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CONVERSANT®
Voice Information System

Version 4.0
Text-to-Speech

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About This Book

Purpose

This book provides the information needed to use the Text-to-Speech packages of the INTUITY CONVERSANT Voice Information System (VIS). Refer to "Types of Text-to-Speech Packages Available" in Chapter 1, "Overview of Text-to-Speech," for a list of the available Text-to-Speech packages.

Intended Audiences

This book is intended for United States (U.S.) customers, as well as Latin American and Castilian Spanish-speaking customers only. The intended audiences for this book are as follows:

- End customer application developers responsible for creating and maintaining applications on an INTUITY CONVERSANT VIS.
- Custom application developers responsible for creating applications for use on an INTUITY CONVERSANT VIS end-user customer environment

  This audience includes any of the custom application development organizations within AT&T.
- Application distributors who distribute and implement applications for end-users

  This audience includes Independent Software Vendors (ISV) and Voice Processing Co-marketers (VPC).

How This Book Is Organized

This book is organized into the following chapters:

- Chapter 1 — "Overview of Text-to-Speech"

  This chapter provides an overview of the INTUITY CONVERSANT Text-to-Speech packages.
- Chapter 2 — “Configuring Text-to-Speech”

  This chapter includes instructions for installing TTS hardware, installing TTS software, assigning TTS functionality, assigning telephony channels, deleting telephony channels, and displaying telephony channels.
- Chapter 3 — "Using Text-to-Speech with Script Builder"

  This chapter includes descriptions of the tts_file, CtvConfig, and Sayesp external actions. The tts_file external action allows a Script Builder application access to U.S. English Text-to-Speech. The CtvConfig and the Sayesp external actions allows access to the Castilian Spanish and the Latin American Spanish Text-to-Speech packages.
- Chapter 4 — "Writing Text-to-Speech Applications in Script Language"

  This chapter includes a summary of the *say* script instruction. The *say* instruction instructs the INTUITY CONVERSANT VIS to play ASCII text stored in a buffer.
- Chapter 5 — "Advanced Text-to-Speech Features"

  This chapter includes information on customizing synthesized speech by including escape sequences to add silence delays, changing the speaking rate, marking text as belonging to a specific text category, and changing the volume level of outgoing text.

- Appendix A — “Using Castilian Spanish and Latin American Spanish Text-to-Speech”

  This appendix includes information regarding the Castilian Spanish and Latin American Spanish Text-to-Speech user interface.

- Appendix B — “Spanish Text-to-Speech Abbreviations”

  This appendix contains a complete list of all Spanish abbreviations that are included with the Castilian Spanish and Latin American Spanish Text-to-Speech packages.

- Appendix C — "Spanish Text-to-Speech Application"

  This appendix includes an example of a Spanish Text-to-Speech application.

Conventions Used in This Book

The following typographic conventions are used in this book:

- Terminal keys
  - Terminal keys are shown in rounded boxes. For example, an instruction to press the enter key is shown as

    Press [ENTER].

  - Function keys (also known as *soft* keys) are shown in rounded boxes followed by the function of that key in parentheses. For example, an instruction to press function key 3 is shown as

    Press [F3] (CHOICES).

  - Two or three keys that you press at the same time (that is, you hold down the first key while pressing the second and/or third key) are shown as a series of rounded boxes. For example, an instruction to press and hold [ALT] while typing the letter **d** is shown as

    Press [ALT] [D].

- User input
  - The word *enter* means to type a value and press [ENTER]. For example, an instruction to type **y** and press [ENTER] is shown as

    Enter **y** to continue.

  - The word *type* means to press the key or sequence of keys specified. For example, an instruction to type **y** is shown as

    Type **y** to continue.

    Do *not* press [ENTER] after you type the value specified.

- The word *select* is used to mean the following: move to the desired menu item using the arrow keys and press [ENTER]. For example, an instruction to select an item from a menu and press [ENTER] is shown as

  Select Configuration Management from the Voice System Administration menu.

- Information that you enter or type from your terminal keyboard is shown in **bold** type; for example

  Enter **root** at the `Console Login` prompt.

- Command and file names and their parameters are shown in **bold** type. Variable parameters are shown in ***bold italic*** type when they are part of a user input and in *regular italic* type when they are not. All are illustrated in the following example:

  Use the **print** command to print your report. The command syntax is **print *reportname,*** where *reportname* is the name of the report to be printed.

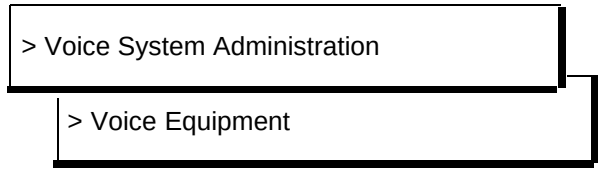
■ Screen displays

- Information that is displayed on your terminal screen — including screen displays, prompts, script code, and system messages — is shown in `typewriter-style` type; for example

  ```
  Installation is in progress -- do not remove
  the floppy disk.
  ```

- The sequence of menu options that you must select to display a specific screen is shown as follows:

  Begin at the CONVERSANT Administration menu, and select the following sequence:



  In this example, you would first access the CONVERSANT Administration menu. Then you would select the Voice System Administration option to display the Voice System Administration menu. From that menu, you would select the Voice Equipment option to display the Voice Equipment screen.

- The screens shown in the CONVERSANT library are only examples. Your screens may not appear exactly as illustrated.

Related Resources

The following books are suggested to be used in conjunction with this book:

- *CONVERSANT VIS V4.0 Script Builder,* 585-350-704
- *CONVERSANT VIS V4.0 Operations,* 585-350-703
- *CONVERSANT VIS V4.0 Hardware Installation,* 585-350-107/108/109

Refer to the *CONVERSANT VIS Documentation Guide,* 585-350-002, for a complete list of CONVERSANT documentation.

Technical Updates

Every effort was made to ensure that the information contained in this book is technically accurate. There are instances however, when an INTUITY CONVERSANT VIS Version 4.0 product behaves differently than documented.

An online bulletin board (Access) is available to all INTUITY CONVERSANT VIS Version 4.0 customers that provides supplemental information about this product in an electronic format. These updates include hints, tips, and exceptions about an INTUITY CONVERSANT VIS Version 4.0.

Access is available 24 hours-a-day, seven days-a-week to subscribers. To receive electronic INTUITY CONVERSANT Access articles, call 1-800-242-6005 and ask for department 186.

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Overview of Text-to-Speech

1

Information in This Chapter

This chapter provides an overview of the INTUITY CONVERSANT Text-to-Speech feature.

Introduction

Text-to-Speech (TTS) allows you to include speech in your application by taking text as input and producing synthesized speech spoken in a male voice. You can use TTS to produce text for prompts, text retrieved from a database or host, or as a text file spoken in an application. You can use TTS in your application by entering the text to be spoken into your Script Builder application or your TSM script. Refer to Chapter 3, "Using Text-to-Speech with Script Builder," for more information about using TTS with Script Builder. Refer to Chapter 4, “Writing Test-to-Speech Applications in Script Language” for more information about using TTS in your TSM application.

The TTS feature is ideal for speaking frequently changing text, such as names and addresses in a database. You can also use the TTS feature for the development of new applications that previously were not possible because their recorded speech data files were too large to store and maintain.

The following list offers several situations in which you can use TTS:

- Large databases with frequent changes

  For example, without Text-to-Speech, a locator service database of more than 50,000 names is not only impractical to record (or to record with accurate pronunciation) but also requires a large amount of disk storage for digitized speech. Database entries (names) may be added or deleted frequently, increasing the amount of administrative support required.

  The Text-to-Speech feature provides a less expensive, more practical alternative by storing the data in text format (compared to digitized speech) and allowing the administrator to update the database quickly and easily. The Text-to-Speech feature also provides greater pronunciation accuracy.

- Dynamic information

  For example, when users of electronic mail are out of their offices (not at a terminal and no FAX machine available), telephone access provides an easy way for users to retrieve their messages. With a customized E-mail system and a script using Text-to-Speech, Text-to-Speech could read messages to the callers.

- Prototyping

  Instead of recording speech in application prototypes, developers can type the appropriate prompts, then use Text-to-Speech to demonstrate or test the application.

Types of Text-to-Speech Packages Available

Text-to-Speech is available in three separate offers:

- United States English

  The United States English package is titled as follows:
  “CONVERSANT VIS V4.0 Text-to-Speech”

- Castilian Spanish

  The Castilian Spanish package is titled as follows:
  “CONVERSANT VIS V4.0 Text-to-Speech Package — Spanish”

- Latin American Spanish

  The Latin American Spanish package is titled as follows:
  “CONVERSANT VIS V4.0 Text-to-Speech Package — LA Spanish”

If differences exist in the features that are available for each package, the differences are discussed in the appropriate sections of this book.

Requirements

The requirements for Text-to-Speech are as follows:

- Text-to-Speech software package
- AYC9 Signal Processor (SP) circuit card

  The SP circuit card must have 8MB of RAM. A single SP card supports up to six channels of simultaneous TTS.

For the software installation procedure, see Chapter 2, "Configuring Text to Speech." For instructions on how to install the AYC9 SP, see the INTUITY CONVERSANT VIS Version 4.0 Hardware book specific for your platform.

How Text-to-Speech Works

Text-to-Speech (TTS) is an advanced option that eliminates the need for recording speech. You enter the phrases to be spoken, and TTS synthesizes the speech. Basically, TTS converts text to speech in the following manner:

- The text is filtered to identify the sentence and phrase boundaries, expand conventional abbreviations, and translate non-alphabetic characters (for example, $5 is translated to “five dollars”). This step applies only to the U. S. English TTS package.
- Each word is labeled according to the part it plays in the text (noun, verb, preposition, etc.)
- The text is analyzed to determine pronunciation and emphasis.
- The text is further analyzed to determine timing and pitch, which is then associated with the pronunciation analysis.
- Synthesis converts the analyzed text into speech.

The TTS technology involves constructing speech by concatenating units of speech. When constructing speech from these units, the TTS feature adjusts parameters, such as pitch and duration, to make the outcome sound natural. Text filtering is critical because it:

- Expands abbreviations appropriate to the context (for example, “Dr.” could be expanded to “doctor” or “drive”, depending on the context)

  NOTE:
  The example above is an U. S. English example. Abbreviations vary depending on the language (for example, the Spanish abbreviation for doctor is “doct”). Refer to Appendix B, “Spanish Abbreviations,” for a list of all the Spanish abbreviations that come with the Latin American Spanish TTS package and the Castilian Spanish TTS package.

