Lucent Technologies
Bell Labs Innovations

Proxy Text-to-Speech (PTTS) User Guide

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- Theft (such as, of intellectual property, financial assets, or toll-facility access)
- Eavesdropping (privacy invasions to humans)
- Mischief (troubling, but apparently innocuous, tampering)
- Harm (such as harmful tampering, data loss or alteration, regardless of motive or intent)

Be aware that there may be a risk of unauthorized intrusions associated with your system and/or its networked equipment. Also realize that, if such an intrusion should occur, it could result in a variety of losses to your company (including but not limited to, human/data privacy, intellectual property, material assets, financial resources, labor costs, and/or legal costs).

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- Installation documents
- System administration documents
- Security documents
- Hardware-/software-based security tools
- Shared information between you and your peers
- Telecommunications security experts

To prevent intrusions to your telecommunications equipment, you and your peers should carefully program and configure your:

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Contents

About This Book

Purpose

CONVERSANT® system applications often involve the playing of synthesized speech. This book, *Proxy Text-to-Speech (PTTS) User Guide*, provides the information needed to use the Proxy Text-to-Speech (PTTS) feature in developing applications that contain synthesized speech.

Note: Because of the significant differences in the implementation of PTTS between CONVERSANT and UCS1000 systems, there is a separate PTTS user guide for UCS1000 systems (*Proxy Text-to-Speech (PTTS) User Guide for UCS1000 Systems*, 585-313-724). This book (*Proxy Text-to-Speech (PTTS) User Guide*, 585-350-115) is for CONVERSANT systems only. If you have a UCS1000 system, please see that documentation for help with the PTTS feature.

Intended Audience

The primary audience for this book is as follows:

- End customer developers — This group creates and maintains applications in the CONVERSANT system environment.
- Custom application developers — This group creates applications used in the system environment for end-user customers and includes Lucent Technologies custom application developers.
- Application distributors — This group distributes and implements applications for end users and includes independent software vendors (ISVs) and voice processing co-marketers (VPCs).
- Installers — This group installs CONVERSANT systems and includes Lucent Technologies installers.

How to Use This Book

This book is organized in the following sections:

- Chapter 1, Overview of PTTS describes the PTTS feature, lists the hardware and software requirements, and provides information on performance and capacity.

- Chapter 2, PTTS Installation and Removal contains procedures to install the PTTS software on the CONVERSANT system and the PTTS servers. It also contains procedures for removing the software.
- Chapter 3, PTTS Administration contains procedures to administer the PTTS feature on the PTTS Windows NT servers and on the CONVERSANT system.
- Chapter 4, Using PTTS in Voice Applications describes how to access PTTS functionality through external functions in Voice@Work and Script Builder applications and through Response Application Programming Interface (IRAPI) parameters in IRAPI C programs.
- Chapter 5, Troubleshooting PTTS lists PTTS alarms and log messages, contains information on checking the status of PTTS connections, and offers troubleshooting guidelines for PTTS problems.
- Appendix A, Simulation Script Files provides information about and guidelines for creating and editing simulation script files for use with SAPI-compliant languages.
- Appendix B, SAPI-Compliant Language IDs lists currently supported SAPI-compliant languages, selected and grouped by character sets (such as Latin-1, Latin-2, etc.).

- Appendix C, Performance Monitoring on the CONVERSANT discusses factors that affect PTTS feature performance, offers a sample of performance test results, and offers procedures for monitoring and viewing system performance of the PTTS feature.
- Appendix D, For Advanced Users provides information about the PTTS program files, service control information, version numbers, and the like. Advanced users, thoroughly proficient with both Windows NT systems and CONVERSANT systems, are likely to make good use of this information.
- The Index alphabetically lists the principal subjects.

Procedures to install, administer, troubleshoot, and use the PTTS feature are provided in this book in full. However, at certain points, common procedures in other books in the CONVERSANT document library are referenced (see Related Resources below).

Conventions Used in This Book

This section describes the typography and other conventions that are used in this book.

Note: The screens shown in this book are examples only. The screens you see on your system may be similar, but not exactly the same in all cases.

Terminology

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

  Type **y** to continue.

- The word “enter” means to type a value and then press the **ENTER** key on the keyboard. For example, an instruction to type the letter “y” and press **ENTER** is shown as

  Enter **y** to continue.

- The word “select” means to move the cursor to the desired menu item and then press **ENTER**. For example, an instruction to move the cursor to the Configuration Management option on the Voice Administration System screen and then press **ENTER** is shown as

  Select:

```
> Configuration Management
```

- The system displays menus, screens, and windows. Menus (Figure 1) present options from which you can choose to view another menu, or a screen or window. Screens and windows both show (Figure 2 on page xxii and Figure 3 on page xxiii) and request (Figure 4 on page xxiii and Figure 5 on page xxiv) system information.

Figure 1. Example of a CONVERSANT Menu

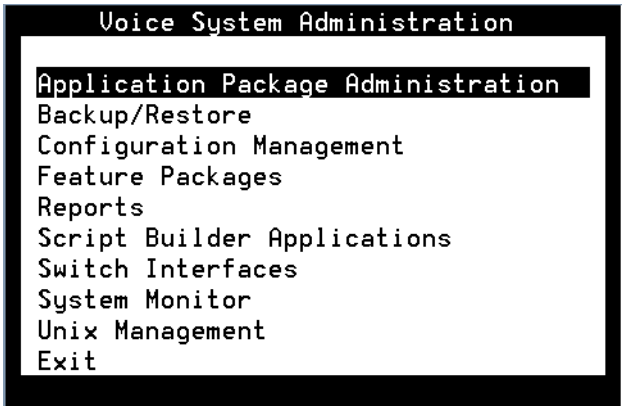

Figure 2. Example of a CONVERSANT Screen Showing Information

```
UnixWare Installation      Primary Hard Disk Partitioning

In order to install LINCS, you should reserve a UNIX system
partition (a portion of your hard disk's space) containing 100%
of the space on your primary hard disk. After you press 'ENTER'
you will be shown a screen that will allow you to create new
partitions, delete existing partitions or change the active
partition of your primary hard disk (the partition that your
computer will boot from).

WARNING: All files in any partition(s) you delete will be
destroyed. If you wish to attempt to preserve any files from an
existing UNIX system, do not delete its partitions(s).

The UNIX system partition that you intend to use on the primary
hard disk must be at lease 4200 MBs and labeled 'ACTIVE.'

Press 'ENTER' to continue
```

Figure 3. Example of a CONVERSANT Window Showing Information

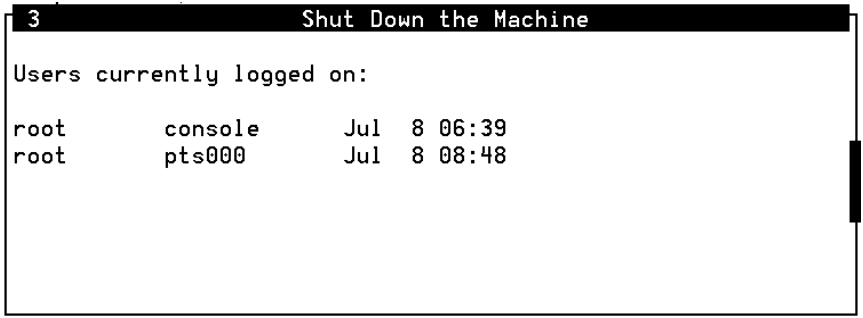

Figure 4. Example of a CONVERSANT Screen Requesting Information

```
UNIX System Installation              Set Slice Sizes

Please select whether you would like the recommended slice
sizes or would like to customize the slice sizes.

Your choices are:
1. Recommended Slice Sizes
2. Customize Slice Sizes

Press '1' or '2' followed by 'ENTER': 1
```

Figure 5. Example of a CONVERSANT Window Requesting Information

Keyboard and Telephone Keypad Representations

- Keys that you press on your terminal or PC are represented as capitalized **BOLD** text. For example, an instruction to press the Enter key is shown as

  Press **ENTER**.

- Two or three keys that you press at the same time on your terminal or PC (that is, you hold down the first key while pressing the second and/or third key) are represented as a series of small, capitalized **BOLD** text separated by the plus sign (**+**). For example, an instruction to press and hold “Alt” while typing the letter “d” is shown as

  Press **ALT+D**

- Function keys on your terminal, PC, or system screens, also known as soft keys, are represented as capitalized **BOLD** text followed by the function or value of that key enclosed in parentheses. For example, an instruction to press function key 2 is shown as

  Press **F2** (Choices).

- Keys that you press on your telephone keypad are represented as **bold** text. For example, an instruction to press the first key on your telephone keypad is shown as

  Press **1** to record a message.

Screen Displays

- System messages, field names, and prompts that appear on the screen are shown in `typewriter text`, as shown in the following examples:
  - Enter the number of ports to be dedicated to outbound traffic in the `Maximum Simultaneous Ports` field.
  - Enter **y** in the `Message Transfer?` field.
  - The system displays the following message:

    ```
    Installation in progress.
    ```

- The sequence of menu options that you must select to display a specific screen or submenu appears in a series of boxes.

  Example:

  Start at the Voice System Administration menu and select:

  In this example, you would access the Voice System Administration menu and select the Reports menu. From the Reports menu, you would then select the Message Log Report window.

Some Screen Simulations

Text in a simulated screen display appears in `typewriter text`.

Example:

```
      QuickStart - Data Recovery Rescue
Copyright(c) 1997-1999 by Enhanced Software Technologies, Inc.
   Serial# 8200-999              Version: 1.3.17

      +--------+  +--------+  +--------+  +-----------+  +-----------+
      | Backup |  | Verify |  | Recover |  | Configure |  | Exit      |
      | System |  | System |  | System |  | QuickStart |  | and Reboot |
      +--------+  +--------+  +--------+  +-----------+  +-----------+
```

Items That May or May Not Appear

Grayed-out type represents optional items that may or may not appear in a given display.

Example:

Once the backup is complete, the system displays a message similar to the following:

`The Differential UNIX backup is now complete. Please remove the tape and label it as "Differential UNIX Backup, created` **`August 30, 1999`**`."`

Other Typography

Command Text

- Literal values, commands, and text that you type in or enter appear in **bold type**, as in the following examples:

  Example 1:

  Enter **change-switch-time-zone** at the `Enter command:` prompt.

  Example 2:

  Type **high** or **low** in the `Speed:` field.

- Command variables are shown in ***bold italic*** type when they are part of what you must type in, and in italics when they are not part of the command line, for example:

  Enter **ch ma *machine_name***, where *machine_name* is the name of the call delivery machine you just created.

- Command options are shown inside square brackets, for example:

  Enter **connect *switchname* [-c] [-b | -w]**

Cross-References and Hypertext

Blue, underlined type indicates a cross reference or hypertext link that takes you to another location in the document when you click on it.

Safety and Security Alert Labels

This book uses the following symbols to call your attention to potential problems that could cause personal injury, damage to equipment, loss of data, service interruptions, or breaches of toll fraud security:

CAUTION:
Indicates the presence of a hazard that if not avoided *can* or *will* cause minor personal injury or property damage, including loss of data.

WARNING:
Indicates the presence of a hazard that if not avoided *can* cause death or severe personal injury.

DANGER:
Indicates the presence of a hazard that if not avoided *will* cause death or severe personal injury.

SECURITY ALERT:
Indicates the presence of a toll fraud security hazard. Toll fraud is the unauthorized use of a telecommunications system by an unauthorized party.

Related Resources

Additional training material and documentation and training material is available for you to learn more about the CONVERSANT product.

Updates to the Product

The following web site displays any updates or exceptions to the product that have occurred after the publication of this document, as well as the most current version of the PTTS documentation:

http://glsdocs.lucent.com

Training

- For information on CONVERSANT training in the United States, call the Enterprise Network Group (ENG) Global Learning Solutions (GLS) Education and Training Center at one of the following numbers:
  - ~ Organizations within Lucent Technologies: (904) 636-3261
  - ~ Lucent Technologies customers and all others: (800) 255-8988
- For customers outside the United States, contact your sales representative or distributor.

Documentation

Additional/Support Documentation

In addition to this user guide, the following documentation may be helpful to you:

- The *CONVERSANT® System System Description* book describes all books in the CONVERSANT documentation library. See the inside front cover of that book for information on how to order CONVERSANT documentation. That book also contains a glossary of terminology, including abbreviations, associated with the CONVERSANT system.

Note: Always refer to the appropriate book for specific information on planning, installing, administering, or maintaining an CONVERSANT system.

- ***Japanese PTTS only:*** For information on using the dictionary editing tool to create a user-provided customized pronunciation dictionary, see the following online documentation installed with the Japanese Proxy Text-to-Speech Engine:

  c:\program files\smarttalk\dll\DICTOOL\DicTool.hlp

Note: The pathname above assumes you have installed the Japanese Proxy Text-to-Speech using the default installation path. If you used another installation, modify the above pathname accordingly.

Obtaining Printed Versions of the Documentation

For information on how to print this document, see the file **cdintro1.pdf** that came with the documentation files.

You can also order the printed documents by calling 1-888-582-3688 or visiting the Customer Information Center (CIC) website at:

http://www.lucent.com/cgi-bin/CIC_store.cgi

Using the CD-ROM Documentation

Lucent Technologies ships the documentation in electronic form. Using the Adobe Acrobat Reader application, you can read these documents on a Windows PC, on a Sun Solaris workstation, or on an HP-UX workstation. Acrobat Reader displays high-quality, print-like graphics on both UNIX and Windows platforms. It provides scrolling, zoom, and extensive search capabilities, along with online help. A copy of Acrobat Reader is included with the documents.

For more information about using Acrobat Reader and using the electronic documentation for this product, see the file **cdintro1.pdf** that came with the documentation files.

Technical Support

- For technical support for the PTTS feature, contact your distributor.
- For technical support for the CONVERSANT system, follow your normal escalation path.

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You may also fax your comments to the attention of the Lucent Technologies CONVERSANT writing team at (303) 538-1741.

1 Overview of PTTS

Overview

As part of its operation, the CONVERSANT® system plays messages and prompts to users. In most circumstances, these announcements are stored as prerecorded digitized speech.

Sometimes, however, it is impractical or impossible to prerecord all the speech the system must play. In such cases, the capability is needed to generate spoken output from a textual representation of the information to be spoken. This capability is called text-to-speech (TTS). Currently, all CONVERSANT platforms support US English TTS. TTS is implemented on the speech and signal processing (SSP) circuit card.

In applications where the demand for TTS is very high or where a language is needed that is not supported on the SSP circuit card, speech processing must be done using one or more auxiliary computers connected to the CONVERSANT system in a client/server configuration. This capability is called Proxy Text-to-Speech (PTTS).

This release of the PTTS feature supports two basic classes of languages:

- Japanese
- Microsoft Speech Application Programming Interface (SAPI) compliant languages, which typically include English and most western European and Latin American languages. This group includes the LTTS and L&H packages available as part of the PTTS offer.

For a complete list of the currently supported languages for this feature, see the *Readme.txt* file that came with your software package.

With the open architecture provided by this feature, you can also add other customized languages, possibly with the assistance of an independent software vendor (ISV).

Currently, PTTS is supported only on the following platforms:

- CONVERSANT Version 7.0, MAP/40P and MAP/100P
- CONVERSANT Version 8.0, MAP/40P
- UCS1000 R4.6

Note: Because of the significant differences in the implementation of PTTS between CONVERSANT and UCS1000 systems, there is a separate PTTS user guide for UCS1000 systems (*Proxy Text-to-Speech (PTTS) User Guide for UCS1000 Systems*, 585-313-724). This book (*Proxy Text-to-Speech (PTTS) User Guide*, 585-350-115) is for CONVERSANT systems only. If you have a UCS1000 system, please see that documentation for help with the PTTS feature.

Purpose

This chapter provides an overview of PTTS feature functionality and system requirements. Major topics include the following:

Feature Description

The PTTS feature enables voice applications running on an CONVERSANT client system to request spoken playback of text phrases using:

- External functions called from either the Voice@Work or the Script Builder application development tool
- Response Application Programming Interface (IRAPI) functions

The PTTS feature consists of software that is installed on a CONVERSANT client system and on one or more customer-provided servers running the Windows NT 4.0 operating system. These computers communicate through socket interface connections, called PTTS connections, over an Ethernet Local Area Network (LAN). Multiple CONVERSANT clients and their associated PTTS servers can be placed on a single LAN.

PTTS supports dynamic port assignment, whereby the CONVERSANT client assigns each new request for PTTS conversion to the least loaded PTTS server to which it is connected.

Text to be converted to speech can be stored in either a buffer or a file. It can be accessed by means of custom data interface processes (DIPs) that communicate with external databases. Or it can be downloaded to the CONVERSANT system and stored as text data files (normally in the **/vs/data/tts_files** directory).

The CONVERSANT client establishes the PTTS connections and submits text to a PTTS server for conversion. The PTTS server converts the text to speech encoded in the PCM64 format (pulse code modulation at 64 kbps using Mu-law encoding) and returns the encoded speech to the CONVERSANT client. The encoded speech is temporarily stored in a buffer and then played. Once the speech buffer is empty, the PTTS server can send more speech to the CONVERSANT client for playback.

The PTTS feature supports multiple languages, and even the use of multiple languages within a single Interactive Voice Response (IVR) application. Each language typically includes, at the least, one voice tag for each gender. For example, US English supports the following voice tags:

- "John-T", a male voice
- "Grace-T", a female voice.

