stress with a digit. The following table includes the en-AU symbols for syllable stress.

0	no stress
1	primary stress (most prominent stress in the word)
2	secondary stress

If a word has more than one syllable, you can mark one of these syllables for primary stress, and mark others for secondary stress or no stress.

A syllable that is not marked for stress is assumed to have no stress, unless it is the only syllable of a word, in which case it is assigned a primary stress.

The syllable stress marker should be within the boundaries of the syllable, and to the left of the vowel. If you do not know where the syllable boundaries in a word like *construction* are located, any of the following SPRs correctly place the primary stress on the second vowel:

```
construction
\! [kXn1strHkSXn]
\! [kXns1trHkSXn]
\! [kXnst1rHkSXn]
\! [kXnstr1HkSXn]
```

Syllable boundary

The following table includes the en-AU symbol for a syllable boundary.

.	(period) beginning of a syllable
---	----------------------------------

Sample SPRs

The following table shows some example SPRs.

Word	SPR
fear	\! [1fIx]
hair	\! [1hEx]
tour	\! [1tUx]
couldn't	\! [1kUdNt]
chance	\! [1CAns]
indooroopilly	\! [2Indrxp1Ili]
frasier	\! [1freZR]



Phoneme marks

The phoneme-mark data structure is useful for matching each moment of synthesized speech with the phonemes being spoken. This information is particularly useful when you synchronize facial animation with speech output.

The structure is returned to your application's callback function, which is described under “SWIttsCallback()” in the API reference section of the *Speechify User's Guide*. Each phoneme-mark contains the phoneme name, along with other information about the phoneme. The phoneme-mark symbols for en-AU are documented in the following table.

Note: The phoneme names used in phoneme marks are not necessarily the same as those used for SPR input.

Phone	Example
aa	path, father, car
ae	back, had
ah	but, mug, son
ao	law, court, hall
aw	out, cow
ax	sofa, alone
ay	life, fine
b	bad, sob
ch	chip, witch
d	dip, had

Phone	Example
dh	th is, breathe
eh	h ed ge, l et
el	catt le , bott le
en	driven l , didn't
er	hur t , ear th
ey	ca k e, pai n
e@	fai r , wea r
f	fi el d, i f , gra ph
g	g oo d, bu g
hh	h o t, h er o
ih	pi ck , i ll
ix	ros e s, di s ease
iy	s ee , sp ea k, beli ev e
i@	f ea r, care er
jh	J an e, hug e
k	ki ll , ma k e
l	l o w, ha ll
m	ma n , hu m , su mm er
n	ne ve r, su n , wi nn er
ng	si ng , fi ng er
oh	ro d , cou gh
ow	bo th , o a k
oy	toi l , bo y
p	pi t , ri p
pau	[Indicates a pause]
r	bor ro w, ra k e
rx	"labour is...", "for a..."

Phone	Example
s	seal, miss, ceiling
sh	ship, wish
t	tip, pet, kitten
th	thing, Beth
uh	took, put
uw	zoo, truth
u@	mature, tour
v	vase, save
w	wear, quick
y	yes, Australia
z	zoo, phase
zh	treasure, regime



User Dictionaries

This chapter describes Australian English behaviors for Speechify dictionaries. Use this chapter in conjunction with the dictionary information found in the *Speechify User's Guide*.

The maximum length for Australian English dictionary keys is 128 characters. The maximum translation length is 512 characters.

Main dictionary

The main dictionary is an all-purpose user dictionary for replacing a word in an input text with almost any type of input string. Main dictionary entries are case-sensitive.

For Australian English, lookups in the main dictionary ignore an attached apostrophe followed by the letter s ('s) as used to indicate possession. For example, if *WHO* is a main dictionary key translating to *World Health Organization*, it will match an input string *WHO's offices*, yielding the pronunciation *World Health Organization's offices*.

Valid main dictionary entries

The following table summarizes the valid main dictionary keys and translations:

Valid key requirement	Valid translation
Latin 1 letters (both upper and lower case), digits. Non-alphanumeric characters, including: @, #, \$, %, &, *, + Apostrophes, quotation marks, parentheses, brackets, etc. Punctuation, except as the final character.	Anything that is valid input to the text-to-speech engine, including whitespace, punctuation, SPRs, and embedded tags.
Disallowed: white space	Disallowed: SAPI tags, SSML tags, and bookmarks

Main dictionary examples

The following table shows examples of main dictionary entries:

Key	Translation
DIMIA	Department of Immigration and Multicultural and Indigenous Affairs
ECSU	\![1i] \![1si] \![1Es] \![1yu]
safekeeping	safe keeping
WYSIWYG	\![1wI0zi0wIg]
stone@ccom.co.au	ess tee one at c com dot c o dot ey u
486DX	4 eight six \![di] ecks

Abbreviation dictionary

The abbreviation dictionary handles word abbreviations that translate to one or more words in ordinary spelling. The entries are case-sensitive.