- Adjusts for inappropriate punctuation (for example, “Dr” with or without a period is interpreted in the same way)
- Identifies names and addresses for special handling

TTS functionality is supported through the CONVERSANT Script Builder menu interface as well as with a TSM script instruction. The WholeWord Speech Recognition talk-off function and other VIS features for voice response work with the U. S. English TTS package just as they work with speech files. The U. S. English TTS package also allows an application developer to use both prerecorded phrases and TTS in the same application. See Chapter 3, “Using Text-to-Speech with Script Builder,” for more information on using Text-to-Speech in your Script Builder application. See Chapter 4, “Writing Text-to-Speech Applications in Script Language,” for more information on using Text-to-Speech in your TSM application. See *CONVERSANT VIS Version 4.0 WholeWord and FlexWord Speech Recognition,* 585-350-824, for more information about the

talk-off feature. The talk-off feature works only with the U. S. English TTS package.

With some U.S. English TTS applications, you may need to further customize the use of synthesized speech — for example, by adding silence delays, changing the speaking rate, or marking text as members of a more specific text category. While you can alter the manner in which TTS speaks a phrase, some applications require that you use escape sequences placed before, within, or after the spoken text. Refer to Chapter 5, “Advanced Text-to-Speech Features,” for several ways to alter the manner in which TTS speaks a phrase.

NOTE:
You can only customize synthesized speech with the U.S. English TTS package.

Benefits of Text-to-Speech

The following are the technological benefits to using the TTS feature:

- Ready-to-run

  No pronunciation instructions or dictionaries are required. TTS is equipped with extensive dictionaries.

- Automatically recognizes name and address data

  TTS knows all common last names in existence and can pronounce them with uncommon accuracy.

- Expands abbreviations appropriate to the context

  For example, TTS knows when “Dr.” should be spoken as “doctor”/“doct” or “drive,” depending on the context in which it appears. For more information, refer to Chapter 5, “Advanced Text-to-Speech Features.”

  NOTE:
  Abbreviations vary depending on the language (for example, the Spanish abbreviation for doctor is “doct,” whereas the U.S. English abbreviation for doctor is “Dr.”).

Configuring Text-to-Speech

2

Information in This Chapter

This chapter includes instructions for the following:

- Installing Text-to-Speech hardware
- Installing Text-to-Speech software
- Assigning Text-to-Speech functionality
- Assigning telephony channels
- Deleting telephony channels
- Displaying telephony channels

Installing Text-to-Speech Hardware

The Text-to-Speech feature requires an analog TR card and an AYC9 Signal Processor (SP) card dedicated to the Text-to-Speech function. A single SP card supports up to six channels of simultaneous Text-to-Speech.

NOTE:
Although an SP card is not required to install the Text-to-Speech software, it is required for the operation of Text-to-Speech.

For information on installing the necessary hardware, see *CONVERSANT Voice Information System Version 4.0 Hardware Installation,* 585-350-107/108/109.

Checking the SP Switch Settings

You need to set the switch on the SP card before installing the Text-to-Speech software. Refer to Chapter 7, *"Installing VIS Circuit Cards" of CONVERSANT Voice Information System Version 4.0 Hardware Installation,* 585-350-107/108/109, for information about where the switch is located on the SP card and how you should set the switch.

Installing Text-to-Speech Software

This section includes information about installing the Text-to-Speech software. The following packages must be loaded in order for the Text-to-Speech package to be loaded:

- CONVERSANT VIS V4.0 Application Software
- CONVERSANT VIS V4.0 Application Software Update

  You need to install the Application Software Update if you are using either the Castilian Spanish or Latin American Spanish Text-to-Speech package.

  NOTE:
  The Castilian Spanish package requires the Application Software Update dated 8/94, whereas the Latin American Spanish package may use the Application Software Update dated 8/94 or 11/95.

- CONVERSANT VIS V4.0 SP Card Driver

The United States English Text-to-Speech package requires approximately 8 Mbytes of hard disk space, whereas the Castilian Spanish and Latin American Spanish packages require approximately 3 Mbytes of hard disk space. Make sure enough space is available in the root (/) directory of your system before beginning the installation.

NOTE:
If you are installing the Text-to-Speech feature package as part of the initial software load, refer to Chapter 4, *"Installing Software for Options/Features" of CONVERSANT Voice Information System Version 4.0 Software Installation,* 585-350-111, for more information.

Installing the Text-to-Speech Software

This section includes the procedure for installing the Text-to-Speech software. The procedure is the same regardless of the Text-to-Speech package you are loading.

1. Enter **installpkg**

   If the voice system is not running, the system response is as follows:

   ```
   Please indicate the installation medium you intend to
   use.  Strike C to install from CARTRIDGE TAPE or F to
   install from FLOPPY DISKETTE.
   Strike ESC to stop.
   ```

2. Press **f**

   System response:

   ```
   Insert the floppy disk.
   ```

```
Strike ENTER when ready
or DEL to cancel.
```

NOTE:
The voice system must be stopped to install the software. If the system is running when you attempt to install the package, the following message will appear:

```
Is it okay to stop the voice system? (y/n):
```

If the answer to this prompt is "no," the installation of the software will abort. If the answer is "yes," the software will be installed, and then the voice system will be restarted.

3. Insert the first floppy disk and press [ENTER].

   System response:

   `Installation in progress -- do not remove the floppy diskette.`

   The system will prompt you when the second floppy disk needs to be inserted. When the system has finished installing, you receive one of the following system responses, depending on the TTS package you are installing:

   `The installation of the Text-to-Speech package is now complete.` (U.S. English TTS)

   `The installation of the Spanish Text-to-Speech package is now complete.` (Castilian Spanish TTS}

   `The installation of the Latin American Spanish Text-to-Speech package is now complete.` (Latin American Spanish TTS)

4. Make sure that the light on the floppy disk drive is off. When it is off, remove the floppy disk.

   You have completed this procedure.

Removing the Text-to-Speech Software

Before you remove the TTS software, make sure that the TTS functionality is not used by any scripts running on the system. Also, be sure that you have unassigned the TTS function from any SP cards before removing the package.

1. Enter **removepkg**

   If the voice system is not running, the system responds by displaying a numbered list of installed packages.

NOTE:
The voice system must be stopped to remove the software. If the system is running when you attempt to remove the package, the following message appears:

```
Is it okay to stop the voice system? (y/n):
```

NOTE:
If the answer to this prompt is “no,” the removal of the software aborts. If the answer is “yes,” the software is removed, and then the voice system restarts.

2. Enter the number associated with the TTS software package.

   When the prompt is returned, the TTS software package has been removed.

Assigning Text-to-Speech Functionality

This section includes instructions for assigning TTS or SP_TTS functionality to an SP card. You assign TTS functionality if you are using the United States English TTS package, and you assign SP_TTS functionality if you are using the Castilian Spanish or Latin American Spanish TTS packages.

Prerequisites for Assigning TTS Functionality

The following prerequisites are required before assigning TTS functionality:

- Each of the TTS packages require that a SP card (AYC9 version) be dedicated to speaking text. For T/R (VRS6) and T1 cards, a second SP is required to play encoded speech. For T/R (IVP6 or IVP4) cards, no second SP is required.
- The SP must be in the manoos state before you can assign TTS functionality to the SP. Refer to the following section, “Changing the State of the SP,” for the procedure to place the SP in the manoos state.

Changing the State of the SP

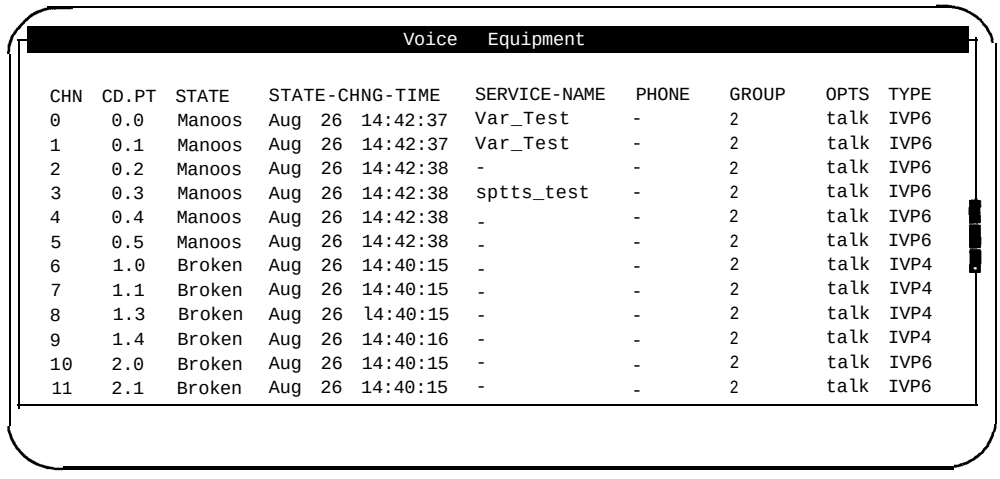
To change the state of the SP to manoos, perform the following procedure:

1. Select Equipment from the Configuration Management menu. The Voice Equipment menu appears as shown in Figure 2-1.
2. Press [F8] (CHG-KEYS).
3. Press [F2] (CHGSTATE).

   The Change State of Voice Equipment window appears as shown in Figure 2-2.

   NOTE:
   Figure 2-2 is an illustration of placing an SF card in the manoos state for Spanish Text-to-Speech.

4. Enter **manoos** in the New State field.



Voice Equipment

CHN	CD.PT	STATE	STATE-CHNG-TIME	SERVICE-NAME	PHONE	GROUP	OPTS	TYPE
0	0.0	Manoos	Aug 26 14:42:37	Var_Test	-	2	talk	IVP6
1	0.1	Manoos	Aug 26 14:42:37	Var_Test	-	2	talk	IVP6
2	0.2	Manoos	Aug 26 14:42:38	-	-	2	talk	IVP6
3	0.3	Manoos	Aug 26 14:42:38	sptts_test	-	2	talk	IVP6
4	0.4	Manoos	Aug 26 14:42:38	-	-	2	talk	IVP6
5	0.5	Manoos	Aug 26 14:42:38	-	-	2	talk	IVP6
6	1.0	Broken	Aug 26 14:40:15	-	-	2	talk	IVP4
7	1.1	Broken	Aug 26 14:40:15	-	-	2	talk	IVP4
8	1.3	Broken	Aug 26 l4:40:15	-	-	2	talk	IVP4
9	1.4	Broken	Aug 26 14:40:16	-	-	2	talk	IVP4
10	2.0	Broken	Aug 26 14:40:15	-	-	2	talk	IVP6
11	2.1	Broken	Aug 26 14:40:15	-	-	2	talk	IVP6

Figure 2-1. Voice Equipment Window

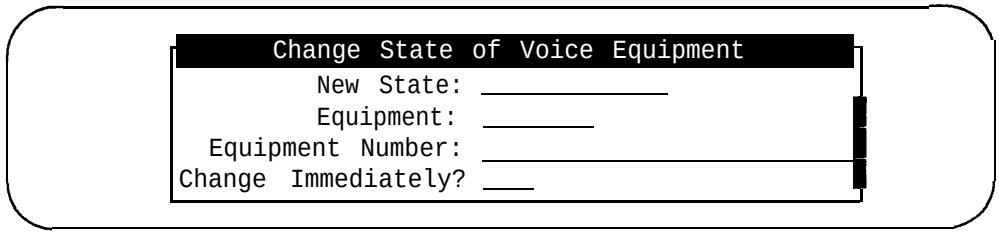


Figure 2-2. Change State of Voice Equipment Window

Assigning Functionality

To assign TTS or SP_TTS functionality to an SP card, perform the following procedure:

1. Select Configuration Management from the Voice System Administration menu. The Configuration Management menu appears.
2. Select Equipment from the Configuration Management menu.