A complete list of the currently supported voice tags can be found in the *Readme.txt* file that came on your **Proxy Text-to-Speech** CD-ROM.

Characteristics of the PTTS speaking voice, such as gender, rate of speech, volume, pitch, and intonation can be customized. Barge-in (talkoff) can be enabled to allow a caller to interrupt speech playback.

For the Japanese language only, a customer-configured pronunciation dictionary residing on the PTTS servers can be used to customize the conversion of selected words and phrases. For SAPI-compliant languages, each language provider must provide the pronunciation dictionary for the language, if one is desired.

PTTS is licensed on a per-connection basis. The PTTS and TTS features share the same licensing, which means that, if you already have TTS licenses, you can use them for this feature as well.

Checklist for Installing, Administering, and Using the PTTS Feature

Table 1 lists the basic steps to install and administer the PTTS feature. Detailed procedures for each step are found in the section cross references listed in the second column.

Table 1. Steps for PTTS Initial Installation and Administration

Action/Step	Procedure Reference
1 Verify that you have all the required software and hardware for the installation.	Hardware, Software, and LAN Requirements in this chapter
2 Verify that you have the appropriate number of PTTS licenses.	Chapter 3, PTTS Administration, Verifying the Status of PTTS Licensing

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Table 1. Steps for PTTS Initial Installation and Administration

Action/Step	Procedure Reference
3 Verify that the PCI Ethernet LAN circuit card is installed and administered on the CONVERSANT system.	The instructions that came with your Ethernet LAN circuit card
4 Install the language library engine(s) on the Windows NT server.	Chapter 2, PTTS Installation and Removal, Installing the PTTS Language Engine on the Windows NT Servers
5 Install the PTTS NT server software set on *each* Windows NT server.	Chapter 2, PTTS Installation and Removal, Installing the PTTS NT Server Software on the Windows NT Servers
6 Administer the PTTS feature on the Windows NT server to select default languages and voices and to configure the system for the optimal channel count.	Chapter 3, PTTS Administration, PTTS Voice Administration on the Windows NT Servers

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Table 1. Steps for PTTS Initial Installation and Administration

Action/Step	Procedure Reference
7 Install the PTTS client software on the CONVERSANT system.	Chapter 2, PTTS Installation and Removal, Installing the PTTS Client Software on the CONVERSANT System
8 Administer the PTTS feature on the CONVERSANT system.	Chapter 3, PTTS Administration, Setting PTTS Connections on the CONVERSANT System and Adding the NT servers to the /etc/hosts File on the CONVERSANT System
9 Verify connection status for the PTTS feature.	Chapter 2, PTTS Installation and Removal, Setting PTTS Connections on the CONVERSANT System

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Table 1. Steps for PTTS Initial Installation and Administration

Action/Step	Procedure Reference
10 Develop the application to use the PTTS feature.	One of the following sections in Chapter 4, Using PTTS in Voice Applications: • PTTS and the Voice@Work Application Development Tool • PTTS and the Script Builder Application Development Tool
11 Run and test the application using the PTTS feature.	The appropriate documentation for your application development tool

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Hardware, Software, and LAN Requirements

Table 2 summarizes minimum configuration for the hardware, software and LAN requirements for PTTS.

Table 2. PTTS Hardware and Software Requirements

CONVERSANT System	Windows NT Server	LAN
Hardware MAP/100P (V7.0 only) or MAP/40P (V7.0 or V8.0) equipped with: • Either one of the following circuit card configurations: ~ Tip/Ring (analog) approved for the platform ~ Lineside T1 (digital) and SSP (AYC43)	**Note:** The PTTS servers are customer-provided. **Hardware** • Minimum of a 400-MHz or faster Pentium processor • Minimum of 256 Mb of RAM	**Note:** LAN installation is the customer's responsibility. Transmission Control Protocol/Internet Protocol (TCP/IP) Ethernet network operating at a speed of at least: • 10 Mbps for systems with fewer than 24 simultaneous PTTS channels

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Table 2. PTTS Hardware and Software Requirements

CONVERSANT System	Windows NT Server	LAN
• The currently supported PCI Ethernet LAN circuit card†	• 10/100-Mbps LAN-compatible circuit card • CD-ROM drive • Diskette drive • Modem	• 100 Mbps for systems with 24 or more simultaneous PTTS channels
Software • CONVERSANT base system software • CONVERSANT Proxy Text-to-Speech Package† • Appropriate circuit card drivers • Voice@Work or Script Builder application development tool (required to use the PTTS external functions)	**Software** • Microsoft Windows NT Version 4.0 operating system with service pack 4 or greater • 512 Mb virtual memory* (equal to approximately twice the amount of RAM) • CONVERSANT Proxy Text-to-Speech for Windows NT 4.0†	**Note:** If you are using a hub for your system, it is recommended that you use a high performance hub with the following characteristics: • full-duplex • autosensing • cut-through switching

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Table 2. PTTS Hardware and Software Requirements

CONVERSANT System	Windows NT Server	LAN
	At least one of the following: • (*For Japanese*) OKI Japanese Text-to-Speech Engine for Windows NT 4.0† • (*For SAPI-compliant languages*) Lucent Text-to- Speech (LTTS) Engine for Windows NT 4.0† • (*For SAPI-compliant languages*) Lernout and Hauspie Speech Products (L& H) Windows NT 4.0 server software‡	

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* For the procedure to increase virtual memory, see Virtual Memory Settings in Chapter 2, PTTS Installation and Removal.

† Provided as part of the Proxy Text-to-Speech offer package

‡ Available by order

For optimal performance, the following requirements also apply:

- Each PTTS server should be dedicated to the PTTS function. Performance degradation can occur if a PTTS server is used to run additional software in the background. Graphical screen savers, in particular, use significant central processing unit (CPU) resources and should not run on PTTS servers.
- The client and server systems must be on the same physical network without intervening bridges, routers, or repeaters.
- The LAN should be dedicated to the PTTS feature, or carry little additional traffic load during peak busy hours. Packets sent between the CONVERSANT client and the PTTS servers should not have to share the network with other traffic. Performance degradation can occur if the PTTS feature is used on networks that introduce additional delay.

Text Input Requirements

This section outlines the requirements for text input according to language.

Japanese Text Input Requirements

Japanese text that PTTS converts to speech *must* be encoded in the Shift-JIS (Japanese Industrial Standard) format (SJIS). If the text string is of a length that will convert to a speech phrase longer than 5 seconds, PTTS uses natural text phrase delimiters to parse the text string into shorter segments, each of the appropriate length. PTTS then processes the segments individually.

Table 3 shows the natural text phrase delimiters PTTS uses to parse Japanese text and the hexadecimal representation of the SJIS code:

Table 3. Japanese Natural Text Phrase Delimiters

Description	Text	Hexadecimal Representation of SJIS Encoding
Japanese period	。	0x8142
Comma	,	0x8143

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Table 3. Japanese Natural Text Phrase Delimiters

Description	Text	Hexadecimal Representation of SJIS Encoding
Question mark	?	0x8148
Exclamation point	!	0x8149
New-line character	Typically, pressing the **RETURN** key or **ENTER** key inserts a new-line character in text.	• 0x0a (UNIX operating system) • 0x0a0d (Windows NT Server operating system)

2 of 2

The entire text string is spoken in a natural-sounding manner, regardless of any parsing into segments that occurs. PTTS begins speaking the first segment while processing continues on subsequent sections. Buffers are used as needed to retain the speech phrases as processing proceeds. This method of processing minimizes the risk of delay in speech playback or unnatural breaks in the speech.

Note: Delay before speech begins may occur for a long text string that does not contain any natural text phrase delimiters. Manual insertion of on-line characters into the text string is recommended in these cases.

Microsoft SAPI Language Text Input Requirements

For European languages, text should be encoded using the "Latin-1" character set, which includes the standard ASCII text characters, plus an extended character set. This extended character set includes umlauts (such as ö and ü) and other special characters (such as ñ, ø, ç, and é) used in many European languages.

The entire text string is spoken in a natural-sounding manner, regardless of any parsing into segments that occurs. PTTS begins speaking the first segment while processing continues on subsequent sections. Buffers are used as needed to retain the speech phrases as processing proceeds. This method of processing minimizes the risk of delay in speech playback or unnatural breaks in the speech.

Large text files are broken into smaller segments, with breaks occurring at punctuation marks (**. , : ; ! ?**), if possible.

Using PTTS with TTS

If a CONVERSANT system configured for the PTTS feature is also equipped with an SSP circuit card and the Text-to-Speech Package, you can use both US English TTS on the SSP circuit card and PTTS in the same voice application.

You can use only one form of text-to-speech conversion per call, however. For example, the voice application can provide the caller with a choice of languages. One way to accomplish this is to use the SSP circuit card to convert US English and use the PTTS server to convert another language. You can use both features concurrently, and the caller can select either language.

Note: For information about feature licensing for PTTS and TTS on the SSP circuit card, see Verifying the PTTS Feature Licensing in Chapter 2, PTTS Installation and Removal.

Capacity

The following statements summarize the capacities of the PTTS feature:

- The maximum number of simultaneous PTTS conversion tasks the CONVERSANT system can handle depends upon the language(s) being used. Generally speaking, the maximum capacity is limited by the most CPU-intensive language being used. Each language has a different performance capability, so the channel capacity is different for each language.

  As a general rule, however, you can use the following as a guide:

  ~ Japanese can handle a maximum of 48 simultaneous PTTS conversion tasks.

  ~ SAPI-compliant languages can handle a maximum of *approximately* 20 simultaneous PTTS conversion tasks, depending on the language, speech engine, phrase length, and processor speed.

Note: These guidelines assume you are using a system with the minimum configuration of 400-MHz CPU clock speed and 256 Mb of RAM. Also, do not confuse the term "simultaneous PTTS conversion tasks" with the number of simultaneous calls a system can handle.

- A maximum of 10 PTTS Windows NT servers can be connected to a single CONVERSANT system.

- The number of PTTS connections that can be configured for an NT server depends on the server hardware. An NT server with a 400-MHz CPU clock speed and 256 Mb of memory, which is the minimum required hardware, can support a maximum 48 PTTS connections for the Japanese language. With this same configuration using one or more SAPI-compliant languages, a maximum of approximately 18 connections is supported, depending upon the language chosen.

  For information on displaying a report showing a system-derived maximum number of connections that can be supported for each server, see Monitoring the PTTS Windows NT Servers from the CONVERSANT System in Chapter 3, PTTS Administration.

Feature Performance

Three dynamically-related factors affect PTTS performance:

- The number of PTTS connections simultaneously handling speech
- The length of the converted speech in seconds
- The language or languages being used

These factors must be taken into account when making a decision about how many PTTS connections to configure for a system. All three affect a system's ability to support the anticipated usage for the intended applications.

For satisfactory performance, when the converted speech phrases are on the order of 60 seconds or more, the ratio of required CONVERSANT voice channels to PTTS connections is approximately one-to-one. For shorter text phrases, fewer PTTS connections may be needed because text conversion occurs so much more rapidly than speech playback that one PTTS connection may handle requests from multiple voice channels.

In general, if the number of connections needed and the average speech length are both high, serious performance degradation can occur, resulting in:

- Delays of more than one second between the time an application requests PTTS conversion until the speech is ready to be played
- Unnatural sounding pauses in the speech, called speech breaks, as text conversion falls behind speech playback in real time

In addition, the language or languages being used affect system performance. Some languages require substantially more CPU time to accomplish the task of conversion. This factor can affect both the number of PTTS connections required and the length of speech phrases that can be converted without a degradation of performance.

Fault Tolerance

A general rule of thumb when configuring your system is that the total demand by the CONVERSANT client system(s) must be less than the capacity of the Windows NT server(s). In other words, if you expect that you will need a maximum of 36 connections, you must make sure that you have enough Windows NT servers connections to meet the demand. Total server capacity should always be equal to or greater than the expected total client demand.

For fault tolerance, sufficient capacity must be available so that if one of the Windows NT servers goes out of service, the remaining servers can handle the maximum load. This means you should configure one spare NT server in addition to the number needed to service the maximum number of simultaneous connections you anticipate.

The following configuration examples should serve to help illustrate how this works.

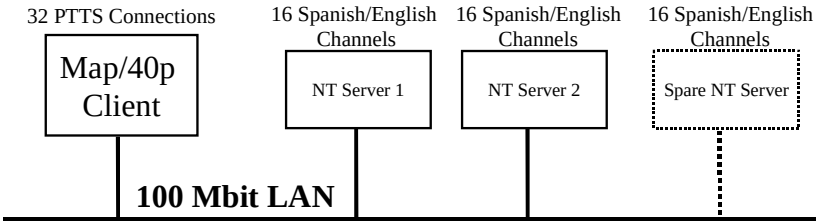
Example 1

In this example, you have determined that you have the following needs:

- Two languages required — Spanish and US English
- A possible maximum of 32 simultaneous PTTS conversion tasks

Given those needs, you could configure your system as follows (Figure 6):

Figure 6. Sample PTTS System Configuration — Single Client



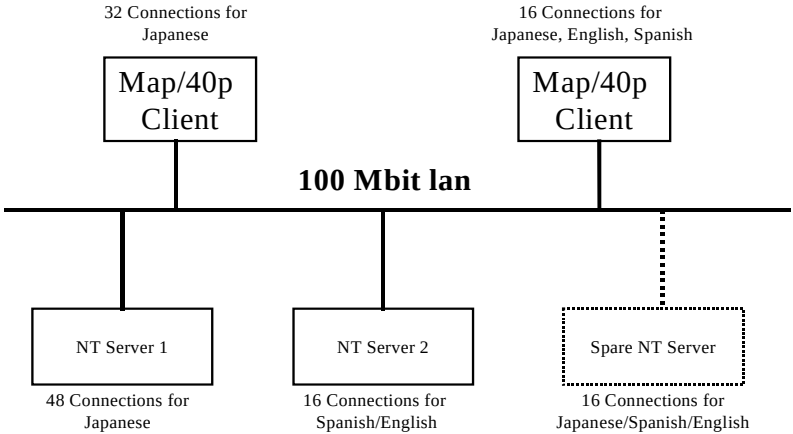
Example 2

In the next example, you have determined that you have the following needs:

- Multiple languages required — Japanese, Latin American Spanish, and US English
- Multiple clients needed to connect with multiple common servers (One client requires 32 PTTS connections for Japanese; the other requires 16 PTTS connections for a combination of Japanese, English, and Spanish. Both clients require access to the same PTTS Windows NT servers.)

Given those needs, you should configure your system as follows (Figure 7):

Figure 7. Sample PTTS System Configuration — Multiple Clients



2 PTTS Installation and Removal

Overview

The software components of the proxy text-to-speech (PTTS) feature package include the PTTS software installed on the CONVERSANT® system, PTTS language engine(s) installed on the Windows NT servers, and the PTTS software installed on the Windows NT servers. It is assumed that you are installing the PTTS feature on a CONVERSANT system on which the base system software is already installed and Windows NT servers on which the Windows NT operating system is already installed. In addition, if the CONVERSANT system is not already equipped with a PCI Ethernet LAN circuit card, you must install one. For details on installing system components, see the following books for your system:

- *CONVERSANT® System New System Installation*
- *CONVERSANT® System Reference*
- *CONVERSANT® System MAP/40P Maintenance*
- *CONVERSANT® System MAP/100P Maintenance*

Purpose

This chapter contains the procedures required to install the hardware and software for the PTTS feature and to remove the software. Topics include the following:

- Verifying System Readiness
- Installing the PTTS Software
  - ~ Installing the PTTS Language Engine on the Windows NT Servers
  - ~ Installing the PTTS Client Software on the CONVERSANT System
- Installing Additional LTTS Languages
- Removing the PTTS Software

Verifying System Readiness

Before you can install the PTTS software on the Windows NT server and the CONVERSANT system, you must verify that both systems are ready to use the PTTS software once it is installed. This involves the following:

- Installing and administering The PCI Ethernet LAN Circuit Card on the CONVERSANT system
- Administering TCP/IP on the Windows NT Servers
- Verifying that the Virtual Memory Settings are correct

Note: When setting up other applications on your Windows NT system, do not use socket numbers 2000 to 4000 as **socalloc.exe** uses socket number 2222 and **socserv.exe** uses socket numbers 3010 to 3110.

The PCI Ethernet LAN Circuit Card

If your CONVERSANT system is not already equipped with an appropriate Ethernet LAN circuit card, you must install the card and driver and verify the installation. For the requirements for the Ethernet LAN circuit card for the PTTS feature, see Hardware, Software, and LAN Requirements in Chapter 1, Overview of PTTS. For the complete procedures to install and configure the Ethernet LAN circuit card for TCP/IP, see the documentation that came with your Ethernet LAN circuit card.

Administering TCP/IP on the Windows NT Servers

Before the Windows NT server and the CONVERSANT system can communicate with each other, TCP/IP must be administered on both systems. The CONVERSANT system comes from the factory with TCP/IP already administered, so you need not worry about that.

To administer the settings for Transmission Control Protocol/Internet Protocol (TCP/IP) on *each* NT server, do the following:

Note: Since the Windows NT servers are customer-provided and may be custom-configured, only general guidelines for TCP/IP administration can be provided here. For complete details on Windows NT LAN administration, see your Windows NT server documentation.