For Australian English, lookups in the abbreviation dictionary ignore an attached apostrophe followed by the letter s (s) as used to indicate possession. For example, if *Inc.* is an abbreviation dictionary key translating to *Incorporated*, it will match an input string *SpeechWorks International Inc.'s offices*, yielding the pronunciation *SpeechWorks International Incorporated's offices*.

Valid abbreviation dictionary entries

The following table summarizes the format of valid keys and translations in the abbreviation dictionary:

Valid key requirement	Valid translation
Sequences of one or more letters optionally separated by periods (x.x.x or xx.xx.xx). Sequences of letters, with or without the trailing period that may be considered part of the abbreviation (xxx. or xxx). Internal apostrophes (not the first or last character in the sequence). Upper or lower case letters.	One or more valid words in ordinary spelling, including both upper and lower case letters, separated by white space or hyphen.
Disallowed: digits, non-alphabetic symbols, white space, or punctuation (except periods).	Disallowed: digits, punctuation, SPRs, or embedded tags.

Abbreviation dictionary examples

The following table shows examples of abbreviation dictionary entries:

Key	Translation
Is.D.	eye ess dee
Ltjg	Lieutenant Junior-Grade
int'l	international

Root dictionary

The root dictionary is used for ordinary words, like nouns (including proper names), verbs, or adjectives. Unlike the main and abbreviation dictionaries, it is not case-sensitive.

The Australian English root dictionary requires that all forms of a word (for example, singular and plural forms) must be entered separately. You must create separate root dictionary entries for each word that is based on a given root in order to customize the pronunciation in all cases. For example, you should create individual root dictionary entries for *roof*, *roofs*, *roof's*, *roofed*, *roofing*, *roofer*, *reroof*, etc., in order to generate the desired pronunciation in each instance.

Allowable root dictionary entries

The following table summarizes the format of valid keys and translations in the root dictionary:

Key	Translation
A single word in ordinary spelling, all lowercase letters.	A single word in ordinary spelling. A valid SPR.
Disallowed: digits, punctuation, or other non-alphabetic characters; white space	Disallowed: digits, punctuation, or other non-alphabetic characters, white space, tags, and annotations

Root dictionary examples

The following table shows examples of root dictionary entries:

Key	Translation	Would apply to...
wilhelmina	Wilma	wilhelmina, Wilhelmina
miyuki	\[0mI.1yu.0ki]	miyci, Miyci



W3C SSML

Speechify includes support for input text formatted according to the W3C Speech Synthesis Markup Language (SSML).

In order to invoke the correct processing for Australian English text, the given W3C SSML input must have the `xml:lang` attribute set to “en-AU”. If this attribute is absent, Speechify assumes “en-US” as a default.

In addition to producing Australian English output, the W3C SSML processor for en-AU parses and expands tag content in a manner consistent with that locale. For example, the tag `<say-as type = "currency">10.20</say-as>` is pronounced “ten dollars and twenty cents.”

For more description of W3C SSML support in Speechify, see the *Speechify User's Guide*.

Index

Symbols

\!date 24
\!locale 25
\!ny0 23
\!ny1 23

A

abbreviation dictionary 37
abbreviations 16
acronyms 17
alphanumeric sequences 15
Australian dollars 10

B

billions 14
boundaries of syllables 30

C

Canadian dollars 11
cardinal numbers 4
consonants 28
currency
 Australian dollars 10
 Canadian dollars 11
 euros 12
 floating point numbers 14
 Hong Kong dollars 11
 negative 13
 New Zealand dollars 12
 pence 13
 pounds 13
 prenominal 15
 Singapore dollars 12
 US dollars 11

D

dash 21
dates 7
dictionaries
 abbreviation 37
 main 35
 root 38
 user 35

E

e-mail addresses 18
embedded tags 23
 date 24
 locale 25
 numbers and years 23
euros 12

F

file names 19
floating point numbers 5
 currency 14
fractions 5

H

Hong Kong dollars 11

L

locale embedded tag 25

M

main dictionary 35
millions 14

N

negative currency 13
negative numbers 5
New Zealand dollars 12
numbers
 cardinal 4
 floating point 5
 fractions 5
 negative 5
 zero-initial 6
numbers and years
 embedded tag 23
numeric expressions 7

P

parentheses 20
paths 19
pence 13
per 21
phone numbers 15
phoneme mark 31
pounds 13
prenominal currency 15
punctuation 20

R

root dictionary 38

S

Singapore dollars 12
slash 21
SPR
 examples 30
SPR symbols
 consonants 28
 vowels 27
SSML 39
stress, syllable 29

support services 2
syllable boundary 30
syllable stress 29

T
thousands 14
trillions 14

U
URLs 19
US dollars 11
user dictionaries 35

V
vowels 27

Z
zero-initial numbers 6