   The Voice Equipment window appears as shown in Figure 2-2.
3. Press [F8] (CHG-KEYS).
4. Press [F3] (ASSIGN) to display the Assign menu.
5. Select Functions to SP Cards from the Assignment. The Assign Functions to SP Cards window appears as shown in Figure 2-3.

CAUTION:
Assignments made in the Assign Functions to SP Cards menu will overwrite any other assignments currently in effect on the specified card(s). Take caution when making assignments and re-assignments.

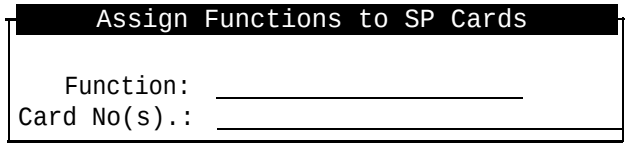


Figure 2-3. Assign Functions to SP Cards Window

6. Press [F2] (CHOICES). The Assign Function menu appears as shown in Figure 2-4.

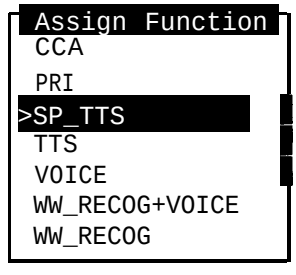


Figure 2-4. Assign Function Menu

7. Select TTS or SP_TTS from the Assign Function menu.

NOTE:
You assign TTS functionality if you are using the United States English TTS package, and you assign SP_TTS functionality if you are using the Castilian Spanish or Latin American Spanish TTS packages.

8. Type the SP card number(s) or ranges in the Card No(s) field. This is the card that you want to dedicate to use for the TTS feature.
9. Press [F3] (SAVE) to save the assignment.

10. Select Equipment from the Configuration Management menu. The Voice Equipment menu appears as shown in Figure 2-1.
11. Press [F8] (CHG-KEYS).
12. Press [F2] (CHGSTATE).

    The Change State of Voice Equipment window appears as shown in Figure 2-2.
13. Enter **inserv** in the New State field.

For more information on assigning functionality and service and changing card states, refer Chapter 3, “Configuration Management” of *CONVERSANT Voice Information System Version 4.0 Operations,* 585-350-703.

Using the spfunc Command

This section includes a description of the optional **spfunc** command that can be used to assign U.S. English, Castilian Spanish, or Latin American Spanish TTS functionality to SP cards.

Synopsis

spfunc *[card number]* sp_tts
spfunc *[card number] tts*

Example

The following is an example of the commands to be used if SP_TTS functionality is to be assigned to card 6:

/vs/bin/remove ca 6

/vs/bin/util/spfunc 6 sp_tts

/vs/bin/restore ca 6

Assigning Telephony Channels

In order to run scripts using Castilian Spanish or Latin American Spanish TTS, the channel running the script must first be assigned to Castilian Spanish or Latin American Spanish TTS due to the constant one-to-one mapping of SP resources to channels. This section includes information on assigning telephony channels to Castilian Spanish or Latin American Spanish TTS using the **sptts_assign** command.

Using the sptts_assign Command

This section includes a description of the **sptts_assign** command. You can use the **sptts_assign** command to assign a telephony channel to an SP resource assigned to Castilian Spanish or Latin American Spanish TTS.

Synopsis

sptts_assign *[channel(s)]*

Description

In order to assign channels, the Castilian Spanish or Latin American Spanish TTS resource must be assigned to an AYC9 SP card. You cannot use the **sptts_assign** command to assign more telephony channels to Castilian Spanish or Latin American Spanish TTS than there are SP resources allocated to Castilian Spanish or Latin American Spanish TTS..

NOTE:
A single AYC9 SP card can handle up to six telephony channels.

The return codes from this command are listed in Table 2-1.

Table 2-1. Return Field Values and Descriptions

Value	Description
0	Action completed successfully
1	Too few arguments
2	Could not read configuration file
3	Could not open configuration file
4	Channel number out of range
5	Not enough SP resources assigned to SP_TTS
6	Invalid channel number format
7	Could not write configuration file
8	Could not attach shared memory
9	Invalid device table

Example

The following is an example of the command to be used for assigning channels 0 through 5 to Castilian Spanish or Latin American Spanish TTS:

/vs/bin/util/sptts_assign 0-5

NOTE:
In order to activate the channel assignments from the **sptts_assign** command, you must stop and restart the INTUITY CONVERSANT VIS.

Deleting Telephony Channels

This section includes information on deleting telephony channels assigned to either Castilian Spanish or Latin American Spanish TTS.

Using the sptts_delete Command

This section includes a description of the **sptts_delete** command. You can use the **sptts_delete** command to delete telephony channels assigned to Castilian Spanish or Latin American Spanish TTS.

Synopsis

sptts_delete ***[channel(s)]***

Description

The return codes from the **sptts_delete** command are listed in Table 2-2.

Table 2-2. Return Field Values and Descriptions

Value	Description
0	Action completed successfully
1	Too few arguments
2	Could not read configuration file
3	Could not open configuration file
4	Channel number out of range
6	Invalid channel number format
7	Could not write configuration file
8	Could not attach shared memory
9	Invalid device table

Example

The following is an example of the command to be used for deleting channels 0 through 5 assigned to Castilian Spanish or Latin American Spanish TTS:

/vs/bin/util/sptts_delete 0-5

NOTE:
In order to activate the channel assignments from the **sptts_delete** command, you must stop and restart the INTUITY CONVERSANT VIS.

Displaying Telephony Channels Assigned to Spanish Text-to-Speech

This section includes information on how you can display telephony channels assigned to Castilian Spanish or Latin American Spanish TTS.

Using the sptts_disp Command

This section includes a description of the **sptts_disp** command. You can use the **sptts_disp** command to display telephony channels assigned to Castilian Spanish or Latin American Spanish TTS.

Synopsis

sptts_disp

Description

The **sptts_disp** command is used to display the channels currently assigned to Castilian Spanish or Latin American Spanish TTS. You do not use any arguments with the **sptts_disp** command. The return codes from the **sptts_disp** command are listed in Table 2-3.

Table 2-3. Return Field Values and Descriptions

Value	Description
0	Action completed successfully
2	Could not read configuration file
3	Could not open configuration file
7	Could not write configuration file

Example

The following is an example of the command to be used for displaying the currently assigned channels to Castilian Spanish or Latin American Spanish TTS:

/vs/bin/util/sptts_disp

Using Text-to-Speech with Script Builder

3

Information in This Chapter

This chapter includes descriptions of the CtvConfig and Sayesp external actions, as well as tts_file, a U.S. English TTS external function. The tts_file directs the system to speak text from an ASCII file and interfaces with the tts_dip to send the file name and start flag. The CtvConfig and the Sayesp external actions are included with the Castilian Spanish and the Latin American Spanish Text-to-Speech packages. Overall, this chapter includes descriptions of how to use your TTS package with Script Builder.

Specifying U.S. English Text-to-Speech with Script Builder

The U.S. English Text-to-Speech package provides an alternative to using recorded speech in your Script Builder application by taking text as input and producing synthesized speech. In other words, Text-to-Speech can *read* text and then *speak* the text in a digitized voice. The text can be used for prompts or for text retrieval from a file, a database, or a host. Text-to-Speech is especially useful for speaking dynamic text; that is, text that changes, such as names and addresses stored in a database.

With the U.S. English TTS package, you can indicate text to be used in the following areas of your application:

- **Announce** action step
- **Prompt & Collect** action step
- **tts_file** external function

Specifying U.S. English Text-to-Speech in an Announce Action Step

For each **Announce** action step in your application, you can have up to 15 lines (750 characters) of text. The text should be in sentence format, or the format most appropriate to the text to be spoken, with correct punctuation and capitalization. Correct punctuation and capitalization help the INTUITY CONVERSANT VIS to determine where to place the emphasis in a sentence so that it sounds normal to the caller.

If you specify Text in the *Type* field of the Define Announce screen, you must enter the text you wish to be spoken in the *Field Name/Phrase Tag/Text String* field. Or you may specify that a field that has been passed from a host or local database should be spoken as text. The Define Announce screen appears as shown in Figure 3-1.

NOTE:
The Text-to-Speech feature recognizes and speaks abbreviations. However, it usually spells out text that is in all capital letters unless it recognizes the text as an abbreviation.

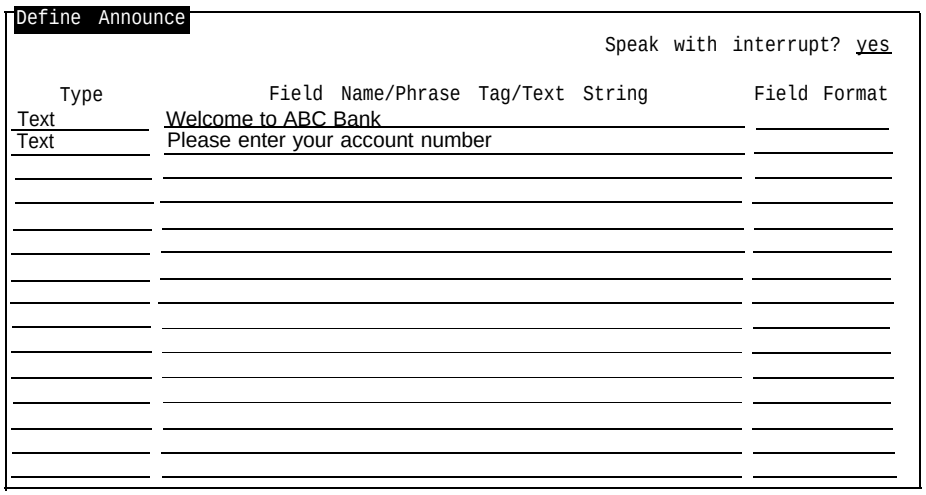


Figure 3-1. Define Announce Screen

Field Format

The choices for the *Field Format* field lists the available Text-to-Speech formats for numeric, date, and time fields similar to those for coded speech (Figure 3-2). The Text-to-Speech formats are those preceded by an “A.” If there is a lot of text to be read that does not match another format (that is, date, dollars, etc.), select "A."