1. Log in to the NT server as administrator.
2. On the Windows taskbar, click **Start**, then **Settings**, then **Control Panel**.
3. Double-click **Network**.
4. Click the **Identification** tab.
5. Administer the information in the following fields:
   - **Computer Name:** This is the name of the computer as it appears on the network.
   - **Domain:** This is the name of the domain in which the computer resides.

6 Click **OK**.

7 Click the **Protocols** tab.

8 If you are administering the machine for the first time, click **Add** to access the following fields. If the machine has previously been administered, click **Properties**.

9 Do the following:

a Click the **IP Address** tab

b Select the desired LAN connection from the **Adapter:** dropdown menu.

Note: Because the some NT servers have integrated dual LAN connections, it is important you select the correct one to administer. Otherwise, you will not be establishing or using the connection you think you are.

c Administer information in the following fields:

- **IP Address**
- **Subnet Mask**
- **Default Gateway**

Note: If you do not have the information you need for these fields, see your LAN administrator.

d Click **Apply**.

Note: If you are using a dedicated LAN connection, you can skip steps e through i.

e Click the **DNS** tab.

f Administer information in the following fields:

- **Host name:**
- **Domain:**
- **DNS Service Search Order**
- **Domain Suffix Search Order**

Note: If you do not have the information you need for these fields, see your LAN administrator.

g Click **Apply**.

h Click the **WINS Address** tab.

i Administer information in the following fields:

- **Primary WINS Server**
- **Secondary WINS Server**
- **Enable DNS for Windows Resolution** (select)
- **Enable LMHOSTS Lookup** (select)

j Click **OK**.

10 Click **Close**.

11 To restart your computer and put the new settings into effect, click **Yes**.

12 After your computer has rebooted, open the Control Panel, **Network** option, and click the **Adapter** tab.

13 Select the LAN connection adapter for the connection you want to use.

14 Click **Properties**.

15 Click the **General** tab.

16 Verify that the 100 Mbps “light” is lit. If it is not, troubleshoot the system, correct the problem, and repeat steps 14 through 17 until this light is lit.

Virtual Memory Settings

The virtual memory on the Windows NT server should be set at approximately twice the amount of RAM installed on the server. For the minimum configuration, this means that you should have a virtual memory setting of 512 Mb.

To verify that you have the correct amount of virtual memory reserved, do the following:

1 Log in to the Windows NT server as administrator.

2 On the Windows taskbar, click **Start**, then **Settings**, then **Control Panel**.

3 Double-click **System**.

4 Click the **Performance** tab.

The **Virtual Memory** box displays the amount of virtual memory reserved for your system. It should read at least twice the amount of RAM you have installed on your system.

5 Do one of the following:

- If the amount of virtual memory is sufficient, click **OK** and close the Control Panel. Skip the remaining steps of this procedure.
- If the amount of virtual memory is too low, click **Change** and go on to the next step.

6 In the **Initial Size (MB):** and **Maximum Size (MB):** fields, type the amount of virtual memory to reserve.

This number should be at least twice the amount of RAM you have installed on your system.

7 Click **Set** and then click **OK**.

The **Performance** tab should now display the new amount of virtual memory reserved.

8 Click **Close**.

9 To restart your computer and put the new settings into effect, click **Yes**.

Installing the PTTS Software

The following procedures are required to install the PTTS software package.

- Verifying the PTTS Feature Licensing – This procedure verifies that the appropriate Right-to-Use (RTU) licenses have been obtained for the PTTS feature. These RTU licenses are the same as those used for the standard TTS feature.

Note: This procedure applies to the CONVERSANT only.

- Installing the PTTS Language Engine on the Windows NT Servers – This software provides the language TTS engine and language libraries for each language on the Windows NT server.
- Installing the PTTS NT Server Software on the Windows NT Servers – This software provides the interface for the Windows NT server to communicate with the CONVERSANT client software and with the TTS language engine on the Windows NT server.
- Installing the PTTS Client Software on the CONVERSANT System – This software provides the interface for the CONVERSANT system to communicate with the PTTS software on the Windows NT server.

Note: For *each* NT server in your system, you must install the PTTS language engine(s) *before* you install the PTTS NT server software.

You can install the client software on the CONVERSANT system either before or after you install the server software and PTTS library on the servers.

Verifying the PTTS Feature Licensing

Access to the PTTS feature is controlled by feature licensing limits. The voice system keeps track of the total number of licenses purchased and currently in use for an application. The TTS feature and the PTTS feature share the same licensing. If your system is already licensed for TTS, then you can use either TTS on the speech and signal processor (SSP) circuit card or PTTS.

To check the number of licenses available for PTTS and TTS on your system, see Verifying the Status of PTTS Licensing in Chapter 3, PTTS Administration.

Note: The feature licensing must be administered before you can use the PTTS software package on the CONVERSANT system. If your system is not properly licensed, you can install the PTTS software, but you cannot use the PTTS feature.

Installing the PTTS Language Engine on the Windows NT Servers

The PTTS language engine software provides the language TTS engine and language libraries for each language on the Windows NT server.

For *each* NT server in your system, you must *first* install the PTTS language engine and *then* install the PTTS NT server software (see Installing the PTTS NT Server Software on the Windows NT Servers below). The PTTS language engine contains the language library files necessary for text-to-speech (TTS) conversion. This library is vendor-licensed.

Depending on what language options you have purchased, you should have one or both of the following:

- (For the Japanese language) **OKI Japanese Text-to-Speech Engine** for Windows NT 4.0, on CD-ROM
- (For SAPI-compliant languages, one of the following):
  - **Lucent Text-to- Speech Engine** for Windows NT 4.0, on CD-ROM, with language "key" on floppy diskette
  - **Lernout and Hauspie Speech Products** (L& H) server software, on CD-ROM
  - Other vendor-provided TTS language engine (format and media to be determined by the vendor)

To install the NT server software for the language options you have purchased, do the procedures in one or more of the following subtopics:

- Installing the OKI Japanese TTS Engine
- Installing a SAPI-Compliant Language Engine

Installing the OKI Japanese TTS Engine

To install the OKI Japanese TTS language engine on *each* PTTS NT server, do the following:

Note: There are several methods to install applications in the Windows NT environment. See your Windows NT documentation for information on other methods. The following procedure is recommended.

1. Log in to the server as administrator.
2. Exit all Windows programs.
3. Insert the CD-ROM labeled **OKI Japanese Text-to-Speech Engine** into the CD-ROM drive.
4. Click the **Start** button on the Windows NT taskbar.
5. On the Start menu, click **Run**.

   The system displays the Run dialog box.

6 In the **Open** field in the Run dialog box, enter ***z*:setup**, where *z* is the letter of your CD-ROM drive.

For example, if your CD-ROM drive is drive e, enter **e:setup**

7 Click **OK**.

The system displays the Welcome window.

8 Write down the vendor name of the PTTS library software package as displayed in the upper left hand corner of the screen. File this name where you can find it later, should you need it.

Note: You will need the package name if you want to remove the software in the future.

9 Follow the instructions in the InstallShield windows.

Note: When the installation script prompts you for a serial number, enter the serial number found on the face of your CD-ROM.

10 When the installation is complete, remove the CD from the CD-ROM drive.

11 Continue with Installing the PTTS NT Server Software on the Windows NT Servers below.

Installing a SAPI-Compliant Language Engine

To install a language engine for a SAPI-compliant language on each PTTS Windows NT server, do the following:

Note: There are several methods to install applications in the Windows NT environment. See your Windows NT documentation for information on other methods. The following procedure is recommended.

1. Log in to the server as administrator.
2. Exit all Windows programs.
3. Insert the CD-ROM into the CD-ROM drive.

Note: If you have enabled "autorun" for CDs on your system, the system automatically executes the setup routine to install the language on your system. If this happens, skip to Step 8.

4. Click the **Start** button on the Windows NT taskbar.
5. On the Start menu, click **Run**.

   The system displays the Run dialog box.

6. In the **Open** field in the Run dialog box, enter ***z*:setup**, where *z* is the letter of your CD-ROM drive.

   For example, if your CD-ROM drive is drive e, enter **e:setup**

7 Click **OK**.

The system displays the Welcome window.

8 Write down the vendor name of the PTTS library software package as displayed in the upper left hand corner of the screen. File this name where you can find it later, should you need it.

Note: You will need the package name if you want to remove the software in the future.

9 Click **Next**.

The system displays the Software License Agreement window.

10 To accept the software license agreement, click **Yes**.

The system displays the Choose Destination Location window.

Note: It is recommended that you install the software in the default folder.

11 Do one of the following:

- To accept the default installation path, go on to the next step.
- To install the software in a location other than the default, do the following:

  [1] Click **Browse**.

  The system displays the Choose Directory window.

[2] Select the directory you want by using the **Path** box, the **Directories** box, and the **Drives** box.

[3] Click **OK**.

12 Click **Next**.

The installation script installs the software to the selected directories. Near the end of the installation, the LTTS Language Manager window appears, prompting you to select the language(s) you want to install.

Note: You must have the appropriate floppy diskette language "key" before you can install a selected language.

13 Click to select the language(s) you want to install, and then click **Install**.

The system prompts you for the floppy diskette language "key" for each language you selected.

Note: If you are using a different vendor-provided language engine, you may or may not receive this prompt, depending on how the vendor has configured the language engine installation.

14 Insert the requested floppy diskette for each language, and then click **OK**.

The system installs each language before prompting for another floppy diskette.

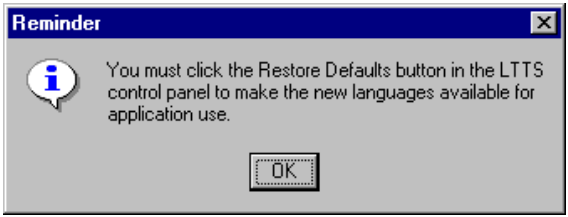
Note: The installation of some languages can take several minutes to accomplish, during which time the system may appear not to be responding. You will need to be patient to allow the system to complete the task.

When the last selected language has been installed, the LTTS Language Manager status bar displays a message indicating that all selected messages have been installed.

15 Click **Exit**.

The system displays the following message:

Figure 8. Restore Defaults Reminder Message



16 Click **OK**.

The system displays a message stating that LTTS installation is complete.

17 Click **OK**.

18 (Required only if you are installing the Lernout and Hauspie Speech Products (L& H) Windows NT 4.0 server software) Install the **ptts.ini.lh** file, using the procedure in the next section, Installing the ptts.ini.lh File (for L&H Speech Engine only).

19 Remove the CD-ROM from the CD-ROM drive.

Installing the ptts.ini.lh File (for L&H Speech Engine only)

After you install the Lernout and Hauspie Speech Products (L& H) software (L&H) software on the NT server, performing the following procedure sets up your system to make use of the L&H voices. You must do this before attempting to administer the L&H voices on the NT server.

To install the **ptts.ini.lh** file and configure your system for the L&H voices, do the following:

1. Use Windows Explorer to verify that the **ptts.ini.lh** file resides in the **Winnt** directory.
2. Open an MS-DOS Command Prompt window.
3. At the command prompt, enter: **cd c:\winnt**
4. At the command prompt, enter: **copy ptts.ini.lh ptts.ini**

Note: This command overwrites the existing **ptts.ini** file with the new version optimized for the L&H software. Do not attempt to accomplish this by merely renaming the **ptts.ini.lh** file; it will not work if you do.

5. Close the MS-DOS Command Prompt window.

6 (Optional) Use Notepad or another text editor to open and edit the new **ptts.ini** file, making the following changes:

WARNING:
Be very careful when editing this file. If the file is saved incorrectly or becomes corrupted in any way, the PTTS software will not function correctly.

a Find the line that begins: **AudioFileInterface=**
b Verify that the word **yes** follows the equal (**=**) sign. If it does not, change it so that it does.

7 Reboot the PTTS NT server.

Making Newly Installed SAPI Languages Available for Use

To make the installed languages available for application use, do the following:

1 On the Windows taskbar, click **Start**, then **Settings**, then **Control Panel**.

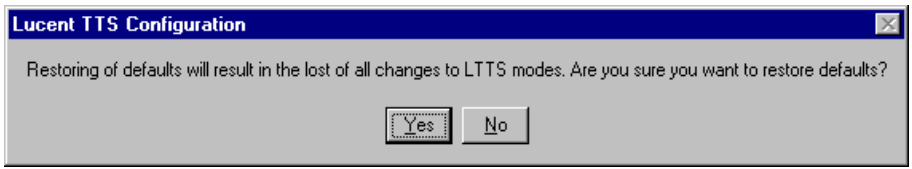
2 Double-click **Lucent TTS Configuration**.

The system displays the Lucent TTS Properties window.

3 Click **Restore Defaults**.

The system displays the following message:

Figure 9. Lucent TTS Configuration Window



4 Click **Yes**.

5 Click **OK**.

Continue with Installing the PTTS NT Server Software on the Windows NT Servers below.

Installing the PTTS NT Server Software on the Windows NT Servers

The PTTS NT server software package consists of a PTTS interface and a service component. See your Windows NT documentation for more information about services and the service controller.

Note: Before you begin this procedure, you should have already installed any applicable PTTS language engines on each PTTS NT server in your system (see Installing the PTTS Language Engine on the Windows NT Servers above).
If the PTTS language engine is not installed, the system displays error messages when you start the PTTS NT server software.

CAUTION:
If you are reinstalling the PTTS NT server software over an existing version, you must first verify that the PTTS service is not running. For the procedure to stop the PTTS service, see Starting and Stopping the PTTS Service in the Windows NT Services Window in Chapter 3, PTTS Administration. If you do not ensure that the PTTS service is not running, the installation fails.

Installation Procedures

To install the PTTS NT server software on *each* NT server in your system, do the following:

Note: There are several methods to install applications in the Windows NT environment. See your Windows NT documentation for information on other methods. The following procedure is recommended.

1. Log in to the NT server as administrator.
2. Exit all windows programs.
3. Insert the CD-ROM labeled **Proxy Text-to-Speech** into the CD-ROM drive.

Note: If you have enabled "autorun" for CDs on your system, the system automatically executes the setup routine to install the language on your system. If this happens, skip to Step 8.

4. Click the **Start** button on the Windows NT taskbar.
5. On the Start menu, click **Run**.

   The system displays the Run dialog box.

6. In the **Open** field in the Run dialog box, enter **z:setup**

Note: This step assumes that **z:** is the letter of your CD-ROM drive. If it is not, substitute the correct letter.

7 Click **OK**.

The system displays the Lucent Technologies Proxy Text-to-Speech Welcome dialog box.

8 Click the button marked **>>**.

The system displays the installation options menu.

9 To install the PTTS software set, click **Install Proxy Text-to-Speech**.

The system displays the InstallShield Welcome screen.

10 Click **Next**.

The system displays the Software License Agreement dialog box.

11 To accept the terms of the license agreement, click **Yes**.

The system displays the User Information dialog box.

12 Type the following:

- Your name in the **Name** field
- Your company name in the **Company** field

13 Click **Next**.

The system displays the Choose Destination Location dialog box. This dialog box allows you to accept the default destination folder for installing the PTTS software or to select another destination.

Note: It is recommended that you install the software in the default folder.

14 In the choose Destination Location dialog box, do one of the following:

~ To accept the default destination folder, go on to Step 15.

~ To select a destination folder other than the default, do the following:

[1] Click **Browse**.

The system displays the Choose Folder dialog box.

[2] Select the directory you want by using the **Path** box, the **Directories** box, and the **Drives** box.

[3] Click **OK**.

15 Click **Next**.

The system displays the Setup Type dialog box.

16 Select **Typical** and then click **Next**.

The system displays the Select Program Folder dialog box. This dialog box allows you to select a program folder for the PTTS program icons.

17 In the Program Folders field, select **Proxy Text-to-Speech**, which is the default.

Note: Do *not* select any other folder.

18 Click **Next**.

The system displays the progress of the setup, and, when it is complete, displays the Setup Complete dialog box.

19 In the Setup Complete dialog box, select:

- The box labeled **I would like to launch Proxy Text-to-Speech Service Manager.**
- The box labeled **I would like to view the README file** to read information to read information about any product developments that may have taken place after this book went into production

20 Click **Finish**.

The system temporarily displays a window with the following message:

`PTTS server manager has been launched.`

If you selected the **I would like to view the README file** check box, the system displays a text window.

The system then displays the Proxy Text-to-Speech window.

21 In the Proxy Text To Speech window, select the box labeled **Yes, I want to restart my computer now**.

22 Remove the CD-ROM from the CD-ROM drive.

23 Click **Finish**.

The server automatically reboots, and the system automatically starts the PTTS service.

Note: You do not need to start the PTTS service manually after installing the PTTS NT server software if the server reboots as described in the procedure above. Rebooting the server automatically starts the PTTS service. Thereafter, you can stop and restart the service as necessary. However, if you choose not to reboot the server now, you *must* do so at some time before using PTTS.

Post-Installation Procedures

After you install the PTTS software on each Windows NT server, there are a few additional procedures you should perform to ensure maximum system efficiency and speed when using the PTTS feature.

Turn off any screen savers.

Screen savers, especially if they are very graphics-intensive, can place an unwanted load on the CPU, thus potentially slowing down the PTTS feature. Therefore, it is recommended that you turn off any screen savers for NT servers running the PTTS feature.

Note: If you want to save your monitor from unnecessary wear and tear, you can simply turn it off or power it down when you are not using it.