The choices presented are those most commonly used. Other valid formats that may be entered for numeric and dollar values are *AND0-9* and *AN$D0-9.* These formats specify from zero to nine places to the right of the decimal point. For example, the numeric value *123456* spoken with the *AND4* format is spoken “12.3456.”

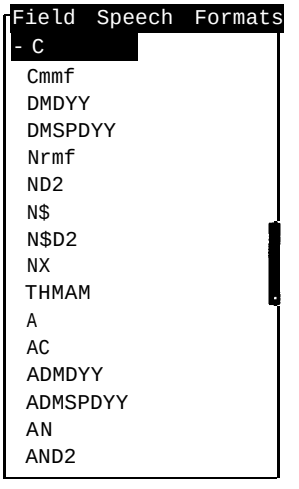


Figure 3-2. Text-to-Speech Options for Field Speech Formats Field

Specifying U.S. English Text-to-Speech in a Prompt & Collect Action Step

The entry in the *Field Format* field of the Define Prompt & Collect screen determines whether the field contents will be spoken using prerecorded speech or with the Text-to-Speech feature. Choosing a field format that begins with "A" invokes the Text-to-Speech feature. The Text-to-Speech field formats function in the same manner as those for prerecorded speech. See Table 3-1 for a list of the Text-to-Speech Field Formats.

Table 3-1. Text-to-Speech Field Formats

Field Value	Field Format	Spoken As
12345	A	"12,345"
12345	AC	"one two three four five"
12345	AN	"12,345"
12345	AND2	"123.45"
12345	AN$	":$12,345"
12345	:AN$D2	"$123.45"
1234	ATHMAM	"12 34 PM"
19910315	ADMDYY	"03 15 1991"
19910315	ADMSPDYY	"March 15th 1991"

NOTE:
The "A" field format causes the contents of a character field to be spoken by the Text-to-Speech feature as verbatim text.

Specifying U. S. English Text-to-Speech with tts_file

The **tts_file** external function directs the system to speak text from an ASCII file and interfaces with the tts_dip to send the file name and start flag. You have access to the **tts_file** external function if you are using the U.S. English TTS package.

The **tts_file** external function is specified in the same manner as any other external function. To specify the **tts_file** external function in your Script Builder application, perform the procedure below:

1. Select **External Function** from the Action Choices menu.
2. Press [F6] (CANCEL) to exit the Action Choices menu.
3. Highlight **External Function** in the transaction definition.
4. Press [F4] (DEFINE).

   The Define External Function screen appears as shown in Figure 3-3.
5. Select **tts_file** from the list of valid external functions. Press [F2] (CHOICES) to see the list of available options (Figure 3-4).

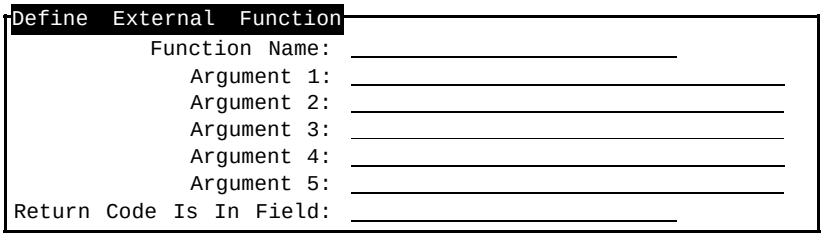


Figure 3-3. Define External Function Screen

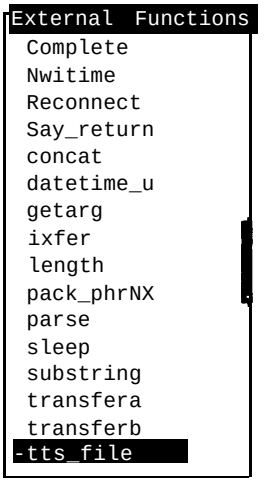


Figure 3-4. External Functions Choices Menu

Two arguments exist for the **tts_file** external function:

- Talkoff Flag

Specifies whether speech playback will stop (“talkoff”) if a user enters a touchtone. If this is set to "1," talkoff occurs. If this is set to “0,” talkoff does not occur.

- File Name

  Name of the file containing the ASCII text to be played. This file must be in the **/vs/data/tts_files** directory. If the file is not in this directory, you must provide an absolute path name (for example, **/usr/dpd/filename).**

If talkoff is turned on and a touchtone digit is received, **tts_file** stops playback of the text and returns to the calling script.

Upon completion, **tts_file** returns one of the following values to the field *Return Code Is In Field:*

- 1 (Talkoff occurred)
- 0 (Function completed successfully)
- -1 (TSM say instruction failed)
- -2 (Resource needed for say instruction not available)
- -3 (ASCII text file not found)
- -4 (dbase call failed or timed out)

Specifying Castilian Spanish or Latin American Spanish Text-to-Speech

Sayesp is an external action provided with the Castilian Spanish and the Latin American Spanish Text-to-Speech packages that plays Spanish text. The Sayesp external action provides a way to play a text string or the contents of an ASCII file. Another feature of the Sayesp external action is touchtone *talk-off.* Touchtone talk-off allows a user to interrupt voice playback by pressing any touchtone number. Experienced callers appreciate being able to shorten the transaction time by not listening completely to each prompt.

To add and define the Sayesp external action in your application, perform the following procedure:

1. Press [F1] (ADD) from the Define Transaction screen. The Action Choices menu appears as shown in Figure 3-5.
2. Select Sayesp from the Action Choices menu and press [ENTER].

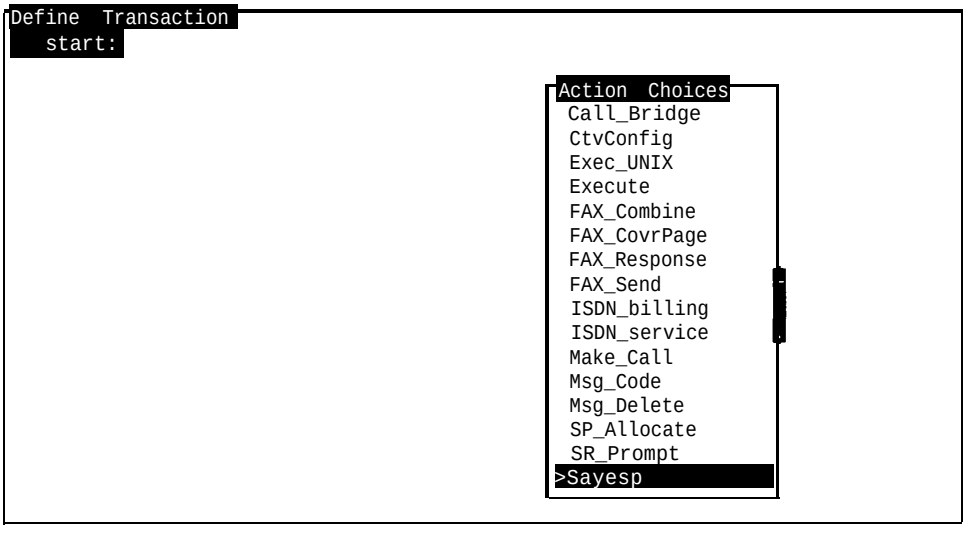


Figure 3-5. Action Choices Window

3. Press [F6] (Cancel).
4. Highlight External Action: Sayesp in the transaction and press [F4] (Define). The Define Sayesp window appears as shown in Figure 3-6.

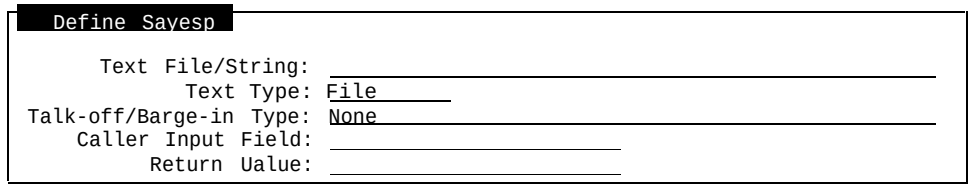


Figure 3-6. Define Sayesp Window

5. Enter the filename or string to be played in the Text File/String field.

   NOTE:
   Script Builder fields can also be selected as valid choices for the Text File/String field.

6. Enter the text type, either *file* or *string,* in the Text Type field. Press [F2] (Choices) to choose from the list of options.
7. Enter the talkoff type in the Talk-off Type field. Press [F2] (Choices) to choose from the list of options. The Talk-off Types menu appears as shown in Figure 3-7. Table 3-2 lists all Talk-off options and their functions.

Figure 3-7. Talk-off Types Window

Table 3-2. Talk-off Options

None	No talk-off used
TouchTone	touchtone talk-off used

8. Enter a field name in the Caller Input Field that stores the input character received during Talk-off. Press [F2] (CHOICES) to choose from the list of options.

NOTE:
Although the Talk-off option may not be used, the Caller Input Field is still required.

After you close the Define Sayesp window, you will be asked to define the field type through the Define Transaction Fields window if this is a new field name.

Define the field as type “char” with a minimum field size of two in the Define Transaction Fields window if necessary.

[9.] Enter an optional numerical return field name in the Return Field field. Press [F2] (CHOICES) to see the list of options.

This field may be tested to determine the status of the Sayesp external action.

After you close the Define Sayesp window, you will be asked to define the field type through the Define Transaction Fields window if this is a new field name.

Define the field as type "num." The values shown in Table 3-3 are acceptable values for the Return Field.

Table 3-3. Return Field Values and Descriptions

Value	Description
0	Action completed successfully
>0	Talk-off occurred. The resulting ASCII code for the digit entered is returned.
-1	Sayesp action failed
-2	SP resource not available
-3	ASCII text file not found
-4	dbase call failed (timeout)
-5	Invalid argument

Specifying the Directory of Text Files

CtvConfig is an external action provided with the Castilian Spanish and the Latin American Spanish Text-to-Speech packages that specifies the directory location of any text files that will be played to the caller. The CtvConfig external action can be specified to change the directory as many times as needed within the application. Once specified, the external action does not need to be reinvoked unless the directory location of text files needs to be changed.

To define the CtvConfig external action, perform the following procedure:

1. Press [F1] (ADD) from the Define Transaction screen. The Action Choices menu appears as shown in Figure 3-8.
2. Select CtvConfig from the Action Choices menu and press [ENTER].

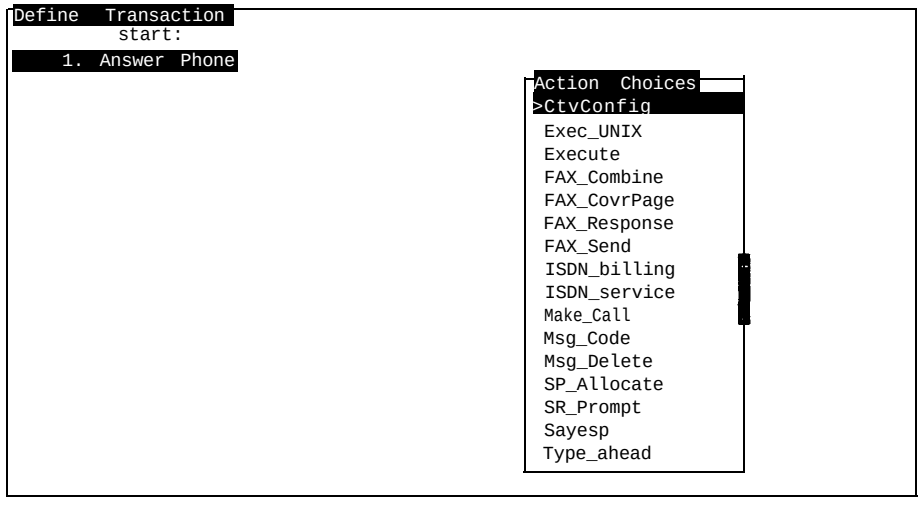


Figure 3-8. Action Choices Window

3. Press [F6] (CANCEL).
4. Highlight External Action: CtvConfig in the transaction and press [F4] (DEFINE). The Define CtvConfig window appears as shown in Figure 3-9.

NOTE:
If the CtvConfig external action is not specified in an application, the default directory, **/att/sptts/ctv/textos,** is used to locate all text files.

Figure 3-9. Define CtvConfig Window

5. Enter the directory, where the Spanish text files are located, in the Directory Name field.

NOTE:
The directory location specified in the Define CtvConfig window can be different for each application using SP_TTS.

[6.] Enter an optional numerical return field name in the Return Field field. Press [F2] (CHOICES) to see the list of options.

This field may be tested to determine the status of the CtvConfig external action.

7. Press [F3] (CLOSE).

After you close the Define CtvConfig window, you will be asked to define the field type through the Define Transaction Fields window, if this is a new field name.

[8.] Define the field as type "num" in the Define Transaction Fields window if necessary. The status values returned in this field are as follows:

- 0 Successful
- <0 Unsuccessful - dbase call failed

Hints for Writing Applications Using Text-to-Speech

The following hints are suggested to improve your Script Builder application:

- Include well-edited text, using punctuation and action verbs
- Work with the sentence structure within the **Announce** action step and the **Prompt & Collect** action step to make the sentences concise. Avoid lengthy and run-on sentences. (U.S. English TTS only)
- Apply the following rules when in the Define Announce screen (U.S. English TTS only):
  - — Line breaks are insignificant. That is, sentences can go from one line to the next without impacting how the sentence is spoken.
  - — A space must be included after the last character on each line. Without the space, each line is joined with the next.
- Insert pauses, or silence, in text to make it sound more natural. U.S. English Text-to-Speech allows you to do this by embedding escape characters before, after, or within the spoken text. These escape characters can add silence delays (for example, sil.500), change the speaking rate, and mark text as belonging to a specific category such as addresses, telephone numbers, fractions, and proper names. This feature applies to the U.S. English TTS package only. For detailed information about these escape characters, refer to Chapter 5, “Advanced Text-to-Speech Features.”

  You can also insert pauses in text through punctuation. The use of commas, colons, and periods in appropriate places introduces natural pauses in the synthesized voice as well as changes in voice intonation.

  When speaking database information, you could use a pause to introduce the actual database lookup.

  For example, "Your Name is..." <database lookup> “Dr. Glenn Tsuromoto. Press 1 for yes, 2 for no.”
- Speak silence (for example, sil.050) between each field of a Define Announce screen if more than one field is spoken using U.S. English Text-to-Speech to make it sound more natural. If you do not insert silence between the fields, the system may run the phrases together, causing the speech to sound unnatural. This feature applies to the U.S. English TTS package only.

NOTE:
If you mix prerecorded speech and Text-to-Speech within the same Define Announce screen, with talkoff enabled, the speech is treated as a play request. If a touchtone digit is received during playback of the speech or text contained within the screen, the remainder of the speech and/or text in the screen is not spoken. This applies to the U.S. English TTS package only.

Consecutive Define Announce screens with mixed speech and text with talk-off enabled are not treated as one play request. However, consecutive screens with Text-to-Speech only, with talk-off enabled are treated as one play request, meaning that a single touchtone digit causes the entire group of **Announce** action steps not to be spoken. This applies to the U.S. English TTS package only.

NOTE:
The first time Text-to-Speech is used during a call, the system tries to allocate the Text-to-Speech resource. If the resource is available, the text is spoken and the transaction proceeds normally. After the text is spoken, the resource is relinquished and must be re-allocated the next time you use Text-to-Speech.

If the Text-to-Speech resource is not available, the system tries every two seconds (up to the default timeout of 45 seconds) to allocate the Text-to-Speech resource. At the end of this time period, if the system is not able to allocate the resource, a -2 is returned in register 0. This approach allows the system to degrade gracefully and, in most cases, eliminates the need to do error checking at the Script Builder level for the Text-to-Speech resource allocation. For those applications which must have error control, External Functions can be written and accessed through Script Builder which give their script access to both *r.0* and the **nwitime()** instruction. The *nwitime* instruction would be used to set the wait time before text is spoken for the first time to a value less than 45 seconds. A second External Function would check the contents of *r.0.* See *CONVERSANT VIS Version 4.0 Application Development,* 585-350-208, for more information about the *nwitime()* instruction.

Example

An example of a Script Builder application using the U.S. English TTS function is as follows:

```
        start:
1.      Answer Phone
        retry:
2.      External Function
           Function Name: Nwitime
           Use Arguments: 10
3.      Announce
           Speak With Interrupt
              Text: “This script uses text to speech.”
4.      External Function
           Function Name: Say_return
5.      Evaluate
        If $CI_NO_DIGS_GOT    = -2
6.          Goto retry
        End Evaluate
7.      Announce
           Speak With Interrupt
             Text: “Please enter your identification number.”
8.      Quit
```

Writing Text-to-Speech Applications in Script Language

4

Information in This Chapter

This chapter includes a summary of the *say* script instruction. The *say* instruction instructs the INTUITY CONVERSANT VIS to play ASCII text stored in a buffer.

NOTE:
The say instruction only applies if you are using the U.S. English Text-to-Speech package.

Text-to-Speech Script Instructions

The **say** instruction is used by the Text-to-Speech (TTS) feature to direct the VIS to speak ASCII text stored in a buffer. The format of the **say** instruction is:

say*(ctype.src)*

where *ctype.src* is the ASCII text string to be spoken. The script may pass text as a literally quoted string or the contents of a null-terminated field (for example, previously populated with a call to the **dbase** instruction). The maximum length of a literal string is 2048 characters.

Say is similar to the talk instruction used for phrases of coded speech. The text passed to say is stored in a buffer that holds up to 2048 bytes of text. This buffer is flushed and the text is played when the buffer is full and another **say** instruction is executed or when any wait-causing instruction is executed.

The **tflush** instruction may be used to flush the text-to-speech buffer and cause the text to play. The first two arguments to tflush (the *must_hear_flag* and the *wait_indicator)* have the same effect for TTS as for coded speech. (The third argument to **tflush,** the *remember_flag,* is not used for TTS.) That is, the first argument may be used to disable talkoff and the second may be used to play speech and to continue the script without waiting for the play to complete. Normally, TSM waits for a TTS play to complete before going to the next instruction. *Spinning off* a TTS play, then executing **dbase** to get the next block of text while the first block is playing avoids a delay in play between the two blocks of text. Scripts may continue executing alternate **say, tflush,** and **dbase** calls in this manner until all the text from a DIP is passed to **say** to be played.

The **say** instruction returns one of following values in script register 0 (r.0):

Table 4-1. Return Values for the say Instruction

Return Value	Return Explanation
0	The instruction completed successfully
-1	The **say** instruction failed. This happens if the text passed to **say** did not fit into one TTS buffer (2048 bytes).

As with coded speech, any TTS being played stops when the script that caused it terminates or executes a **tstop** instruction.

Advanced Text-to-Speech Features

5

Information in This Chapter

This chapter includes information on customizing synthesized speech by including escape sequences to add silence delays, changing the speaking rate, marking text as belonging to a specific text category, and changing the volume level of outgoing text.

NOTE:

Some advanced features may only be available for specific Text-to-Speech packages. Refer to the appropriate section in this chapter for details regarding availability.

Overview of Advanced Features

With some Text-To-Speech (TTS) applications, you may need to further customize the use of synthesized speech — for example, by adding silence delays, changing the speaking rate, or by marking text as members of a more specific text category. While you can alter the way in which TTS speaks a phrase, some applications require that you use escape sequences placed before, after, or within the spoken text.

Not all applications require these advanced features. If you have questions about the use of advanced TTS features, call the United States Customer Support Hotline on 1-800-344-9670. If you are a non-U.S. customer, please contact the International Technical Assistance Center (ITAC) on 1-303-538-4666.

CAUTION:
Use the escape sequences exactly as they are described in this chapter. Using them differently could create problems in your application.

Using Escape Sequences

The manner in which TTS speaks a phrase can be altered by using specific escape sequences within the text. Several methods exist for adding escape sequences to your text. One method is to edit your text directly. Another method is to concatenate the specific escape sequence to your text string. Examples of these two methods are provided at the end of this section.

NOTE:
Escape sequences are available if you are using the U.S. English Text-to-Speech package.

Silence Delays

Several ways to introduce silent pauses or delays during the speaking of synthesized text are available. Most application silence needs can be handled by using the methods described in Chapter 3, “Using Text-to-Speech with Script Builder,” in the section called “Hints for Writing Applications Using Text-to-Speech.” However, if your application requires more advanced silence delays, you may use an escape sequence. With escape sequences, silence delays can be added to the beginning, end, or within a text phrase. The application developer indicates the silence duration in centiseconds (one hundredth of a second). One hundred centiseconds equals one second. The escape sequences shown in Table 5-1 are used for silence delays.

CAUTION:

Pay careful attention to the limits on the duration of silence delays. Using values outside of the limits could cause problems in your application.