To turn off screen savers, do the following:

1. On the Windows taskbar, click **Start**, then **Settings**, then **Control Panel**.
2. Double-click the **Display** option.
3. Click the **Screen Saver** tab.
4. From the **Screen Saver** pulldown menu, click **(None)**.
5. Click **Apply**.
6. Click **OK**.

Turn off “fast find”.

The Windows “fast find” feature allows you to find files and directories quickly, because it runs in the background keeping track of where everything is on your computer. Unfortunately, this “fast find” feature also keeps the CPU busy, which can tend to slow down the PTTS feature.

To see if the “fast find” feature is running on your system, do the following:

1. On the Windows taskbar, right-click **Start**.
2. From the popup menu, select **Open**.
3. Double-click **Programs**.
4. Double-click **Startup**.

   If the “fast find” feature is enabled for your system, an item named **Microsoft Fast Find** appears in the display.

To turn off the “fast find” feature, do the following:

1. Click the item named **Microsoft Fast Find**.
2. Press the **Delete** key on your keyboard.
3. Click **Yes**.

Verify that the Event Viewer log settings are correct.

If the log settings for the Event Viewer log are not set properly, the Event Viewer log can use more disk space than is desirable and can cause the system to slow down when using the PTTS feature.

To verify that the Event Viewer log settings are correct, do the following:

1. From the Windows taskbar, select **Start**, then **Programs**, then **Administrative Tools (Common)**, then **Event Viewer**.
2. From the **Log** menu, select **Log Settings...**
3. Verify that the following settings are selected:
   - “Change Settings for” – **System**
   - “Maximum Log Size:” – **512** Kilobytes
   - “Event Log Wrapping” – **Overwrite Events as Needed**
4. Click **OK**.

Installing the PTTS Client Software on the CONVERSANT System

PTTS client software provides the interface for the CONVERSANT system to communicate with the PTTS software on the Windows NT server.

To install the PTTS client software on the CONVERSANT system, do the following:

Note: Make sure your CONVERSANT system is properly licensed for the PTTS feature. See Verifying the PTTS Feature Licensing above for more information. If your system is not properly licensed, you can install the PTTS software, but you cannot use the PTTS feature.

1. Log in to the CONVERSANT system as root.
2. To stop the voice system, enter **stop_vs**

   For the procedure to use either the CONVERSANT windows or the **stop_vs** command to stop the voice system, see Stopping the Voice System in the *CONVERSANT® System System Reference* book for your system.
3. Enter **pkgadd -d diskette1**

   For more information on this command, see the *CONVERSANT® System Administration* book for your system.

The system displays the following message:

```
Insert diskette into Floppy Drive 1.
Type [go] when ready, or [q] to quit: (default: go)
```

4 Insert the diskette labeled **Proxy Text-to-Speech Package** into the diskette drive.

5 Press **ENTER**.

The system displays messages indicating the progress of the installation and then the following message:

```
Select the packages you wish to process (or all to
process all packages) (default: all) [?,??,quit].
```

6 Press **ENTER**.

When the installation is complete, the system displays the following message:

```
Installation of  Proxy-Text-To-Speech Package was
successful.
Insert diskette into Floppy Drive I.
Type [go] when ready, or [q] to quit: (default: go)
```

7 Enter **q**

The system displays the system console prompt.

8 Remove the diskette from the diskette drive.

9 (Optional) It is recommended but not required that at this point you administer the PTTS feature on the CONVERSANT system before proceeding. For the procedures, see Administering the PTTS Feature on the CONVERSANT System in Chapter 3, PTTS Administration.

WARNING:
After you install the PTTS software, you must reboot the operating system before you can use the PTTS feature. Failure to do so can lead to serious system errors.

10 Reboot the operating system.

For the procedure to use the **shutdown** command to reboot the operating system, see Rebooting the UNIX System in the *CONVERSANT® System System Reference* book for your system.

11 To start the voice system, enter **start_vs**

For the procedure to use either the CONVERSANT windows or the **start_vs** command to start the voice system, see Starting the Voice System in the *CONVERSANT® System Reference* book for your system.

Note: To verify that the software is installed on your system, use the **pkginfo** command (see the **pkginfo** command in Appendix A, Summary of Commands, in the *CONVERSANT® System Administration* book for your system). The PTTS package name is "PTTS".

Installing Additional LTTS Languages

Once you have installed the Lucent Text-to-Speech language engine, you can add other languages without having to reinstall the entire language engine.

To install a new LTTS language, do the following:

1. From the Windows taskbar, click **Start**, then **Programs**, then **Lucent TTS**, then **Language Manager**.

   The system displays the LTTS Language Manager window.

2. Insert the CD-ROM labeled **Lucent Text-to-Speech Engine** into the CD-ROM drive.

Note: If you have enabled "autorun" for CDs on your system, the system automatically tries to execute the setup routine to install the language on your system. If this happens, click **Cancel** when the Welcome window is displayed, and then click **Exit Setup**.

CAUTION:
Do *not* try to install new languages by going through the LTTS setup routine. If you do, any languages already installed are removed during installation.

3. Click **Change CD...**

   The system displays the standard Windows **Open** window.

4 Use the **Look in:** dropdown window to locate your CD-ROM drive, and select it.

5 Select and open the **Languages.txt** file.

The LTTS Language Manager window now displays the languages available for installation.

6 Click to select the language(s) you want to install, and then click **Install**.

Note: You must have the appropriate floppy diskette language "key" before you can install a selected language.

The system prompts you for the floppy diskette language "key" for each language you selected.

7 Insert the requested floppy diskette for each language, and then click **OK**.

The system installs each language before prompting for another floppy diskette.

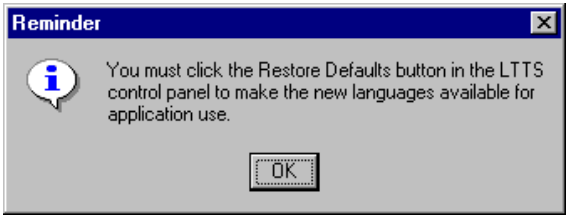
Note: The installation of some languages can take several minutes to accomplish, during which time the system may appear not to be responding. You will need to be patient to allow the system to complete the task.

When the last selected language has been installed, the LTTS Language Manager status bar displays a message indicating that all selected messages have been installed.

8 Click **Exit**.

The system displays the following message:

Figure 10.Restore Defaults Reminder Message



9 Click **OK**.

The system displays a message stating that LTTS installation is complete.

10 Click **OK**.

11 Remove the CD-ROM from the CD-ROM drive.

To make the newly installed language(s) available for application use, follow the procedure in Making Newly Installed SAPI Languages Available for Use above.

Removing the PTTS Software

The following procedures are required to remove the PTTS software from the CONVERSANT system and the Windows NT servers. You can do the procedures in any order.

Note: You must remove the PTTS library and the PTTS NT server software from *each* Windows NT server in order to completely remove the PTTS package from your system.

- Removing the PTTS NT Server Software from the Windows NT Servers
- Removing the PTTS Language Engine from the Windows NT servers
- Removing the PTTS Client Software from the CONVERSANT System

Removing the PTTS NT Server Software from the Windows NT Servers

To remove the PTTS NT server software completely from your system, you must remove the server package from *each* Windows NT server.

Note: There are several ways to remove applications in the Windows NT environment. See your Windows NT documentation for information on other methods. The following procedure is recommended.

To remove the PTTS NT server software from a Windows NT server, do the following:

1. Stop the PTTS service.

   For the procedure, see Starting and Stopping the PTTS Service in the Windows NT Services Window in Chapter 3, PTTS Administration.

2. Remove the PTTS service.

   For the procedure, see Removing the PTTS Service from the Windows NT Servers in Chapter 3, PTTS Administration.

3. Click the **Start** button on the Windows NT taskbar, point to **Settings**, and click **Control Panel**.

   The system displays the Control Panel window.

4. Double-click **Add/Remove Programs**.

   The system displays the Add/Remove Programs Properties dialog box.

5. Select the **Install/Uninstall** tab.

6. Select **Proxy Text-to-Speech** from the scrolling list near the bottom of the dialog box.

7. Click **Add/Remove**.

   The system displays the Confirm File Deletion dialog box.

8 Click **Yes**.

The system displays the UninstallShield window followed by the Remove Programs From Your Computer dialog box.

9 Click **OK**.

When the PTTS software has been removed, the dialog box displays the following message:

```
Uninstall successfully completed.
```

10 Click **OK**.

11 Close the Control Panel window.

Removing the PTTS Language Engine from the Windows NT servers

To remove the PTTS software completely from your system, you must uninstall the PTTS language engine from *each* Windows NT server.

Note: There are several methods to remove applications in the Windows NT environment. See your Windows NT documentation for information on other methods. The following procedure is recommended.

1 Click the **Start** button on the Windows NT taskbar, point to **Settings**, and click **Control Panel**.

The system displays the Control Panel window.

2 Double-click **Add/Remove Programs**.

The system displays the Add/Remove Programs Properties dialog box.

3 Select the **Install/Uninstall** tab.

4 Select the PTTS library software package from the scrolling list at the bottom of the dialog box.

Note: The PTTS library is listed by the name under which it was installed. See Installing the PTTS Language Engine on the Windows NT Servers above, and select the package name you recorded there.

5 Click **Add/Remove**.

The system displays the Confirm File Deletion dialog box.

6 Click **Yes**.

The system displays the UninstallShield window, followed by the Remove Programs From Your Computer dialog box.

7 Click **OK**.

When the PTTS library has been removed, the dialog box displays the following message:

```
Uninstall successfully completed.
```

8 Click **OK**.

9 Close the Control Panel window.

Removing the PTTS Client Software from the CONVERSANT System

To remove the PTTS client software from the CONVERSANT system, do the following:

1. Log in to the CONVERSANT system as root.
2. To stop the voice system, enter **stop_vs** at the system prompt.

   For the procedure to use either the CONVERSANT windows or the **stop_vs** command to stop the voice system, see Stopping the Voice System in the *CONVERSANT® System Reference* book for your system.
3. To verify that the PTTS software package is currently installed on your system, enter **pkginfo** at the system prompt.

   For more information on this command, see the *CONVERSANT® System Administration* book for your system.

   The system displays all the software packages installed on your system. The PTTS package is listed as follows:

   ptts Proxy Text to Speech Package
4. Once you verify that the package is currently installed, enter **pkgrm**

   For more information on this command, see the *CONVERSANT® System Administration* book for your system.

   The system displays a list of installed packages, each preceded by a number.

5 Note the number associated with the PTTS package.

6 Press **CTRL+D**.

The system displays the following prompt:

```
Select package(s) you wish to process (or 'all' to
process all packages). (default: all) [?,??,quit]:
```

7 Enter the number (as it appears on the screen) of the PTTS package.

8 The system displays the following message:

```
Do you want to remove this package [yes,no,?,quit]
```

9 Enter **y**

The system displays messages indicating the progress of the removal. When the removal is complete, the system displays the following message:

```
Removal of <ptts> was successful.
```

10 Reboot the operating system.

For the procedure to use the **shutdown** command to reboot the operating system, see Rebooting the UNIX System in the *CONVERSANT® System Reference* book for your system.

WARNING:
After you remove the PTTS package, you *must* reboot the operating system before reinstalling the package or starting the voice system.

11 To start the voice system, enter **start_vs** at the system prompt.

For the procedure to use either the CONVERSANT windows or the **start_vs** command to start the voice system, see Starting the Voice System in the *CONVERSANT® System Reference* book for your system.

3 PTTS Administration

Overview

After the Proxy Text-to-Speech (PTTS) software is installed, you must:

- Administer the Local Area Network (LAN) connections on the CONVERSANT® system and all Windows NT servers.
- Administer the PTTS voices on all Windows NT servers.
- Verify that the PTTS service is running properly.

In addition, there are a variety of other administrative tasks you may need to perform from time to time. These include:

- Starting or stopping the PTTS service on Windows NT servers
- Removing or replacing the PTTS service on Windows NT servers
- Monitoring PTTS service from the CONVERSANT system
- Creating and using a pronunciation dictionary

Purpose

This chapter provides the procedures required to administer the CONVERSANT system and the NT servers for the PTTS feature once the PTTS software has been installed on both systems. Topics covered include the following:

- Obtaining IP Addresses for the PTTS Servers
- Administering the PTTS Feature on the Windows NT Servers
- Administering the PTTS Feature on the CONVERSANT System

Obtaining IP Addresses for the PTTS Servers

Verify that you have a unique Internet Protocol (IP) address for *each* Windows NT server and CONVERSANT system on the PTTS-dedicated LAN. Use this information to administer the Windows NT servers and the CONVERSANT system.

Note: See Hardware, Software, and LAN Requirements in Chapter 1, Overview of PTTS for the LAN requirements.

Administering the PTTS Feature on the Windows NT Servers

The following administration for PTTS must be done on *each* Windows NT server. You can complete these procedures in any order.

- Starting and Stopping the PTTS Service in the Windows NT Services Window
- Verifying the PTTS Service Status in the Windows NT Task Manager Window
- PTTS Voice Administration on the Windows NT Servers
- Removing the PTTS Service from the Windows NT Servers
- Restoring the PTTS Service on the Windows NT Servers
- Creating a Pronunciation Dictionary on the Windows NT Servers (Japanese PTTS Only)

Starting and Stopping the PTTS Service in the Windows NT Services Window

The PTTS service must be started on the NT servers before the PTTS feature can be used. However, certain maintenance situations require the PTTS service to be stopped.

Note: You need not start the PTTS service immediately after installing the PTTS NT server software if you reboot the NT server as directed in the installation procedure (see Installing the PTTS NT Server Software on the Windows NT Servers in Chapter 2, PTTS Installation and Removal). Rebooting the server automatically starts the PTTS service. Thereafter, you can stop and restart the service as necessary.

To stop or start the PTTS service on the NT server, do the following:

1. Click the **Start** button on the Windows NT taskbar, point to **Settings**, and click **Control Panel**.

   The system displays the Control Panel window.

2. Double-click **Services**.

   The system displays the Services window. The **Status** column indicates the current status of the services listed as either **Started** or blank (stopped).

3. In the scrolling list, select **PttsSrvMgr**.

4 Do one of the following:

~ To start the PTTS service, click **Start**.

The system displays the Service Control window with the following message:

```
Attempting to start the PttsSrvMgr service.
```

When the service is started, the **Status** column shows the current status of PttsSrvMgr as **Started**. The Task Manager window displays the PTTS processes as running (see Verifying the PTTS Service Status in the Windows NT Task Manager Window below).

~ To stop the PTTS service, do the following:

[1] Click **Stop**.

The system displays the Services dialog box with the following prompt:

```
Are you sure you want to stop the PttsSrvMgr
service?
```

[2] Click **Yes**.

The system displays the Service Control window with the following message:

```
Attempting to stop the PttsSrvMgr service.
```

When the service is stopped, the Status column shows the PttsSrvMgr as stopped (blank). The Task Manager window does not show any PTTS processes as running (see Verifying the PTTS Service Status in the Windows NT Task Manager Window below).

5 Close the Services dialog box and the Control Panel.

Verifying the PTTS Service Status in the Windows NT Task Manager Window

To verify the status of the PTTS services, do the following:

1 Right-click a blank area on the Windows NT taskbar, and click the **Task Manager** option on the popup menu.

The system displays the Windows NT Task Manager window.

2 Click the **Processes** tab.

The system displays a list of all processes running on the NT server.

3 Verify in the **Image Name** column that the following process are running continuously:

- **socserv.exe** (one process per connection as displayed in the **ptts_post** file, to a maximum of 48; see Monitoring the PTTS Windows NT Servers in Chapter 5, Troubleshooting PTTS)
- **socalloc.exe** (one process)
- **mttsserv.exe** (one process)
- **pttssrvmgr.exe** (one process)

Note: If these processes are displayed intermittently, the system may be respawning them.

4 Click the **Performance** tab.

Check the percentage displayed in the **CPU Usage** box.

If the percentage is greater than 90%, and the processes appear to be respawning (Step 3), there may be a problem with installation of the NT server software or the PTTS library. See PTTS Troubleshooting Guidelines in Chapter 5, Troubleshooting PTTS for the repair procedure.

5 Close the Windows NT Task Manager window.

PTTS Voice Administration on the Windows NT Servers

Before you can use the PTTS feature, you must administer the "voices" and the languages you want to available for your PTTS applications. You must also configure the Windows NT server for the optimal channel utilization based on the language(s) you select. These tasks are accomplished using the Proxy Text-to-Speech Administration tool on the Windows NT server.