Table 5-1. Escape Sequences for Silence Delays

Escape Sequence	Definition	Example
\!si < *n* >	For *n* centiseconds of silence at the beginning of a phrase, where 1 < *n* < 100. This escape sequence can only be used at the beginning of a text line, as it is used in the example where .7 seconds of silence occurs before the word "Hello" is spoken.	Announce Speak with Interrupt Text: "\!si70 Hello! Welcome to your Home Shopping Line!"
\!sf < *n* >	For *n* centiseconds of silence at the end of a phrase, where 1 < *n* < 60. This escape sequence can only be used at the beginning of a text line, as it is used in the example where 0.5 seconds of silence occurs after the first sentence is spoken but before the second sentence is spoken.	Announce Speak with Interrupt Text: "\!sf50 Hello, welcome to your Home Shopping Line! Text: For information about this service, press 1. Text: To start your order, press 2."
\(*[<n>]\)	For *n* centiseconds of silence within a phrase, where 1 < *n* < 100. In the example, 70 centiseconds of silence occurs after the word "Hello" is spoken and before the word "and" is spoken. The maximum allowance is 100 centiseconds.	Announce Speak with Interrupt Text: "Hello \(*[701\) and Text: welcome to your Text: Home Shopping Line!"

Speaking Rate

The rate of the synthesized voice can be controlled through the use of an escape sequence. Five rates are available, from 0 (quickest) to 4 (slowest). The default rate is 2. Each rate setting is effective until the end of the sentence (text ending with punctuation such as a period, question mark, or exclamation mark). To insure that the rate returns to the default, you must manually change the rate back to 2. The escape sequence shown in Table E-2 are used to change the speaking rate.

Table E-2. Escape Sequences for Speaking Rate

Escape Sequence	Definition	Example
\!r < *n* >	Where *n* is the new rate value between 0 and 4. In the example, the slower rate is in effect only while the order number is spoken. The first sentence, up to the rate change, and the second sentence is spoken with the default speaking rate.	Announce Speak with Interrupt Text: "Your order number is \!r4 104235\!r2 ." Text: Please use this number when checking on your order."

Additional Text Classes

With the **Prompt & Collect** and **Announce** action steps, you can indicate the format of the text to be spoken. The text can be marked to be spoken in the following formats:

- Character
- Number
- Time
- Date
- Dollar amounts

Some applications may require a further classification of the text to be spoken. The following additional escape sequences are available for further classifications:

- Addresses
- Telephone numbers
- Fractions
- Proper names.

To speak text from these additional class types, you must activate a *class detector* for a specific text class. The detector can be set to one of the following three detection modes:

- Off
- Conservative
- Risky

Initially, all the class detectors are set in the conservative mode. Class detector escape sequences do not need to be embedded in or connected to some other text to be activated. The mode can be changed by using an “Announce” action step and speaking only the escape sequence. The class detector will remain in the new state until it is changed or until the script ends.

NOTE:
Only use Risky mode when the spoken text is known to be a member of the specified text class (for example, telephone numbers) or classes (for example, names and addresses).

Changing Class Detection

Text class detection modes can be changed using escape sequences with the following general format:

\!n< c >< m >

The *c* variable is one of the following text classes:

- a (Address)
  Use risky mode to detect partial addresses and to correctly pronounce ambiguous address abbreviations, such as “Dr.” for “Drive.”
- f (Fraction)
  Use risky mode so that, for example, “1/4” is pronounced as “one fourth.”
- n (Proper name)
  Use risky mode so that titles such as “Mr.” for “Mister” or ambiguous proper name abbreviations such as “Dr.” for “Doctor” are pronounced correctly.
- p (Telephone numbers)
  Use risky mode to ensure that vanity telephone numbers such as 1 (800) CALL ATT are spelled out.

The *m* variable is one of the three possible class detector mode settings for the specified text class:

- o (Turn off the class detector)
- c (Set the class detector to conservative mode — default)
- r (Set the class detector to risky mode)

Setting Specific Class Detector Modes

This section includes examples of setting specific class detector modes.

- Proper Name Detector

  \!nnr (Set the Proper Name Detector to Risky Mode)

  \!nnc (Set the Proper Name Detector to Conservative Mode — default)

  \!nno (Set the Proper Name Detector to Off)

  The example that follows shows setting the proper name detector to risky mode, speaking a customer name from a database field, and then setting the proper name detector back to conservative mode. The risky mode setting is needed only if your data is known to have name-related abbreviations or titles. Otherwise, use the default mode.

```
Announce
  Speak with Interrupt
   Text:   "\!nnr"
```

```
  Text:   “Your name is”
 Field:    customer_name as A
  Text:   "\!nnc"
```

- Telephone Number Detector

  \!npr (Set the Telephone Detector to Risky Mode)

  \!npc (Set the Telephone Detector to Conservative Mode — default)

  \!np“o” (Set the Telephone Number Detector to Off)

  The example that follows shows setting the telephone number detector to risky mode, speaking a vanity phone number, and turning the telephone number detector off because no more phone numbers are expected.

```
Announce
 Speak with Interrupt
  Text:  “Please call \!npr” 1-800 SHOPPER \!npo
  Text:  for more information.“
```

- Address Detector

  \!nar (Set the Address Detector to Risky Mode)

  \!nac (Set the Address Detector to Conservative Mode — default)

  \!nao (Set the Address Detector to Off)

  The example that follows shows setting the address detector to risky mode, speaking out an address from a database field, and then turning the address detector to conservative mode.

```
Announce
 Speak with Interrupt
  Text:  "\!nar"
  Text:  “Your address is”
 Field:   customer_address as A
 Field:   customer_state as A
  Text:  "\!nac"
```

Sample Application Using Escape Sequences

The following is a sample Script Builder application that uses escape sequences.

```
      start:
1.    Answer Phone
2.    Set Field Value
            Field: ADDRESS_RISKY_MODE = "\!nar"
            Field: ADDRESS_DEFAULT_MODE = "\!nac"
            Field: PHONE_RISKY_MODE = "\!npr"
            Field: PHONE_DEFAULT_MODE = "\!npc"
            Field: NAME_RISKY_MODE = "\!nnr"
            Field: NAME_DEFAULT_MODE = "\!nnc"
            Field: BEG_SILENCE = "\!si70"
            Field: MIDDLE_SILENCE = "\!(*[50])"
            Field: END_SILENCE = "\!sf70"
            Field: SPEAKING_RATE_FOUR = "\!r4"
3.    Announce
         Speak With Interrupt
          Text: "Hello! Welcome to your home shopping line!"
4.    Prompt & Collect
         Prompt
            Speak With Interrupt
           Text: "For information about this service, press
```

```
1."
                Text:  “To start your order, press 2.”
          Input
             Max Number Of Digits: 01
          Checklist
             Case:  “1”
                Goto  SPEAK_INFO
             Case:  “2”
                Goto  TAKE_ORDER
             Case:  “Not On List”
                Reprompt
             Case:  “Initial Timeout”
                Reprompt
             Case:  “Too Few Digits”
                Reprompt
             Case:  “No More Tries”
                Quit
       End Prompt & Collect
       SPEAK_INFO:
5.     External Function
          Function Name:  tts_file
          Use Arguments:  1  “/att/trans/sb/shopper/text”
6.     Prompt & Collect
          Prompt
             Speak With Interrupt
                Text:  “To start your order, press 1.”
                Text:  “To complete this call, press 2.”
          Input
             Max Number Of Digits:  01
          Checklist
             Case:  "1"
                Goto  INITIATE_ORDER
             Case:  "2"
                Goto  GOODBYE
             Case:  “Not On List”
                Reprompt
             Case:  “Initial Timeout”
                Reprompt
             Case:  “Too Few Digits”
                Reprompt
             Case:  “No More Tries”
                Quit
       End Prompt & Collect

       INITIATE_ORDER:
7.     Prompt & Collect
          Prompt
             Speak With Interrupt
                Text:  “Using touch tones, please enter your
```

```
5-digit"
                Text:  "customer account number."
          Input
             Min Number Of Digits: 05
             Max Number Of Digits: 05
          Checklist
             Case:  "Input Ok"
                Continue
             Case:  "Initial Timeout"
                Reprompt
             Case:  "Too Few Digits"
                Reprompt
             Case:  "No More Tries"
                Quit
       End Prompt & Collect
8.     Read Table
          Table Name:   cust_db    Search From Beginning
             Field:  account_number  =  $CI_VALUE
9.     Evaluate
       If  $MATCH_FOUND    ! = 0
10.       Prompt & Collect
             Prompt
                Speak With Interrupt
                   Field:  NAME_RISKY_MODE  As A
                   Text:  "Your name is: "
                   Field:  customer_name As  A
                   Text:  "Press 1 for yes, 2 for no."
                   Field:  NAME_DEFAULT_MODE As  A
             Input
                Max Number Of Digits: 01
             Checklist
                Case:  "1"
                   Goto  CHECK_ADDRESS
                Case:  "2"
                   Goto  TRANSFER_CALL
                Case:  "Not On List"
                   Reprompt
                Case:  "Initial Timeout"
                   Reprompt
                Case:  "Too Few Digits"
                   Reprompt
                Case:  "No More Tries"
                   Quit
          End Prompt & Collect
       Else
11.       Goto  INITIATE_ORDER
       End Evaluate

       CHECK_ADDRESS:
       ### Verify the caller's address
12.    Prompt & Collect
          Prompt
             Speak With Interrupt
                Field:  ADDRESS_RISKY_MODE  As A
```

```
                Text: "Your address is "
                Field: customer_address As A
                Phrase: "sil.500"
                Field: customer_city As A
                Text: "Press 1 for yes, 2 for no."
          Input
             Max Number Of Digits: 01
          Checklist
             Case: "1"
                Goto TAKE_ORDER
             Case: "2"
                Goto TRANSFER_CALL
             Case: "Not On List"
                Reprompt
             Case: "Initial Timeout"
                Reprompt
             Case: "Too Few Digits"
                Reprompt
             Case: "No More Tries"
                Quit
       End Prompt & Collect

       TAKE_ORDER:
13.    Prompt & Collect
          Prompt
             Speak With Interrupt
                Text: "Enter the item number, or the pound
```

```
key to ”
                Text:  “complete your order.”
          Input
             Max Number Of Digits: 05
          Checklist
             Case: “#”
                Goto  WRAPUP_ORDER
             Case:  “nnnnn”
                Continue
             Case:  “Not On List”
                Reprompt
             Case:  “Initial Timeout”
                Reprompt
             Case:  “Too Few Digits”
                Reprompt
             Case:  “No More Tries”
                Quit
       End Prompt & Collect
14.    Read Table
          Table Name:   grocery_db     Search From Beginning
             Field:  item_number  =  $CI_VALUE
15.    Evaluate
       If  $MATCH_FOUND    != 0
          ### Speak the item description and cost
16.       Announce
             Speak With Interrupt
                Field:  item_description As A
                Text:  "for"
                Field:  item_price As AN$D2
          ### Add the item to the customer’s order
17.       Modify Table
             Table Name:  order_db Operation:  Add
                Field:    order_number = account_number
                Field:  order_item  =  item_number
18.       Goto  TAKE_ORDER
       End Evaluate

       WRAPUP_ORDER:
19.    External  Function
          Text:   “Your order number is: ”
          Field:  SPEAKING_RATE_FOUR as  A
          Field:  order_number as  A
          Text:   “ .     ”
          Text:   “Please use this number when checking your
```

```
order."

     GOODBYE:
20.  Announce
        Speak With Interrupt
          Text: "Thanks for using the Home Shopping Line."
           Text: "For further inquiries, please call"
           Text: " \!npr 1 800-SHOPPER.   \!npc"
           Text: "Goodbye."
21.  Disconnect
22.  Quit
     TRANSFER_CALL:
23.  Announce
        Speak With Interrupt
         Text: "Your call will be transferred to the next"
           Text: "available agent."
24.  Transfer To AGENT_EXT Type: Intelligent
        Maximum Number of Rings: 3
        Case: "Answer"
           Complete
        Case: "Busy"
           Reconnect
        Case: "No Answer"
           Reconnect
        Case: "Error"
           Reconnect
     End Transfer
25.  Disconnect
26.  Quit
```

Changing the Volume Level with U.S. English Text-to-Speech

To change the volume level of U.S. English Text-To-Speech, perform the following procedure:

NOTE:
This advanced feature is available if you are using the U.S. English Text-to-Speech package.

1. Enter **cvis_menu**
2. Select Voice System Administration from the CONVERSANT VIS Version 4.0 screen.
3. Select Switch Interfaces to open the Switch Interfaces window (Figure 5-1) from the Voice System Administration screen. The VIS must be running before you can use Switch Interface Administration. (To start the VIS, either use the System Control screen, or from the UNIX system command line, use the **start_vs** command). Refer to the information

under “Start Voice System” in Chapter 3, “Configuration Management” in *CONVERSANT Voice Information System Version 4.0 Operations,* 585-350-550, for details on how to start the VIS.

The Switch Interfaces window offers two choices: Analog Interfaces and Digital Interfaces.

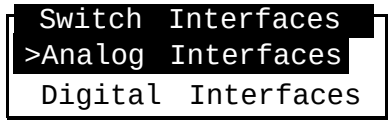


Figure 5-1. Switch Interfaces Window

4. Highlight Analog Interfaces or Digital Interfaces (whichever applies to your platform) to open the screen. Figure 5-2 demonstrates the Analog Interfaces screen.
5. Adjust the volume control. In the Outgoing Text Volume field, you can adjust the number to reflect the desired volume control.
6. Press [SAVE] to save your changes.
7. Press [CANCEL] to exit the window.

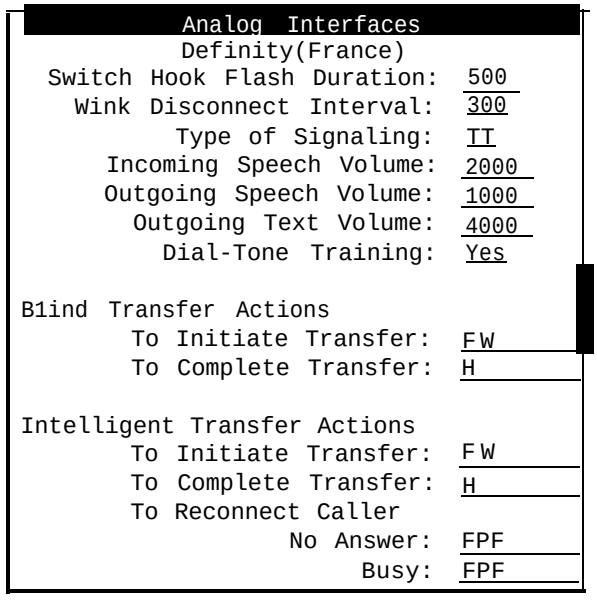


Figure 5-2. Analog Interfaces Window

Relating the Incoming Text Volume to Outgoing Text Volume

This section includes an equation for calculating either the incoming text volume (IVOL), outgoing text volume (OVOL), or either (XVOL).

$$\text{Power dB} = 10 \log \frac{P2}{P1}$$

$$\frac{P2}{P1} = \left(\frac{XVOL}{1000}\right)^2$$

$$\boxed{\text{Power dB} = 10 \log \left(\frac{XVOL}{1000}\right)^2}$$

Let's say that the OVOL is set to 2000, how much dB gain is that?

$$10\log\ (2)^2 = 10\log\ (4) = +\ 6\text{dB gain}$$

What should IVOL be set to for a 3dB volume reduction?

$$\log \left(\frac{IVOL}{1000}\right)^2 = \frac{-3}{10}$$

$$IVOL = 707$$

Changing the Volume Level with Castilian Spanish or Latin American Spanish Text-to-Speech

The Spanish Text-to-Speech feature allows you the capability of changing the volume level of outgoing text.

To change the volume level of spTTS, use the **sptts_vol** command as described in the section below.

NOTE:
Although the output volume of spTTS can be controlled on a system-wide basis, it cannot be tuned differently for specific cards or channels.

Using the sptts_vol Command

This section includes a description of the **sptts_vol** command.

Name

The **sptts_vol** command is used to adjust the spTTS volume.

Synopsis

sptts_vol *[multiplier]*

Description

The [multiplier] parameter indicates the volume level of the Spanish text. The default value is 2.1. A value of 0 will result in silence. Increasing the value increases the volume, whereas decreasing the value decreases the volume.

NOTE:
Adjust the volume in small increments, that is, in increments plus or minus .5.

In order to activate the new volume level assigned with the **sptts_vol** command, the voice system must be stopped and then started.

Example

sptts_vol 2.6

Using Castilian Spanish and Latin American Spanish Text-to-Speech

A

Information in This Appendix

This appendix includes information regarding the Castilian Spanish and Latin American Spanish Text-to-Speech user interface.

User Interface

This section discusses the user interface of the Castilian Spanish and Latin American Spanish Text-to-Speech packages.

Translating Spanish Characters

Spanish Text-to-Speech provides support for entering Spanish characters without the need for obtaining a specialized terminal. This is accomplished with a set of keys that are translated into the Spanish characters. Each character contains a three-letter designation that maps to a single Spanish character. These keys also allow the Spanish characters to be used in strings within the Script Builder Sayesp external action. Refer to Chapter 3, "Using Text-to-Speech with Script Builder," for more information about the Sayesp external action. Table A-1 lists all the Spanish characters along with the corresponding translation keys.

Table A-1. Spanish Character Translations

Character	Key
á	\'a
Á	\'A
é	\'e
É	\'E
í	\'i
Í	\'I
ó	\'o
Ó	\'O
ú	\'u
Ú	\'U
ü	\:u
Ü	\:U
¿	\%?
¡	\%!
ñ	\~n
Ñ	\~N
ç	\,c
ª	_a
º	_o

Spanish Abbreviations

B

Information in This Appendix

This appendix contains a complete list of all Spanish abbreviations that are included with the Castilian Spanish and Latin American Spanish Text-to-Speech packages.

Spanish Abbreviations

Table B-1 includes a list of all of the Castilian Spanish and Latin American Spanish abbreviations that are included with the Castilian Spanish and Latin American Spanish Text-to-Speech packages.

Table B-1. Spanish Abbreviations

Abbreviation	Definition
a.	área
a. C.	antes de Cristo
a. de C.	antes de Cristo
a. de J. C.	antes de Jesucristo
a. de J.C.	antes de Jesucristo
a. J. C.	antes de Jesucristo
a. J.C.	antes de Jesucristo
A.A.	Antiguo Alumno
a.C.	antes de Cristo
a.m.	antes del mediodía
A.T.	Antiguo Testament
a/c.	a cuenta
a/f.	a favor
Abr.	abril
abr.	abril
adj.	adjetivo
admón.	administración
adv.	adverbio
afmo.	afectísimo
Ago.	agosto
ago.	agosto
Amér.	América
ant.	antiguo
ap.	aparte
aprox.	aproximadamente
apóc.	apócope
art.	artículo

Table B-1. Spanish Abbreviations — *Continued*

Abbreviation	Definition
atta.	atenta
atte.	atentamente
atto.	atento
aux.	auxiliar
Av.	avenida
Avda.	avenida
b.	bajo
b. a.	bellas artes
b. l. m.	besa la mano
b. l. p.	besa los pies
b/s	bit por segundo
Barna.	Barcelona
Bco.	banco
bill.	billar
biol.	biología
bit/s	bit por segundo
bits/s	bit por segundo
bl.	bloque
bot.	botánica
br.	bachiller
c.	capítulo
c. c.	centímetro c
c/	calle
c/c.	cuenta corriente
c/u	cada uno
cal	caloría
cap.	capítulo
cc.	centímetro c
CE	Comunidad Europea
cent.	centavo
cf.	compárese

Table B-1. Spanish Abbreviations — *Continued*

Abbreviation	Definition
cfr.	compárese
cg	centígramo
ch/	cheque
cl	centílitro
cm	centímetro
col.	columna
compos.	composición
conj.	conjunción
const.	construcción
cont.	contado
cta.	cuenta
cte.	constante
cto.	cuarto
cts.	céntimo
cód.	código
D.	Don
d. de C.	después de Cristo
d. de J. C.	después de Jesucristo
d. de J.C.	después de Jesucristo
d. J. C.	después de Jesucristo
d. J.C.	después de Jesucristo
d.C.	después de Cristo
D.E.P.	descanse en paz
D.L.	depósito legal
D.m.	Dios mediante
D.P.	distrito postal
d/f.	días fecha
d/v.	días vista
dcha.	derecha
dcho.	derecho
def.	defecto

Table B-1. Spanish Abbreviations — *Continued*

Abbreviation	Definition
dep.	deportes
depto.	departamento
desc.	descuento
desp.	despacho
Dg	decagramo
dg	decígramo
Dic.	diciembre
dic.	diciembre
dipl.	diplomacia
dir.	director
div.	división
Dl	decalitro
dl	decílitro
Dm	decámetro
dm	decímetro
doc.	documento
doct.	doctor
dom.	domingo
Dr.	doctor
dr.	doctor
Dra.	doctora
dto.	descuento
dupdo.	duplicado
Dª.	Doña
e/	envío
ecol.	ecología
econ.	economía
ed.	edición
educ.	educación
EE.UU.	Estados Unidos
ef.	efecto