To administer "voices" for use with the PTTS software on the NT servers, do the following:

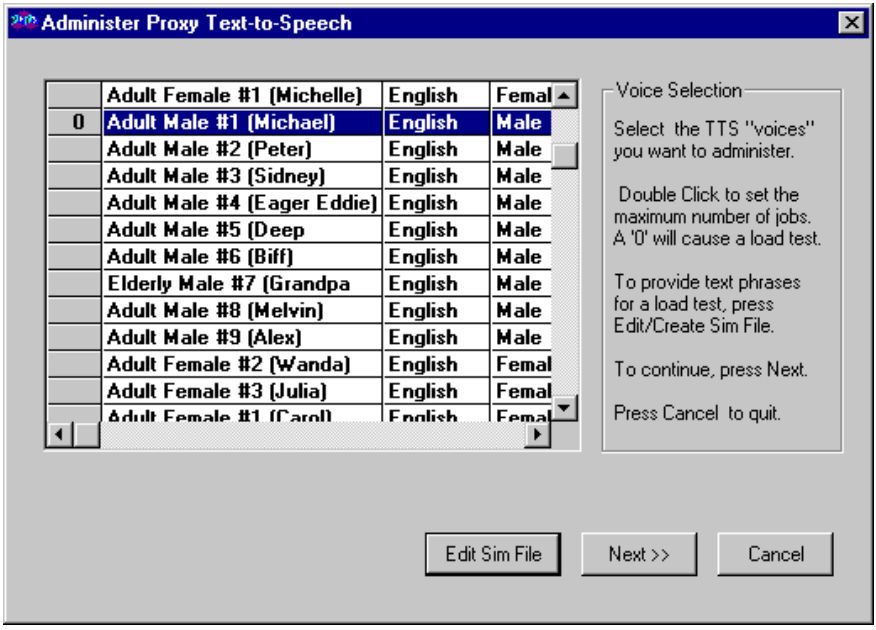
1 Double-click the **Proxy Text-to-Speech Administration** icon on the Windows desktop (Figure 11).

Figure 11. Proxy Text-to-Speech Administration Icon

Note: You can also open the Proxy Text-to-Speech Administration tool by clicking the **Start** menu, then selecting **Programs**, then **Proxy Text-to-Speech**, then **PTTS Administration**.

The system displays the Administer Proxy Text-to-Speech window (Figure 12).

Figure 12. Administer Proxy Text To Speech Window



2 Click to select the "voices" you want to administer on your system.

A number in the left-most column indicates that a voice has been selected. Any number other than zero (0) indicates that you have already installed the voice on your system and that number of channels have been defined for it.

A zero (0) indicates that you have selected the voice but you have not defined a number of channels for that voice. If you leave this number as zero, the PTTS Administration tool runs a load test for that voice during installation.

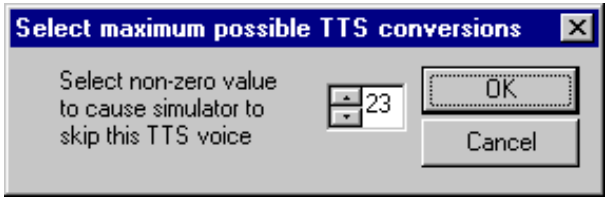
Note: Each voice that requires a load test adds approximately 6 minutes to the installation time.

3 (Optional) If you want to define the number of channels assignable to a particular voice, do the following:

a Double-click the name of the voice tag.

The system displays the Select maximum possible TTS conversions dialog box (see Figure 13 on page 75).

Figure 13. Select maximum possible TTS conversions Dialog Box



b Use the up-down arrows to select the number of channels you want to assign to the voice. Alternatively, you can type the number you want directly in the number field.

c Click **OK**.

4 (Optional) Create or edit the simulation script file for each voice selected.

For information about creating and editing simulation script files, see Appendix A, Simulation Script Files, Creating and Editing Simulation Script Files.

Note: If no simulation file exists for a selected voice, you *must* create one before you can install the voice.

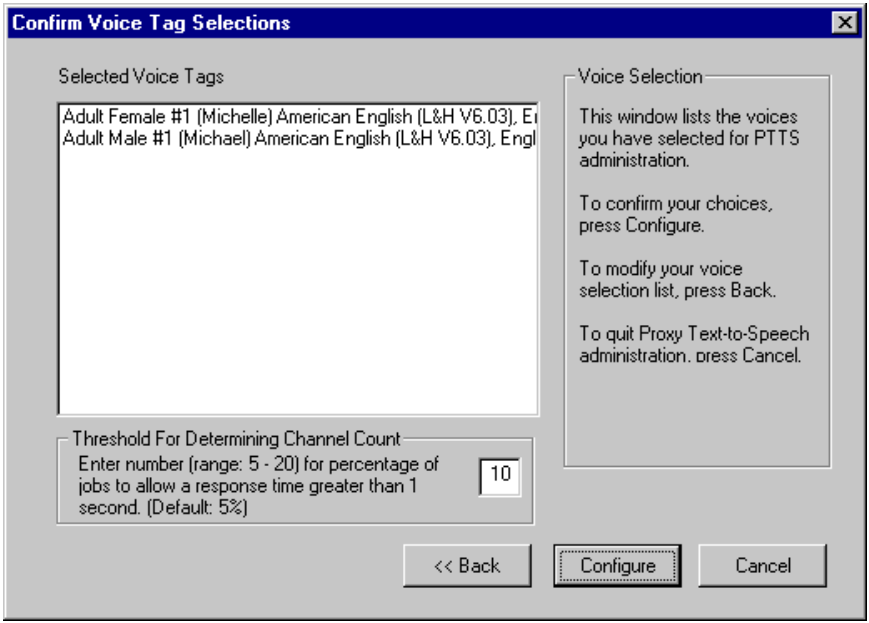
5 Click **Next**.

If you have selected two or more voices that have the same language and gender, for example **Grace-T** and **Mary (for Telephone)**, which are both US English/female voice tags, only one of them can be the default voice tag for that language and gender. The system requires you to select one voice as the default voice before you can proceed. This is the voice tag that will be used by default for that language and gender. To use a different voice tag, you must use the proxyvoice external function.

To choose the voice to be the default, select a voice tag from the dropdown menu and then click **OK**.

The system displays the Confirm Voice Tag Selections window (Figure 14 on page 77).

Figure 14. Voice Tag Selections Window



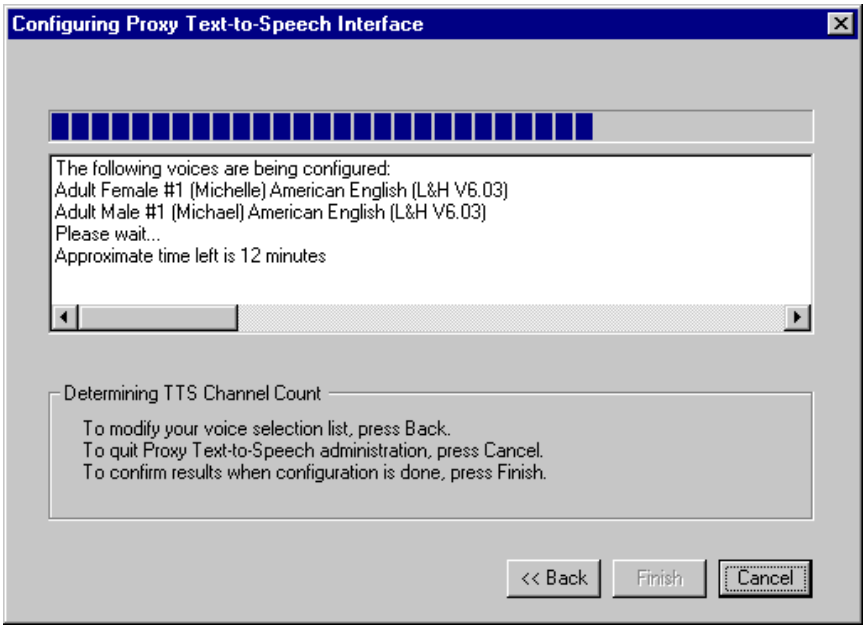
6 Verify that the voices you want to install are listed and (optionally) enter a number from 5 to 20 in the **Threshhold for Determining Channel Count** field.

Note: This number represents the greatest percentage of TTS jobs which will be allowed to experience a system response time of *greater* than one second. The default (and recommended) value is 5%. This means that (with this value set to 5%) 95% of the TTS jobs will have a response time of *less* than one second.

7 Click **Configure**.

The system displays the Configuring Proxy Text To Speech Interface window (Figure 15 on page 79), which shows the progress of the configuration process.

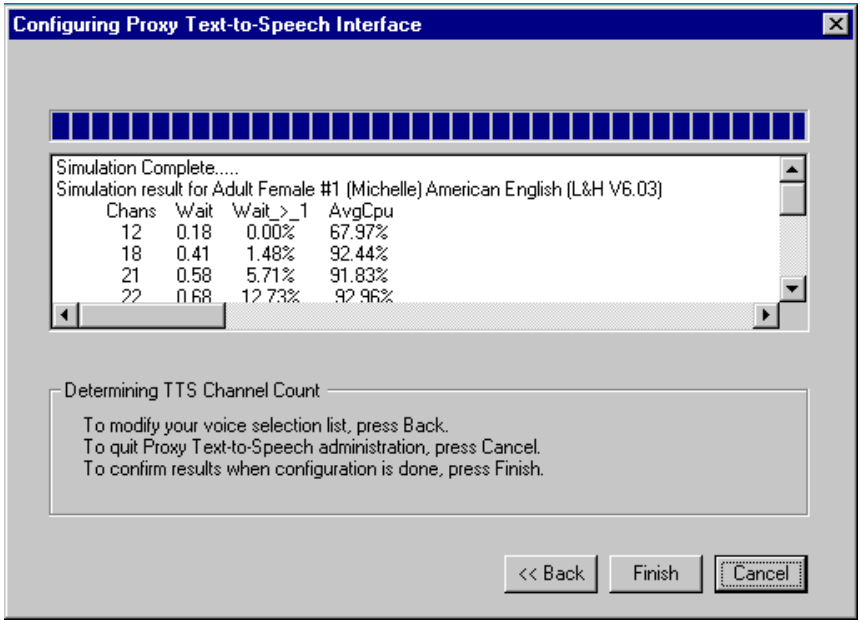
Figure 15. Configuring Proxy Text To Speech Interface Window



This configuration process takes into account the voices you have selected for use, your CPU speed, and other factors about your Windows NT system configuration. It uses this information to simulate various numbers of simultaneous PTTS conversion tasks, until it finds the maximum number of tasks at which 95% of the tasks have less than one second of delay. If more than one language has been selected and is being simulated, the process uses the "weakest link" rule, in which the language that processes tasks most slowly is used as the basis of this maximum number of tasks.

When the configuration process is finished, the system displays a summary configuration report showing the optimal configuration for your system (Figure 16 on page 81).

Figure 16. Finish Configuring Proxy Text-to-Speech Interface Window



8 To accept the configuration, click **Finish**.

The system displays a message instructing you to reboot your computer.

Note: You *must* reboot the Windows NT server before you can use these voices.

Removing the PTTS Service from the Windows NT Servers

In certain maintenance situations, the PTTS service must be removed from the NT servers. Before the PTTS feature can be used, the PTTS service must be restored on the NT servers.

To remove the PTTS service on an NT server, do the following:

1. Log in to the NT server as administrator.

Note: You *must* be logged in as administrator to use this procedure.

2. Stop the PTTS service.

   For the procedure, see Starting and Stopping the PTTS Service in the Windows NT Services Window above.

3. Click the **Start** button on the Windows NT taskbar, point to **Programs**, and click **Command Prompt**.

   The system displays the Command Prompt window.

4. At the command prompt, enter **cd Program Files**
5. Enter **cd Proxy Text-to-Speech**
6. Enter **cd chat**

7 Enter **instServ PttsSrvMgr remove**

Note: The example above assumes that you used the default installation path when installing the PTTS software. If you used a different installation path, alter the above commands appropriately.

You cannot abbreviate this process by entering the entire pathname and command on one command line.

The system removes PttsSrvMgr from the list of services in the Services dialog box and displays the following message:

```
Delete Service SUCCESS
```

Note: If the Services dialog box was already displayed on your desktop before you removed the PTTS service, the PttsSrvMgr service will still be listed. You must close and then reopen the Services dialog box to refresh the display and confirm that PttsSrvMgr has been removed from the list of services.

8 Close the Command Prompt window.

Restoring the PTTS Service on the Windows NT Servers

In certain maintenance situations, where PTTS service has been removed from the NT servers, the PTTS service must be restored on the NT servers before the PTTS feature can be used.

To restore the PTTS service on an NT server, do the following:

1. Log in to the NT server as administrator.

Note: You *must* be logged in as administrator to use this procedure.

2. Click the **Start** button on the Windows NT taskbar, point to **Programs**, and click **Command Prompt**.

   The system displays the Command Prompt window.

3. At the command prompt, enter **cd Program Files**
4. Enter **cd Proxy Text-to-Speech**
5. Enter **cd chat**
6. Enter **instServ PttsSrvMgr**

Note: The example above assumes that you used the default installation path when installing the PTTS software. If you used a different installation path, alter the above command appropriately.

You cannot abbreviate this process by entering the entire pathname and command on one command line.

The system restores PttsSrvMgr to the list of services displayed in the Services dialog box and displays the following message:

```
Create Service SUCCESS
```

Note: If the Services dialog box was already displayed on your desktop before you restored the PTTS service, the PttsSrvMgr service will not be listed. You must close and then reopen the Services dialog box to refresh the display and confirm that the PttsSrvMgr has been restored to the list of services.

7 Close the Command Prompt window.

Creating a Pronunciation Dictionary on the Windows NT Servers (Japanese PTTS Only)

Note: This section is for Japanese PTTS systems only.

The Windows NT servers can read in a user-supplied dictionary that customizes the pronunciation of words and phrases. Follow these guidelines if you use a customized pronunciation dictionary:

- Use the user dictionary editing tool provided with the PTTS library to create the dictionary file. For information on the tool, see the online help in the following file on the NT server:

  c:\program files\smarttalk\dll\DICTOOL\DicTool.hlp

Note: The example above assumes that you used the default installation path when installing the PTTS software. If you used a different installation path, alter the above command appropriately.

The online help file is installed with the Japanese PTTS library. See Installing the PTTS NT Server Software on the Windows NT Servers in Chapter 2, PTTS Installation and Removal.

- On each server, the pathname to the user dictionary file should be:

  c:\Program Files\Proxy Text-to-Speech\chat\JTTS_USER.DIC

Note: The example above assumes that you used the default installation path when installing the PTTS software. If you used a different installation path, alter the above command appropriately.

- Before using the dictionary for the first time or if you change the dictionary, stop and then restart the PTTS service on *each* NT server.

  For these procedures, see Starting and Stopping the PTTS Service in the Windows NT Services Window in Chapter 2, PTTS Installation and Removal.

Note: To initialize a new dictionary, you *must* stop and then restart the PTTS service (see Starting and Stopping the PTTS Service in the Windows NT Services Window above).

Administering the PTTS Feature on the CONVERSANT System

The following administration for PTTS must be done on *each* Windows NT server. You can complete these procedures in any order.

- Setting PTTS Connections on the CONVERSANT System
- Adding the NT servers to the /etc/hosts File on the CONVERSANT System
- Monitoring the PTTS Windows NT Servers from the CONVERSANT System

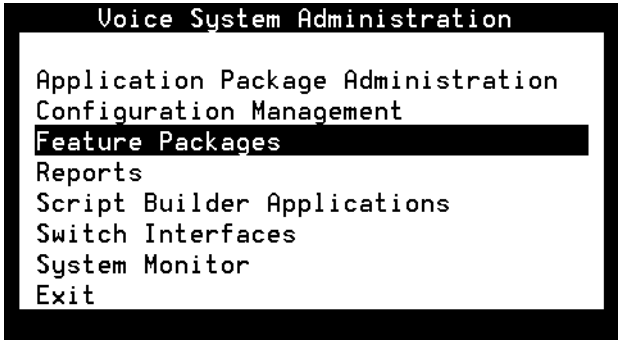
Setting PTTS Connections on the CONVERSANT System

To set the PTTS connection parameters on the CONVERSANT system, do the following:

1. Log in to the CONVERSANT system as root.
2. Enter **cvis_menu**

   The system displays the Voice System Administration screen (Figure 17 on page 88).

Figure 17. Voice System Administration Screen



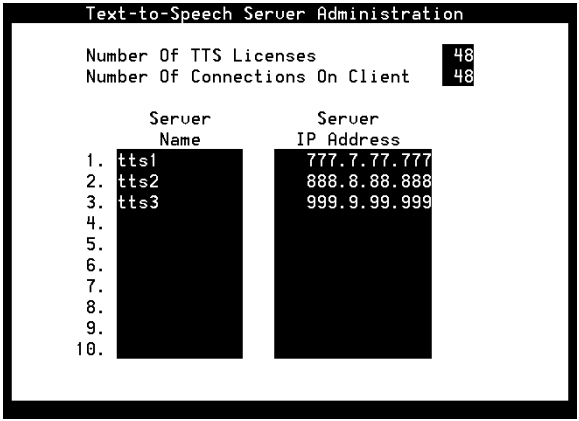
3 Select the following:

> Feature Packages

> Proxy Text-to-Speech

The system displays the Text-to-Speech Server Administration screen (Figure 18 on page 89).

Figure 18. Text-to-Speech Server Administration Screen



4 If the value in the **Number Of TTS Licenses** field (see Table 4 on page 92) is:

- ~ 0 (zero), go to Step 10, and then contact your remote support center to obtain licensing administration. For more information, see Verifying the PTTS Feature Licensing in Chapter 2, PTTS Installation and Removal. After the licensing has been administered, begin this procedure again.
- ~ Any number except 0 (zero), continue with Step 5.

5 Enter the total number of PTTS connections to be enabled on this CONVERSANT system in the **Number of Connections on Client** field (see Table 4 on page 92).

6 Enter information in the following fields for *each* NT server to be administered (see Table 4 on page 92):

- **Server Name**
- **Server IP Address**

Note: If your system is using a spare NT server for fault tolerance, administer it now. See Fault Tolerance in Chapter 1, Overview of PTTS, for more information.