Table B-I. Spanish Abbreviations — *Continued*

Abbreviation	Definition
efect.	efectivo
ej.	ejemplo
en.	enero
Ene.	enero
ene.	enero
entlo.	entresuelo
esc.	escultura
esp.	español
est.	estado
etc	etcétera
etim.	etimología
ev.	evangelista
Excma.	excelentísima
Excmo.	excelentísimo
Exc^{a}.	Excelencia
expr.	expresión
ext.	extensión
F	grado Farenjeit
f.	femenino
F.C.	F
fam.	familiar
farm.	farmacia
fasc.	fascículo
Fdez.	Fernández
Feb.	febrero
feb.	febrero
febr.	febrero
fec.	lo hizo
fem.	femenino
fest.	festivo
FF.CC.	ferrocarriles

Table B-1. Spanish Abbreviations — *Continued*

Abbreviation	Definition
fig.	figurado
filat.	filatelia
filos.	filosofía
fol.	folio
fot.	fotografía
fr.	franco
Fr.	fray
fra.	factura
frs.	francos
fund.	fundador
fut.	futuro
fís.	física
g	gramo
g/	giro
g/p.	giro postal
Gb/s	gigabít por segundo
Gbyte	gigabáit
Gbyte/s	gigabáit por segundo
Gbytes	gigabáit
Gbytes/s	gigabáit por segundo
geog.	geografía
geol.	geología
geom.	geometría
ger.	gerundio
Glez.	González
gpo.	grupo
gr	gramo
gral.	general
gram.	gramática
grs.	gramos
Gª.	García

Table B-1. Spanish Abbreviations — *Continued*

Abbreviation	Definition
h	hora
h.	hijo
hab.	habitante
Hdez.	Hernández
hect.	hectárea
Hg	hectogramo
hidr.	hidráulica
hist.	historia
Hl	hectolitro
Hm	hectómetro
hnos.	hermanos
hort.	horticultural
HP	caballo de vapor
hum.	humorístico
Hz	hercio
hz	hercio
i. e.	esto es
i.e.	esto es
ib.	en el mismo lugar
id.	lo mismo
idmd.	en el mismo lugar
imp.	importe
incl.	incluso
indef.	indefinido
inf.	información
ing.	ingeniería
irr.	irregular
it.	también
izq.	izquierda
izqda.	izquierda
izqdo.	izquierdo

Table B-1. Spanish Abbreviations — *Continued*

Abbreviation	Definition
J	julio
J.C.	Jesucristo
juev.	jueves
Jul.	julio
jul.	julio
Jun.	junio
jun.	junio
jves.	jueves
K. O.	cao
k. o.	cao
K.O.	cao
k.o.	cao
Kb	kilobít
Kb/s	kilobít por segundo
Kbyte	kilobáit
Kbyte/s	kilobáit por segundo
Kbytes	kilobáit
Kbytes/s	kilobáit por segundo
Kc	kilociclo
kc	kilociclo
Kg	kilogramo
kg	kilogramo
KHz	kilohercio
Khz	kilohercio
khz	kilohertzio
Kl	kilolitro
Km	kilómetro
km	kilómetro
Km/h	kilómetro por hora
km/h	kilómetro por hora
Kw	kilovatio

Table B-1. Spanish Abbreviations — *Continued*

Abbreviation	Definition
kw	kilovatio
Kwh	kilovatio hora
kwh	kilovatio hora
l	litro
l. c.	en el lugar citado
L/	letra
Lda.	licenciada
Ldo.	licenciado
lib.	libro
lic.	licenciado
long.	longitud
Ltda.	limitada
ltdo.	limitado
lun.	lunes
lóg.	lógica
m	metro
m	s.
M. I. Sr.	Muy Ilustre Señor
m/	mi
m/n	moneda nacional
Mar.	marzo
mart.	martes
mat.	matemáticas
May.	mayo
may.	mayo
mañ.	mañana
Mb	megabáit
mb	milibar
Mb/s	megabít por segundo
Mbyte	megabáit
Mbyte/s	megabáit por segundo

Table B-1. Spanish Abbreviations — *Continued*

Abbreviation	Definition
Mbytes	megabáit
Mbytes/s	megabáit por segundo
Mc	megaciclo
med.	medicina
mg	miligramo
MHz	megahertzio
Mhz	megahertzio
min.	minería
mitol.	mitología
miérc.	miércoles
ml	mililitro
mm	milímetro
mr.	mártir
ms	milisegundo
Mtro.	maestro
mzo.	marzo
Mª	María
Mª.	María
máx.	máximo
mín.	mínimo
n ->	m.
n ->	ms.
N-I	nacional uno
N-II	nacional dos
N-III	nacional tres
N-IV	nacional cuatro
N-V	nacional cinco
N-VI	nacional seis
n.	nota
N. S.	Nuestro Señor
N.T.	Nuevo Testamento

Table B-1. Spanish Abbreviations — *Continued*

Abbreviation	Definition
n/	nuestro
nomin.	nominativo
Nov.	noviembre
nov.	noviembre
ns	nanosegundo
ntra.	nuestra
ntro.	nuestro
Nª. Sª.	Nuestra Señora
nº	n
o/	orden
ob. cit.	obra citada
Oct.	octubre
oct.	octubre
op.	obra
orig.	origen
p	bl.
p.	página
p. a.	por autorización
p. ej.	por ejemplo
P.D.	posdata
p.ej.	por ejemplo
p.m.	después del mediodía
P.O.	por orden
P.S.	posdata
P.V.P.	precio de venta
Pat.	patente
pdo.	pasado
pers.	personal
pl.	plural
pp	páginas
pp.	páginas

Table B-1. Spanish Abbreviations — *Continued*

Abbreviation	Definition
priv.	privilegio
Prof.	profesor
prov.	provincia
pról.	prólogo
pta.	peseta
ptas.	peseta
pts.	peseta
pág.	página
págs.	páginas
párr.	párrafo
q.b.s.p.	que besa sus piés
q.e.p.d.	que en paz descanse
q.s.g.h.	que santa gloria haya
quím.	química
R.D.	Real Decreto
R.I.P.	descanse en paz
R.O.	Real Orden
r.p.m.	revolucion por minuto
reg.	regular
rel.	religión
Rte.	remitente
rte.	remitente
Rvdo.	reverendo
s	segundo
S.	San
s.	siguiente
s. l.	sus labores
S.A.	Sociedad Anónima
S.A.R.	Su Alteza Real
S.E.	Su Excelencia
s.e.u.o.	salvo error u omisión

Table B-1. Spanish Abbreviations — *Continued*

Abbreviation	Definition
S.L.	Sociedad Limitada
s.l.	sus labores
S.M.	Su Majestad
S.R.C.	Se ruega contestación
s.s.	seguro servidor
S.S.	Su Santidad
s.s.s.	su seguro servidor
s.v.	en el artículo
s/n	sin n
Sept.	septiembre
sept.	septiembre
sgte.	siguiente
sig.	siguiente
sing.	singular
Sr.	Señor
Sra.	Señora
Sras.	Señoras
Sres.	Señores
Srta.	Señorita
ss.	siguientes
SS.AA.	Sus Altezas
SS.MM.	Sus Majestades
Sta.	Santa
Sto.	Santo
sup.	suplica
sáb.	sábado
símb.	símbolo
t	tonelada
t.	tomo
tel.	teléfono
teléf.	teléfono

Table B-1. Spanish Abbreviations — *Continued*

Abbreviation	Definition
temp.	temperatura
tfno.	teléfono
Tm	tonelada métrica
trad.	traduccíon
trig.	trigonometría
TV	televisión
técn.	técnico
tít.	título
Ud.	usted
Uds.	ustedes
ult.	
univ.	universidad
urb.	urbanización
v	voltio
v.	véase
v. g.	verbigracia
v. gr.	verbigracia
v.g.	verbigracia
var.	variable
Vd.	usted
vd.	usted
Vda.	viuda
vda.	viuda
Vdo.	viudo
vdo.	viudo
Vds.	ustedes
vds.	ustedes
viern.	viernes
virg.	virgen
vnes.	viernes
vol.	volumen

Table B-1. Spanish Abbreviations — *Continued*

Abbreviation	Definition
vta.	vista
vtro.	vuestro
Vº.Bº.	Visto Bueno
W.C.	retrete
Xto.	Cristo
y/o	y o
zool.	zoologia

Spanish Text-to-Speech Application

C

Information in This Appendix

This appendix includes an example of a Spanish Text-to-Speech application.

Spanish Text-to-Speech Application

Refer to Figure C-1 and Figure C-2 for an example of an application using the Spanish Text-to-Speech external actions, CtvConfig and Sayesp.

```
     start:
1.   Answer Phone
2.   Set Field Value
           Field:  esp_name = “John Doe”
3.   External Action:  CtvConfig
        dir_textos:   “/att/sptts/ctv/textos/sptts_exp”
     End External Action
4.   External Action: Sayesp
        text:   “file1”
        text_type:   “File”
        talkoff_type:   “TouchTone”
        caller_inp:   sayesp_ci
        Return Field:   sayesp_ret
     End External Action
5.   Evaluate
     If sayesp_ret   < 0
6.      Goto sayesp_error
     End Evaluate
7.   Evaluate
     If sayesp_ci   ="1"
8.      Goto esp_quit
     End Evaluate
9.   Set Field Value
           Field:  esp_no_retries = 0
     pin_repeat:
10.  External Action:  Sayesp
        text:   esp_name
        text_type:   “String”
        talkoff_type:   “None”
        caller_inp:   sayesp_ci
        Return Field:   sayesp_ret
     End External Action
11.  External Action:  Sayesp
        text:   “Please enter your PIN now”
        text_type:   “String”
        talkoff_type:   “None”
        caller_inp:   sayesp_ci
        Return Field:   sayesp_ret
     End External Action
```

Figure C-1. Example of a Script using Spanish Text-to-Speech

```
12.  Prompt & Collect
        Input
           Min Number Of Digits: 04
           Max Number Of Digits: 04
           TT Terminator Code Value: "#"
           No. Of Tries To Get Input: 01
        Checklist
           Case: "Input Ok"
              Continue
           Case: "Initial Timeout"
              Goto pin_error
           Case: "Too Few Digits"
              Goto pin_error
           Case: "No More Tries"
              Goto pin_error
     End Prompt & Collect
     esp_quit:
13.  External Action: Sayesp
        text:  "Good Bye, Thank you for calling"
        text_type:  "String"
        talkoff_type:  "None"
        caller_inp:  sayesp_ci
        Return Field:  sayesp_ret
     End External Action
     sayesp_error:
14.  Quit
     pin_error:
15.  External Action: Sayesp
        text:  "Invalid PIN entry"
        text_type:  "String"
        talkoff_type:  "None"
        caller_inp:  sayesp_ci
        Return Field:  sayesp_ret
     End External Action
16.  Set Field Value
           Field: esp_no_retries = esp_no_retries + 1
17.  Evaluate
     If esp_no_retries > 2
18.     Goto esp_quit
     End Evaluate
19.  Goto pin_repeat
```

Figure C-2. Example of a Script using Spanish Text-to-Speech

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