7 Press **F3** (Save).

The system displays the following prompt:

```
Do you wish to continue with this change (y/n)?
```

8 Enter **y**

The system displays the following message:

```
You need to restart the Voice System to make the
changes active.
```

9 Press **F1** (Acknowlg Message).

10 Press **F6** (Cancel) twice to return to the Voice System Administration menu.

11 If you made changes to the information on the Text-to-Speech Server Administration window, before you use the PTTS feature, stop and then restart the voice system.

For the procedure to use either the CONVERSANT windows or the **stop_vs** command to stop the voice system, see “Stopping the Voice System” in the *CONVERSANT® System Reference* book for your system.

For the procedure to use either the CONVERSANT windows or the **start_vs** command to start the voice system, see “Starting the Voice System” in the *CONVERSANT® System Reference* book for your system.

Table 4. Text-to-Speech Server Administration Screen — Description of Fields

Field	Description/Comments
Number Of TTS Licenses	This is the number of TTS connections purchased. The maximum is 48 per CONVERSANT machine. You cannot change the information in this field. If the value is 0 (zero), contact your remote support center. See Verifying the PTTS Feature Licensing in Chapter 2, PTTS Installation and Removal.
Number Of Connections on Client	This is the number of PTTS connections licensed on the CONVERSANT client. Normally this number is equal to the number of TTS licenses, although it can be less. The maximum is 48. You can configure more PTTS connections than you have PTTS licenses. However, the CONVERSANT resource manager will limit the number of simultaneous TTS jobs to the number of valid RTU licenses. If you need more licenses, contact your remote support center.

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Table 4. Text-to-Speech Server Administration Screen — Description of Fields

Field	Description/Comments
Server Name	This is the domain naming system (DNS) name of the Windows NT server. This name also appears in the **/etc/hosts** file on the CONVERSANT system if it has been entered there. See Adding the NT servers to the /etc/hosts File on the CONVERSANT System below. If the address in the **Server IP Address** field (see below) is invalid, the system attempts to look up the DNS name entered here in the **/etc/hosts** file and to obtain the correct IP address there.
Server IP Address	This is the IP address of the Windows NT server. This address also appears in the **/etc/hosts** file on the CONVERSANT system if it has been entered there. See Adding the NT servers to the /etc/hosts File on the CONVERSANT System below. The system uses the address in this field to establish connectivity.

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Note: Information about the connections that you set in this procedure is stored in the **/vs/data/tts_servers** file on the CONVERSANT system.

Adding the NT servers to the /etc/hosts File on the CONVERSANT System

To enable network connectivity between the CONVERSANT client and the NT servers, normally it is sufficient to set the IP address and DNS name on the Text-to-Speech Server Administration window (see Setting PTTS Connections on the CONVERSANT System above). In the event the IP address entered in the window is invalid, the system attempts to match the DNS name in the **Server IP Address field** to the DNS name in the **/etc/hosts** file and to obtain the correct IP address there.

To enter the NT servers in the **/etc/hosts** file on the CONVERSANT system, do the following:

1. Log in to the CONVERSANT system as root.
2. Open the **/etc/hosts** file with an ASCII text editor, such as the vi editor.
3. For each NT server, add an entry to this file consisting of one line that includes the server's IP address and DNS name.

   If desired, you can also add one or more aliases for the DNS name in the following format, where <separator> is a tab or space character:

IP_address **<separator>** ***DNS_name*** <separator> *alias* <separator> *alias*

Note: By convention, the DNS name should match the PC name administered in the Windows NT server operating system on the server.

4. Save the file and exit.

Monitoring the PTTS Windows NT Servers from the CONVERSANT System

There are times you need to monitor the status of the PTTS Windows NT servers from the CONVERSANT system. Monitoring activities you can perform from the CONVERSANT system include the following:

- Verifying the Status of PTTS Licensing
- Checking Connection Status with the Windows NT Servers
- Checking for Language Availability

Note: The voice system *must* be running for the following procedures. If the voice system is not running you can still get limited information about PTTS connectivity by using the **ping** command (see Checking PTTS Connectivity in Chapter 5, Troubleshooting PTTS).

Verifying the Status of PTTS Licensing

To verify the status of the PTTS Right-to-Use (RTU) licensing, do the following:

1. Log in to the CONVERSANT system as root.
2. To start the voice system, enter **start_vs**

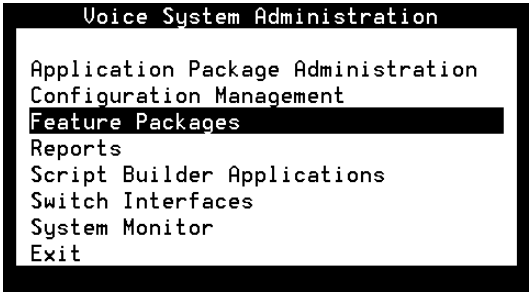
   For more information about starting the voice system using either the CONVERSANT windows or the start_vs command, see Starting the Voice System in the *CONVERSANT® System Reference* book for your system.

Note: If the voice system is already started, the system displays a message stating that the action failed because the voice system is already running.

3. Enter **cvis_menu**

   The system displays the Voice System Administration window (Figure 19 on page 97).

Figure 19. Voice System Administration Window



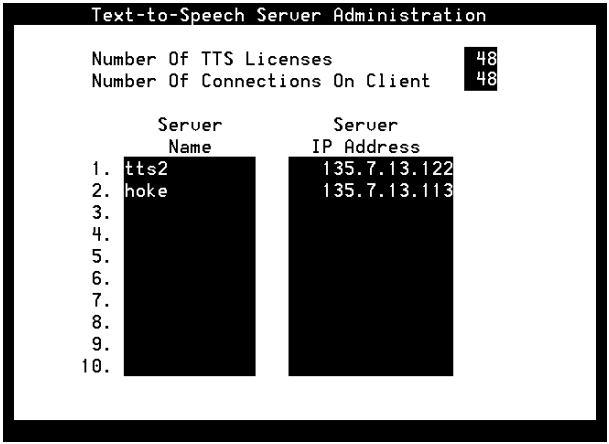
4 Select the following:

> **Feature Packages**

> **Proxy Text-to-Speech**

The system displays the Text-to-Speech Server Administration window (Figure 20 on page 98).

Figure 20. Text-to-Speech Server Administration Window



The top line of this window displays the number of valid PTTS licenses.

Note: A zero (0) in this field indicates there are no valid licenses. Any other number indicates the number of valid licenses.

If the RTU licensing is not correct, contact your remote service center for information about RTU license administration.

5 Press **F6** (Cancel) three times to return to the system prompt.

Checking Connection Status with the Windows NT Servers

To check the status of CONVERSANT-Windows NT server connections from the CONVERSANT system, perform the same procedure as in Verifying the Status of PTTS Licensing above.

The second line of the Text-to-Speech Server Administration window and the **Server Name** and **Server IP Address** fields display connection status information.

Note: For best operations, the numbers in the **Number of Connections on Client** and in the **Number of TTS Licenses** fields should be the same. In any case, the **Number of Connections on Client** should be less than (if not equal to) the **Number of TTS Licenses**.

Checking for Language Availability

To find out what languages are installed and available for use on Windows NT servers, do the following:

1. Perform the procedure in Verifying the Status of PTTS Licensing above through step 4.
2. Press **F5** (Status).

   The system displays the Proxy Text-to-Speech System Status Checker window. This window displays information about the Windows NT server connection status, languages that are installed and available, and other system status messages.

Note: You may need to page down using the **F3** (Next Page) key to see more information.

3. Find the screen that displays information about the languages that are installed and available. The screen should appear similar to Figure 21 on page 101.

Figure 21. Proxy Text-to-Speech System Status Checker Window

```
------------------------------------------------------------------------------

Server     IP Address      Avail Max Message
tts1       135.7.13.122       48  48 ResponseTime=1 csec
 Memory: Physical 41% of 128 MB Avail, Page 40% of 254 MB Avail, v4.3.1
 V7_V8 CPU = 20%
 VoiceTag                    Language      Vendor LangID Sex Dflt NChan Stat
 OkiMale-T                   Japanese      oki     1041  M=1   Y   48    OK
------------------------------------------------------------------------------
Server     IP Address      Avail Max Message
tts2       135.7.13.113       17  17 ResponseTime=1 csec
 Memory: Physical 41% of 128 MB Avail, Page 40% of 254 MB Avail, v4.3.1
 V7_V8 CPU = 20%
 VoiceTag                    Language      Vendor LangID Sex Dflt NChan Stat
 John-T                      English       Lucent  1033  M=1   Y   18    OOS
 Pablo-T                     Spanish       Lucent  2058  M=1   Y   17    OK
------------------------------------------------------------------------------
```

This screen presents a variety of information about each Windows NT server in the system and the languages available on each Windows NT server. Table 5 on page 102 lists and describes in detail the fields for this display.

4 Press **F6** (Cancel) four times to return to the system prompt.

Table 5. Proxy Text-to-Speech System Status Checker Window Fields

Field Name	Description
Server	Name of the Windows NT server
IP Address	IP address of the Windows NT server
Avail	Number of connections available; if zero (0) and Max is greater than zero, then the Windows NT server capacity needs to be increased.
Max	Maximum number of connection possible; if zero (0), no voices are administered on the Windows NT server.
Message	Various system response messages
Memory:	Information about physical and RAM memory
NT version number	Shows version of NT being used
CONVERSANT version number	Shows version of CONVERSANT being used

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Table 5. Proxy Text-to-Speech System Status Checker Window Fields

Field Name	Description
CPU usage indicator	Shows the NT server CPU usage; updated once every second
VoiceTag	Names of the speaking voices available for use on this server (example: "John-T"); if this field says "NoVoice", you have not yet administered any voice tags and must do so before voices are available (for details, see PTTS Voice Administration on the Windows NT Servers in this chapter)
Language	Name of the language with which the VoiceTag is associated
Vendor	Name of the vendor who provided the language library (example: "Lucent")
LangID	4-digit number used to identify the language using Microsoft SAPI ID numbering standards (example: "1033", which is used for US English)

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Table 5. Proxy Text-to-Speech System Status Checker Window Fields

Field Name	Description
Sex	Gender of the VoiceTag (example: "M=1" means it is a male voice)
Dflt	Designation of whether the voice is a default language (example: "y" for "yes", meaning it is designated as a default language); only applicable when the language and the gender are the same for two different Voice Tags, in which case, only one of them can be tagged as the default.

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Table 5. Proxy Text-to-Speech System Status Checker Window Fields

Field Name	Description
NChan	Maximum number of channels (simultaneous PTTS conversion tasks) this particular language can handle; if zero (0), no voices are administered on the Windows NT server.
Stat	Indicator of whether all the selected voices loaded properly. This field is updated only when the server starts the PttsSrvMgr process. The two possible values are "OK" or "OOS" (for "Out of Service"). The PTTS heartbeat process generates a NOVOICE alarm each time a voice does not successfully load.

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4 Using PTTS in Voice Applications

Overview

There are five Proxy Text-to-Speech (PTTS) external functions used to access PTTS functionality in Script Builder or Voice@Work applications.

Note: PTTS does not support the text-to-speech (TTS) formats available for TTS on the speech and signal processor (SSP) circuit card for playback in Announce or Prompt and Collect nodes (Voice@Work) or action steps (Script Builder). These formats are listed in Appendix D, Text-to-Speech Formats, in the *CONVERSANT® System Speech Development, Processing, and Recognition* book for your system.

The **irSetParam** function is used to set the value of the PTTS parameters in Response Application Programming Interface (IRAPI) C programs.

Purpose

This chapter provides information about using the PTTS feature with CONVERSANT voice response systems. It also provides information about the external functions and IRAPI parameters available to access the PTTS feature in voice applications. Major topics include the following:

Considerations for Using PTTS

The Proxy Text-to-Speech (PTTS) feature makes it possible to use SAPI-compliant TTS voices in CONVERSANT applications. When using this feature, you should keep the following considerations in mind:

Initialize IRAPI parameters.

IRAPI parameters can be used to set TTS attributes such as gender, volume, language ID, and VoiceTag. These IRAPI parameters can be set differently for each channel, and they remain changed until something is done to change them again or to reset them. This can lead to unexpected and undesirable results when these IRAPI parameters remain unchanged from one call on a channel to the next.

Unfortunately, there is no easy way to reset IRAPI parameters at the *end* of a call. Therefore, it is up to the application developer to avoid this problem by initializing all PTTS parameters at the *beginning* of a call flow application. This can help avoid any confusion caused by wrong or inappropriate IRAPI settings left from previous calls.

To initialize the IRAPI parameters at the beginning of the PTTS application, place calls to the proxyparams, proxylang, and proxyvoice external functions near the beginning of your application script. For an example of how to do this using:

- Voice@Work, see PTTS and the Voice@Work Application Development Tool, Example 2, later in this chapter
- Script Builder, see PTTS and the Script Builder Application Development Tool, Example 2, later in this chapter

Keep text files less than 5 Kbytes.

The maximum size text file that the proxytext external function can handle is 5 Kbytes. Longer files are truncated to 5 Kbytes.

Construct text files carefully.

In order to help balance the load of channels competing for PTTS conversion, text files are parsed before being converted to speech. The parsed files are then sent out in individual text buffers for speech conversion.

The algorithm used in parsing the text files looks for carriage return-line feed (CRLF) markers as break points. Thus, you should try to construct your text files by placing CRLFs at natural pause points in the text, such as ends of statements or clauses. The more CRLFs you can provide in the text file, the fewer the parser must create on its own.

The rule for the parser is that, if a line consists of 40 or more characters, then that line comprises the text for the next PTTS conversion task. If the line is less than 40 characters, then the next line is included with it.

The longest a text buffer can be is 256 characters. If the parser cannot find a natural break point within that number of characters, it breaks the text at that point, regardless of whether it is a good point to break or not. In any case, you should avoid text buffers of that length, as it can cause other channels to suffer delays.

In general, you should try to create short text buffers with numerous CRLFs.

Plan your system configuration carefully.

As many as 10 Windows NT servers can be connected to a single CONVERSANT client. These Windows NT servers can be shared by multiple CONVERSANT clients, but in setting up your system, you must be careful that the total client (CONVERSANT) demand does not exceed the total Windows NT server capacity to respond.

You should also configure your system so that you have one more Windows NT server than you absolutely need. This provides for built-in redundancy so that service will not be interrupted even if one Windows NT server goes out of operation.

Plan multilingual applications carefully.

If you are creating multilingual applications, you may choose to:

- Support all required languages on each Windows NT server.
- Designate different Windows NT servers to support different languages.

Be aware that, on Windows NT servers supporting more than one language voice tag, the rule is that the server can support only as many simultaneous conversion tasks as the most CPU-intensive voice tag supports.

For example, US English is more CPU-intensive than Japanese. Thus, if you use one Windows NT server to support both Japanese, which can handle a maximum of 48 simultaneous conversion tasks, and US English, which can handle a maximum of 23 simultaneous conversion tasks, then that server can only be counted on to support a maximum of 23 simultaneous conversion tasks.

On the other hand, if you choose to use different Windows NT servers for different languages, then you should plan for 20% additional connection capacity, as it will be necessary at times to drop a connection if the newest conversion task requires a language that is not supported by the currently connected server.

Keep VoiceTag names less than 64 characters long.

The longest a VoiceTag name can be is 64 characters.

This is generally significant only if you plan to have more than one voice tag with the same language and gender attributes, for example, "Grace-T" and "Mary (for Telephone)", which are both US English, female voice tags.

In such cases, the default voice can be accessed using only the language ID and gender parameters. If you want to access a non-default voice, you must access it using the VoiceTag parameter. Non-default voice tags are designated only when there are two or more voice tags with the same language ID and gender. In such cases, only one voice tag may be designated as the default voice tag.

If you do not have Cornerstone 3.1 with rfu+b, you must install the vs+ap2 patch.

Starting with PTTS version 2.1, phrase queuing is supported for the PTTS feature. This means you can now string together a number of interruptible PTTS files or text buffers, and they can all be interrupted with a single touch tone. These text lines may also come from multiple Voice@Work Announce nodes or Script Builder Announce commands.

To make this happen, a slight change to the VROP was required, and this change is included in the Cornerstone 3.1 **rfu+b** release (V7.0 only). If you do not have this release, you must add the **vs+ap2** patch before phrase queuing will work properly on your system. If you need this patch, contact your Technical Support Center for assistance.

Note: If you plan to use phrase queuing, be aware that some of the **Field Format** strings don't work for some languages. Make sure you test carefully before placing the application into service.

PTTS External Functions

Table 6 lists and describes the external functions used for PTTS.

Table 6. PTTS External Functions

External Function	Description
proxytext	This external function is used to request conversion of text to speech.
proxytts_on	This external function switches between PTTS and TTS on the SSP circuit card.
proxyparams	This external function customizes the PTTS speaking voice rate, pitch, and gender.
proxylang	This external function allows you to select languages using language ID numbers based on Microsoft standard codes. This external function can be used to switch languages in the middle of an application.

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Table 6. PTTS External Functions

External Function	Description
proxyvoice	This external function allows you to select a particular voice tag. This external function is needed only if you want to support two or more voices that have the same language ID and gender. Normally, an application uses the default voice for a language and gender, which is designated during voice administration (see PTTS Voice Administration on the Windows NT Servers in Chapter 3, PTTS Administration).

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CAUTION:
All PTTS external functions use channel-based IRAPI parameters. These parameters retain their values between calls. Application developers, therefore, must set these values at the beginning of each call, or unexpected values may be used.

proxytext

The **proxytext** external function causes the PTTS server to convert either a text file or a text buffer to speech. The maximum size for this file is 5 Kbytes. Longer files are truncated.

Using this function in an application sets an IRAPI flag that causes all subsequent requests for TTS in the application to use PTTS and not the SSP circuit card. Using this external function you can also enable and disable barge-in (talkoff).

Note: To switch back to TTS on the SSP circuit card, use the **proxytts_on** external function.

The transaction assembler script (TAS) code for this function is in the file **/vs/bin/ag/lib/proxytext.t** on the CONVERSANT system.

Table 7 on page 116 gives the arguments, values, and return values for the **proxytext** external function.

Table 7. proxytext External Function

Arguments	Values	Return Values
talkoff flag (Determines whether a caller can stop speech playback by entering a touch tone)	• 0 = The caller cannot interrupt the phrase. • 1 = The caller can interrupt the phrase with a touch tone. • 2 = The caller can interrupt the phrase with a touch tone or with speech.	1 = Talkoff occurred. 0 = Function completed successfully. -1 = TSM **say** instruction failed. -2 = Resources needed for **say** instruction not available. -3 = IRAPI failed. -4 = Bad talkoff flag.
string variable (Names the text buffer or text file on the CONVERSANT system that PTTS reads)	• Pointer to a text buffer • The absolute pathname (from root) of a file containing text; such a file is assumed if the first character of the string is a back slash (*/*)	

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Table 7. proxytext External Function

Arguments	Values	Return Values
string variable (cont.)	• The simple filename of a file that exists in **/vs/data/tts_files** **Note:** You can use a relative pathname for a file *only* if it exists in the **/vd/data/tts_files** directory. If the file resides anywhere else, you must use an absolute pathname.	

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proxytts_on

The **proxytts_on** external function toggles between PTTS and TTS on the SSP circuit card. By default, the system uses PTTS. If you want to use TTS on the SSP circuit card, you must reset the value to **1**.

The TAS code for this function is in **/vs/bin/ag/lib/proxytts_on.t** on the CONVERSANT system.

Note: If you use the **proxytts_on** external function to switch from PTTS to SSP-based TTS, you should not try to switch back to PTTS during the same call. Problems can result if you do.

Table 8 gives the arguments, values, and return values for the **proxytts_on** external function.

Table 8. proxytts_on External Function

Argument	Values	Return Values
proxy/SSP	• 0 = PTTS (default) • 1 = TTS on the SSP circuit card	-1 = Error -2 = Bad argument

Note: It is not necessary to use the **proxytts_on** external function if you plan to use *only* PTTS in the application, as the proper call is set within the **proxytext** external function.

proxyparams

The **proxyparams** external function allows you to alter the default parameters for the PTTS speaking voice, including gender, rate of speech, volume, pitch, and intonation. The system uses the default values if you use the **proxytext** external function (see proxytext above) without using the **proxyparams** external function.

Note: Once the defaults are altered, the new settings remain in effect for the current channel until they are reset or the CONVERSANT system is stopped.

The TAS code for this function is in **/vs/bin/ag/lib/proxyparams.t** on the CONVERSANT system.

Table 9 on page 120 gives the arguments, values, and return values for the **proxyparams** external function.

Table 9. proxyparams External Function

Arguments	Values	Return Values
gender	Range: 0 (female) or 1 (male); default = 1	0 = Function completed successfully. -3 = IRAPI failed.
speed	Range: 1 (slowest) to 10 (fastest); default = 5	
volume	Range: 1 (softest) to 10 (loudest); default = 5	
pitch	Range: 1 (lowest) to 10 (highest); default = 5	
intonation (used for Japanese only)	Range: 1 to 6; default = 4	

proxylang

The **proxylang** external function is used to set the language of the PTTS voice used for an application.

If your system uses only a single language, you may want to use the **set_lang** command to set the default language ID. You must configure at least one Windows NT server to support whatever language you specify as the default language.

Note: You can set the default language ID number by using the following command at the CONVERSANT system prompt:

/vs/bin/util/set_lang ####

where *####* represents a 4-digit language ID number (1033 for US English, for example). If you leave this ID number argument blank, the system displays a list of the currently supported languages.

For example, the default primary language is 1033 (US English). If you wanted to change the default primary language to Mexican/ Latin American Spanish, you would enter:

/vs/bin/util/set_lang 2058

This external function takes an integer argument that determines the language to be used by subsequent PTTS jobs. Each supported language has a corresponding identification number (Table 10 on page 122).

The TAS code for this function is in **/vs/bin/ag/lib/proxylang.t** on the CONVERSANT system.

To find information about language identification numbers, as well as other information about the installed and available languages in your system, use the Proxy Text-to-Speech System Status Checker window **F5** (Status) command to view information on the status of the Windows NT servers (see Monitoring the PTTS Windows NT Servers from the CONVERSANT System in Chapter 3, PTTS Administration).

Table 10 gives the arguments, values, and return values for the **proxylang** external function.

Table 10. proxylang External Function

Argument	Possible Values	Return Values
language	1033 (US English–default) 1041 (Japanese) 2058 (Mexican/Latin American Spanish) 1034 (Traditional/Castilian Spanish) **Note:** For other available languages, use the Proxy Text-to- Speech Administration application (see PTTS Voice Administration on the Windows NT Servers in Chapter 3, PTTS Administration).	0 = Function completed successfully -3 = IRAPI failed

proxyvoice

CAUTION:
In general, you should not use this external function unless you need, within a single application, to support more than one voice having the same language ID and gender attributes.

Each Speech Application Programming Interface (SAPI) TTS voice can be accessed using a voice tag, such as "John-T". In selecting which TTS voice to use, the server software uses the following rules:

- If the voice tag is set using this external function, the software attempts to use that TTS voice.
- If the voice tag is null (""), the default voice for language and gender is used.

If a designated voice cannot be found, the **PTTS_NOVOICE** alarm is invoked and no speech output is heard.

For the procedure to define a default voice for a language, see PTTS Voice Administration on the Windows NT Servers in Chapter 3, PTTS Administration.

The **proxyvoice** external function is needed only if you want to use two or more SAPI TTS voices having the same language ID and gender. It is, for example, possible to have two English male voices and to access the non-default version using this external function.

Note: Normally, a default voice tag is designated for a given language ID and gender when the voices are installed and administered using the Proxy Text-to-Speech Administration tool (see PTTS Voice Administration on the Windows NT Servers in Chapter 3, PTTS Administration).

Once **proxyvoice** has been used to select a voice, all subsequent calls to **proxytext** are handled by that voice. To turn off that voice, you must call **proxyvoice** again, with the voice tag set to "" (null) or to another voice tag. In fact, because the system does not automatically reset voices, to reset to the default voice at the end of the call, you *must* use this external function again with the voice tag set to "" (null).

The TAS code for this function is in **/vs/bin/ag/lib/proxyvoice.t** on the CONVERSANT system.

To see the currently supported voice tags, do one of the following on the CONVERSANT system:

- Use the **F5** (Status) option in the Text-to-Speech Server Administration window (see Monitoring the PTTS Windows NT Servers from the CONVERSANT System in Chapter 3, PTTS Administration).
- Run the **/vs/bin/util/pchk** command.

Table 11 gives the arguments, values, and return values for the **proxyvoice** external function.

Table 11. proxyvoice External Function

Arguments	Values	Return Values
VoiceTag	Names of language "voices" (for example, "John-T" **Note:** It is important that you spell these VoiceTags *exactly* as they are given the Windows NT PTTS Administration tool. The maximum length for this field is 60 characters. If this is set, PTTS attempts to convert subsequent text using the voice associated with the VoiceTag. If the VoiceTag corresponds to a valid voice, LanguageID and Gender (see below) are ignored. If the voice has been configured as a default voice, it is also possible to access a TTS voice using LanguageID and Gender (see below).	0 = Function completed successfully. -3 = IRAPI failed.

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Table 11. proxyvoice External Function

Arguments	Values	Return Values
LanguageID	1033 (US English–default) 1041 (Japanese) 2058 (Mexican/Latin American Spanish) 1034 (Traditional/Castilian Spanish) **Note:** For other available languages, use the Proxy Text To Speech Administration application (see PTTS Voice Administration on the Windows NT Servers in Chapter 3, PTTS Administration).	
Gender	0 = female, 1 = male	

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PTTS and the Voice@Work Application Development Tool

The method of accessing the PTTS external functions differs depending on the release of the Voice@Work application development tool you are using.

Voice@Work Releases Prior to R3.0

For all releases of Voice@Work prior to R3.0, the PTTS external functions are not included as standard external functions. Therefore, the first time you use a PTTS external function in a pre-R3.0 Voice@Work application, you must create a custom external function node to act as an interface with the PTTS external function, which is located on the CONVERSANT system. Once you create the external function node, you can make it a shared resource and import it into any Voice@Work applications you develop in the future.

Using an External Function for the First Time

Use the following procedure the first time you use *each* PTTS external function in pre-R3.0 Voice@Work applications.

1. Create a new custom external function by completing the procedure in the Working with External Functions chapter of *Using Voice@Work*, 585-313-207.

Note: Use the names in Table 6 on page 113 for the external functions.

2 Define the attributes of the PTTS external function for Voice@Work by completing the procedure in the Working with External Functions chapter of *Using Voice@Work*, 585-313-207.

For the arguments for all the PTTS external functions, enter the following:

- **ToFunc** in the **Direction** field
- **True** in the **Required** field

Once you define the external function, an icon for the external function node is added to the External Functions palette (see the Palettes chapter of *Using Voice@Work*, 585-313-207.)

3 If you intend to use the external function in other Voice@Work applications, make the node a shared resource. See the Sharing Menu chapter of *Using Voice@Work*, 585-313-207, for the procedure.

Importing an Existing External Function

Use the following procedure to import a PTTS external function that has been made a shared resource into an application.

1. Import the external function into the application.

   Use the procedure in the Application Resources Tool chapter of *Using Voice@Work*, 585-313-207.

2. Use the Node Inspector to set values for the external function arguments.

   For the procedure, see the Node Inspector Tool chapter of *Using Voice@Work*, 585-313-207. You can enter the literal value for the argument, or, if you have defined it as a variable, you can select it from the drop-down list of variables.

Voice@Work R3.0

In Voice@Work R3.0, some of the PTTS external functions (proxytext, proxytts_on, and proxyparams) are included as standard external functions. You can import them into an application by using the procedure in the Application Resources Tool chapter of *Using Voice@Work*, 585-313-207.

Note: If you have previously created your own PTTS external functions using the procedure in the Voice@Work Releases Prior to R3.0 section above, you must delete them before importing these standard PTTS external functions.

If you want to use the proxylang or proxyvoice external functions, you must create the interface yourself. For the procedures to do this, see Voice@Work Releases Prior to R3.0 above.

Voice@Work R3.1 and Subsequent Releases

Starting with Voice@Work R3.1, all of the PTTS external functions are included as standard external functions. You can import them into an application by using the procedure in the Application Resources Tool chapter of *Using Voice@Work*, 585-313-207.

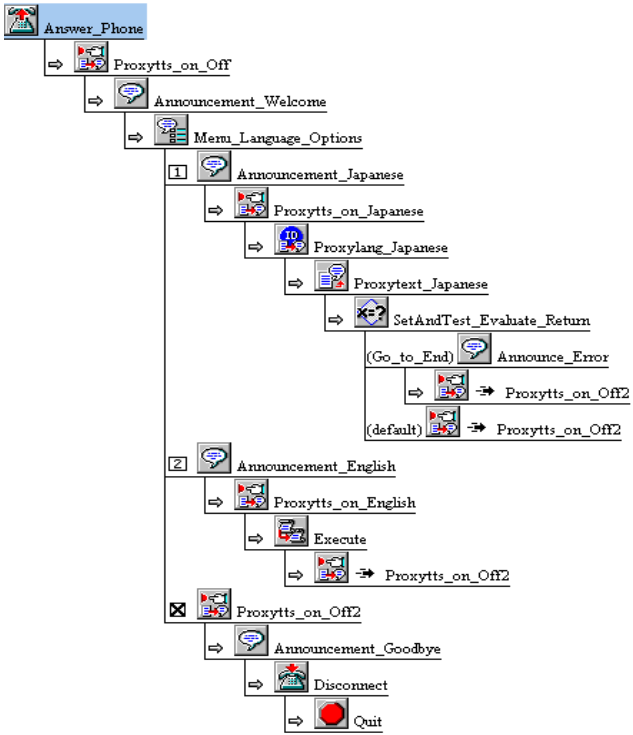
Note: If you have previously created your own PTTS external functions using the procedure in the Voice@Work Releases Prior to R3.0 section above, you must delete them before importing these standard PTTS external functions.

Example 1

The Voice@Work call flow shown in Figure 22 on 131 demonstrates how to use the **proxytts_on** external function to switch between PTTS and TTS on the SSP circuit card. For information on licensing for PTTS and TTS, see Using PTTS with TTS in Chapter 1, Overview of PTTS.

Note: For the Script Builder version of this call flow, see Example 1 in PTTS and the Script Builder Application Development Tool below.

Figure 22. Sample Voice@Work Call Flow



Example 2

The Voice@Work following call flows are for a more involved application. The figures shown on the following pages demonstrate how to use the PTTS external functions to change voices and languages. This application first plays some English text using a female US English voice. Later, it switches to Spanish text using a male Spanish voice.

Note: For the Script Builder version of this call flow application, see Example 2 in PTTS and the Script Builder Application Development Tool below.

In order to use this application, the appropriate Windows NT server(s) must first be set up to support the female US English voice and the male Spanish voice. Also, the appropriate English and Spanish text files must already reside on the CONVERSANT system in the **/vs/data/tts_files** directory.

Figure 23. Voice@Work Example 2, Main Call Flow

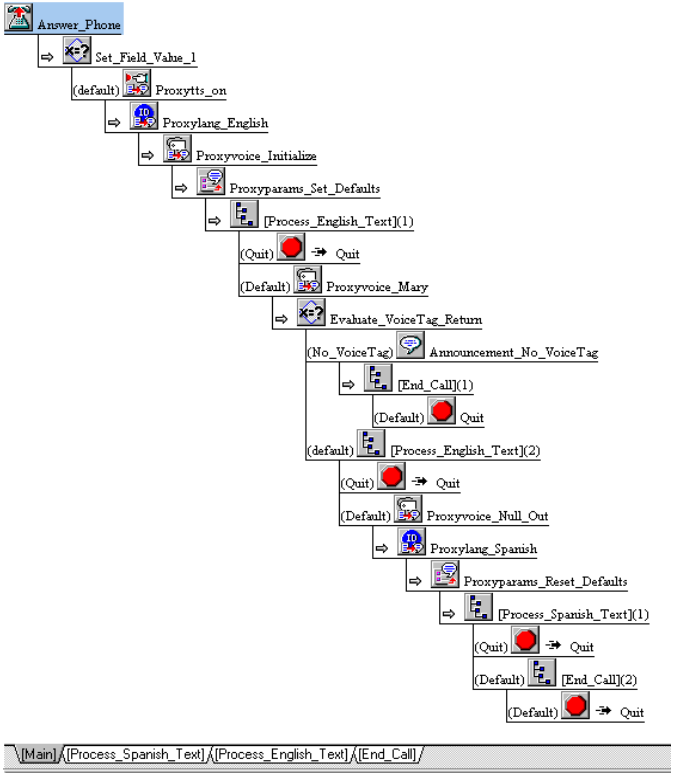


Figure 24. Voice@Work Example 2, English-Processing Call Flow

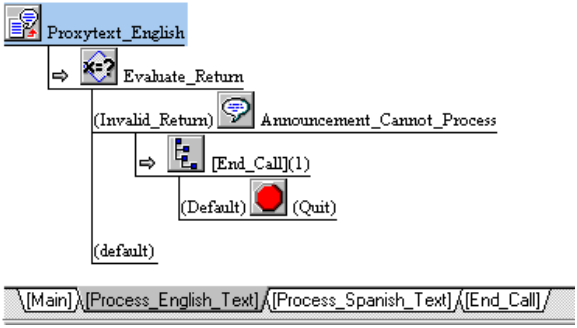


Figure 25. Voice@Work Example 2, Spanish-Processing Call Flow

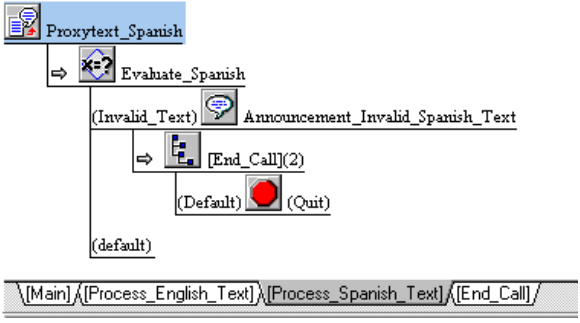
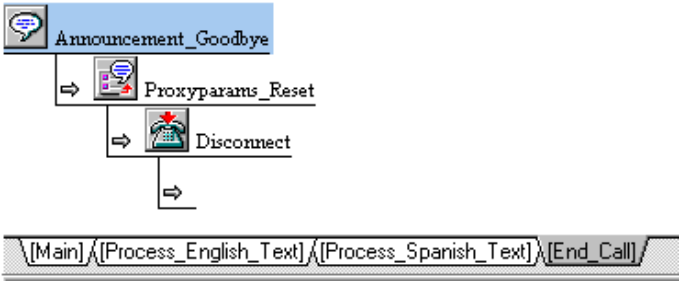


Figure 26. Voice@Work Example 2, End-Call Call Flow



PTTS and the Script Builder Application Development Tool

In a Script Builder application, you access PTTS external functions from the Define Transaction screen. This screen allows you to specify the name of the external function, the function arguments, and the return code field that receives a value back from the function. For details on using external functions in a Script Builder application, see the following sections of the *CONVERSANT System Application Development with Script Builder* book for your system:

- “Defining External Functions” in Chapter 7, "Defining the Transaction"
- “Using External Functions” in Chapter 11, "Using Advanced Features"

Note: For each external function, you must specify a value for every argument in the order shown in Table 7 on page 116 through Table 10 on page 122, respectively. Use the function names and filenames shown in the tables.

Example 1

The following Script Builder script demonstrates how to use the **proxytts_on** external function to switch between PTTS and TTS on the SSP circuit card. For information on licensing for PTTS and TTS, see Using PTTS with TTS in Chapter 1, Overview of PTTS.

Note: For the Voice@Work version of this call flow, see Example 1 in PTTS and the Voice@Work Application Development Tool above.

```
   start:
1. Answer Phone
2. Announce
     Speak With Interrupt
       Phrase: "Welcome to the Proxy Text-to-Speech
                application."
3. Prompt & Collect
     Prompt
      Speak With Interrupt
        Phrase: "If you would like to continue in English,
                 press 1 now."
        Phrase: "If you would like to continue in Japanese,
                 press 2 now."
     Checklist
```

```
        Case: "Input Ok"
           Continue
        Case: "Initial Timeout"
           Reprompt
        Case: "Too Few Digits"
           Reprompt
        Case: "No More Tries"
           Quit
      End Prompt & Collect
4. Evaluate
     If $CI_VALUE   = 1
5. Goto US_tts
     Elseif $CI_VALUE   = 2
6. Goto J_tts
     End Evaluate
     J_tts:
7. Announce
     Speak With Interrupt
       Phrase: "You have chosen to continue in Japanese."
8. External Function
     Function Name: proxytts_on
     Use Arguments: 0
9. External Function
     Function Name: proxylang
     Use Arguments: 1041
10. External Function
     Function Name: proxytext
     Use Arguments: "/vs/data/tts_files/jdem1"
     Return Field:  ret_file
11. Evaluate
```

```
      If ret_file   < 0
13. Goto end
      End Evaluate
      end:
14. Announce
      Speak With Interrupt
        Phrase: "Good-bye."
15. Disconnect
16. Quit
      US_tts:
17. Announce
      Speak With Interrupt
        Phrase: "You have chosen to continue in English."
18. External Function
      Function Name: proxytts_on
      Use Arguments: 1
19. External Action: Execute
      Application_Name:  "tts_tst"
      Write_Call_Data_Record:  "yes"
      Return Field:  ret_ustts
      End External Action
20. Goto end
```

Example 2

The following Script Builder script demonstrates how to use the PTTS external functions to change voices and languages. This text first plays some English text using a female US English voice. Later, it switches to Spanish text using a male Spanish voice.

Note: For the Voice@Work version of this call flow, see Example 2 in PTTS and the Voice@Work Application Development Tool above.

In order to use this script, the appropriate Windows NT server(s) must first be set up to support the female US English voice and the male Spanish voice. Also, the appropriate English and Spanish text files must already reside on the CONVERSANT system in the **/vs/data/tts_files** directory.

```
   start:
1. Answer Phone
2. Set Field Value
     Field: English = 1033
     Field: Japanese = 1041
     Field: Spanish = 1034
     Field: Male = 1
     Field: Female = 0
3. Set Field Value
     Field: Gender = Male
     Field: Speed = 5
     Field: Pitch = 5
     Field: Volume = 5
```

```
     Field: Intonation = 4
4. External Function
     Function Name: proxytts_on
     Use Arguments: 0
   #We are selecting English first
5. External Function
     Function Name: proxylang
     Use Arguments: English
     Return Field:  retval
   #It is always good to initialize proxyvoice
   #if you're using proxyvoice in the application
6. External Function
     Function Name: proxyvoice
     Use Arguments: ""  English  Male
     Return Field:  retval
7. External Function
     Function Name: proxyparams
     Use Arguments: Gender  Speed  Pitch  Volume  Intonation
     Return Field:  retval
   #We're now converting some English text to speech
   #using English Male voice
8. External Function
     Function Name: proxytext
     Use Arguments: Male  "/vs/data/tts_files/ENG.TXT"
     Return Field:  ret_text
9. Evaluate
     If ret_text   < 0
10. Goto end
      End Evaluate
    #We are going to convert English text to speech
```

```
    #using English male "Mike (for Telephone)" voice
11. External Function
      Function Name: proxyvoice
      Use Arguments: "Mike (for Telephone)"  English  Male
      Return Field:  ret_voice
12. Evaluate
      If ret_voice   < 0
13. Goto end
      End Evaluate
14. External Function
      Function Name: proxytext
      Use Arguments: 0  "/vs/data/tts_files/ENG.TXT"
      Return Field:  ret_text
15. Evaluate
      If ret_text   < 0
16. Goto end
      End Evaluate
    #Nulling the proxyvoice is very important
    #when you're done with it
17. External Function
      Function Name: proxyvoice
      Use Arguments: ""  English  Male
      Return Field:  ret_voice
    #We are now selecting Mexican Spanish (2058)
18. External Function
      Function Name: proxylang
      Use Arguments: Spanish
      Return Field:  retval
19. External Function
      Function Name: proxyparams
```

```
      Use Arguments: Gender  Speed  Pitch  Volume
Intonation
      Return Field:  retval
    #now convert some spanish text to speech using Male
    #voice
20. External Function
      Function Name: proxytext
      Use Arguments: Male  "/vs/data/tts_files/spanish.TXT"
      Return Field:  ret_text
21. Evaluate
      If ret_text   < 0
22. Goto end
      End Evaluate
      end:
23. Announce
      Speak With Interrupt
        Phrase: "Good-bye."
24. Disconnect
25. Quit
```

PTTS IRAPI Parameters

In IRAPI C programs, the **irSetParam** function is used to set the value of the PTTS parameters. Table 12 on page 143 lists the IRAPI parameters corresponding to the PTTS external functions. For more information about IRAPI programming, see the *CONVERSANT® System Application Development with Advanced Methods* book for your system.

Table 12. PTTS IRAPI Parameters

External Function	PTTS Parameter	IRAPI Parameter	Values
proxyparams.t	gender	IRP_EXT_PARAM_7A	0 (female) or 1 (male)
	speed	IRP_EXT_PARAM_7B	1-10
	volume	IRP_EXT_PARAM_7C	1-10
	pitch	IRP_EXT_PARAM_7D	1-10
	intonation	IRP_EXT_PARAM_7E	1-6
proxytts_on.t	proxy/SSP	IRP_TTS_TYPE	IRD_SPTTS (SSP circuit card) or IRD_SWTTS (PTTS)
proxylang.t	language	IRP_EXT_PARAM_7F	4-digit language ID number (see Table 10 on page 122)
proxyvoice.t	VoiceTag language gender	IRP_EXT_PARAM_7H IRP_EXT_PARAM_7F IRP_EXT_PARAM_7A	"John-T" 4-digit language ID number 0 (female) or 1 (male)

5 Troubleshooting PTTS

Overview

CONVERSANT® system messages alert you to problems, potential problems, or a change in the state of the system. This chapter contains the messages specific to the proxy text-to-speech (PTTS) feature. This chapter also tells you how to view information about the status of the PTTS servers and how to troubleshoot problems that are not associated with system messages.

Note: All other CONVERSANT system messages are described in "Alarms and Log Messages" in the *CONVERSANT® System Reference* book for your system. See also Appendix A, "Summary of Commands," in the *CONVERSANT® System Administration* book for your system, for information on using the **logCat** command to see a list of alarms and using the **explain** command to get information about how to respond to an alarm or log message.

Purpose

Refer to this chapter to help you determine the action to take regarding trouble with the PTTS feature. Major topics include the following:

- PTTS Alarms and Log Messages
- Monitoring the PTTS Windows NT Servers
- Checking PTTS Connectivity
- PTTS Troubleshooting Guidelines

PTTS Alarms and Log Messages

This section lists alarm codes and log messages you may encounter while installing and administering PTTS on your system. Descriptions of the causes for these messages and repair procedures are also provided.

If a repair procedure for a message does not effectively correct the problem experienced, escalate the problem to the next level of support.

Note: The following alarm codes all begin with the prefix **PTTS**. This is as they appear on V8.0 systems. V7.0 codes begin with the prefix **TTS**, for example, **TTS007** instead of **PTTS007**.

PTTS007 — PTTS Server not found

Alarm Level

Major

Description

The PTTS feature cannot be started because the **/vs/data/tts_servers** file on the CONVERSANT system, which contains addresses for the PTTS servers, either does not exist, contains no data, or has the wrong permissions.

Repair Procedure

- If the file /**vs/data/tts_servers** does not exist on the CONVERSANT system, create it by using the Text-to-Speech Server Administration window. For the procedure to set the server connections, see Setting PTTS Connections on the CONVERSANT System in Chapter 3, PTTS Administration.
- Make sure the root login on the CONVERSANT system has permission to read the **/vs/data/tts_servers** file. To set the appropriate permissions, do the following:
  - **a** Log in to the CONVERSANT system as root.
  - **b** Enter **chmod 644 /vs/data/tts_servers**

PTTS008 — PTTS Protocol error

Alarm Level

Minor

Description

A TCP/IP protocol error occurred.

Repair Procedure

- Make sure the PTTS software is running on the PTTS servers. For the procedure, see Verifying the PTTS Service Status in the Windows NT Task Manager Window in Chapter 2, PTTS Installation and Removal.
- Use the Proxy Text-to-Speech System Status Checker window **F5** (Status) command to view information on the status of the Windows NT servers (see Monitoring the PTTS Windows NT Servers from the CONVERSANT System in Chapter 3, PTTS Administration).

PTTS009 — PTTS Server slow to respond

Alarm Level

Minor

Description

The PTTS server was slow to respond.

Repair Procedure

- Make sure that sufficient capacity exists and that the load is distributed appropriately. For guidelines on load distribution, see Capacity in Chapter 1, Overview of PTTS.
- Make sure all the PTTS servers are in service. Use the Proxy Text-to-Speech System Status Checker window **F5** (Status) command to view information on the status of the Windows NT servers (see Monitoring the PTTS Windows NT Servers from the CONVERSANT System in Chapter 3, PTTS Administration).

PTTS010 — PTTS Server has all ports busy

Alarm Level

Warning

Description

All ports on the PTTS server were busy during the heartbeat check. This condition is not necessarily serious, but it could become so if all the PTTS servers are completely busy and one of them goes out of service.

Repair Procedure

- Use the Proxy Text-to-Speech System Status Checker window **F5** (Status) command to view information on the status of the Windows NT servers (see Monitoring the PTTS Windows NT Servers from the CONVERSANT System in Chapter 3, PTTS Administration).
- Consider adding more servers for redundancy in case one or more PTTS servers is out of service. For guidelines, see Capacity in Chapter 1, Overview of PTTS.

PTTS011 — PTTS Server library times out

Alarm Level

Warning

Description

The PTTS server times out before returning a result.

Repair Procedure

- Make sure the PTTS software is running on the PTTS server (see Verifying the PTTS Service Status in the Windows NT Task Manager Window in Chapter 2, PTTS Installation and Removal).
- Use the Proxy Text-to-Speech System Status Checker window **F5** (Status) command to view information on the status of the Windows NT servers (see Monitoring the PTTS Windows NT Servers from the CONVERSANT System in Chapter 3, PTTS Administration). Make sure all the PTTS servers are in service.
- Make sure that sufficient capacity exists and that the load is distributed appropriately. For guidelines on load distribution, see Capacity in Chapter 1, Overview of PTTS.

PTTS012 — PTTS Server library error

Alarm Level

Warning

Description

A error occurred in the PTTS library.

Repair Procedure

Table 13 on page 152 lists error codes. For information on the error code that is part of the error message, see the documentation provided with the PTTS library.

Note: Error code 3 means that the encoded text for a Japanese application contains no SJIS characters and that, therefore, the conversion of text to speech was cancelled. For more information, see Text Input Requirements in Chapter 1, Overview of PTTS.

All other error codes are internal to the PTTS library.

Table 13. PTTS012 Error Codes

Code	Description
2	Terminated by Call Back Error Return
3	Canceled, No SJIS Encoding in Text
25	Canceled, No Text
2048	Invalid Instance Handle
2049	Invalid Thread
2050	Invalid Window Handle
2054	Internal Error
2055	Invalid Buffer Address
2056	Could Not Release Buffer
2057	Not Yet Initialized
2058	License Not Valid
2059	Invalid Use of Function
2060	Registry Not Updated
2061	Speech Synthesis Improper

PTTS013 — PTTS Server connection refused

Alarm Level

Major

Description

A PTTS process could not find an available connection.

Repair Procedure

Increase the number of possible PTTS connections by adding more PTTS servers or decrease the number of required PTTS connections.

For guidelines on load distribution, see Capacity in Chapter 1, Overview of PTTS.

For the procedure to use the Text-to-Speech Server Administration window to set the number of PTTS connections, see Setting PTTS Connections on the CONVERSANT System in Chapter 3, PTTS Administration.

PTTS014 — PTTS Server server statistics unavailable

Alarm Level

Warning

Description

The PTTS port allocator does not respond.

Repair Procedure

- Make sure the PTTS software is running on the PTTS server (see Verifying the PTTS Service Status in the Windows NT Task Manager Window in Chapter 2, PTTS Installation and Removal).
- Use the Proxy Text-to-Speech System Status Checker window **F5** (Status) command to view information on the status of the Windows NT servers (see Monitoring the PTTS Windows NT Servers from the CONVERSANT System in Chapter 3, PTTS Administration).

PTTS015 — PTTS Server not initialized

Alarm Level

Warning

Description

The PTTS server is not initialized.

Repair Procedure

Initialize the PTTS connections. For the procedure to use the Text-to-Speech Server Administration window to set the PTTS connections, see Administering the PTTS Feature on the Windows NT Servers in Chapter 3, PTTS Administration.

PTTS017 — PTTS_SRVDOWN

Alarm Level

Major

Description

A server listed in the **/vs/data/tts_servers** file has just become unavailable. The heartbeat process timed out while trying to connect.

Repair Procedure

- Make sure the server is still physically connected.
- Administer the PTTS connection, as appropriate, to remove the server or correct the IP address. For the procedure to use the Text-to-Speech Server Administration window to set the PTTS connections, see Setting PTTS Connections on the CONVERSANT System in Chapter 3, PTTS Administration.

PTTS018 — PTTS_SRVUP

Alarm Level

Informational

Description

A server listed in the **/vs/data/tts_servers** file has just become available. The heartbeat process is now able to connect.

Repair Procedure

None required.

PTTS019 — PTTS_NOVOICE

Alarm Level

Minor

Description

No server listed in the **/vs/data/tts_servers** file is currently supporting the specified TTS voice. The voice may be specified by VoiceTag. If VoiceTag is null, then the voice with the specified language and gender is used. No server currently supports this VoiceTag or language-gender description.

Repair Procedure

- Use the Proxy Text-to-Speech System Status Checker window **F5** (Status) command to view information on the status of the Windows NT servers (see Monitoring the PTTS Windows NT Servers from the CONVERSANT System in Chapter 3, PTTS Administration).
- If the **Stat** column for the voice in question indicates that the voice is "Out of Service" (**OOS**), manually stop and then restart the **PttsSvrMgr** (see Starting and Stopping the PTTS Service in the Windows NT Services Window in Chapter 3, PTTS Administration).

- If the VoiceTag you want is not listed in the system display, add the VoiceTag using the PTTS Administration tool. For the procedure, see PTTS Voice Administration on the Windows NT Servers in Chapter 3, PTTS Administration.
- If this still does not clear up the problem, the shared memory used to keep track of server status may be corrupt. Stopping and restarting the voice system should take care of the problem.

PTTS020 — PTTS_UNSCODE

Alarm Level

Minor

Description

The user has selected an unsupported PTTS speech encoding style. Only 8-bit µ-Law and 16-bit PCM styles are supported. Examples of unsupported speech encoding styles are 8-bit PCM and 8-bit A-Law.

Repair Procedure

- In some cases, SAPI TTS voice vendors supply different voice tags for each output encoding style. Make sure to choose a voice tag for either µ-Law or 16-bit PCM.
- In other cases, SAPI TTS voice vendors allow you to change certain parameters for a supplied voice tag. Lucent TTS supports a Control Panel applet called **Lucent TTS Configuration** that can be used to select the speech encoding style. Make sure to select either µ-Law or 16-bit PCM.

CGEN006 — Initialization Failure

Reason: Could not get number of express processes

Alarm Level

Critical

Description

The PTTS feature cannot be started because the **/vs/data/tts_servers** file on the CONVERSANT system, which contains addresses for the PTTS servers, either does not exist or contains no data.

Repair Procedure

If the file **/vs/data/tts_servers** does not exist on the CONVERSANT system, create it by using the Text-to-Speech Server Administration window. For the procedure to set the server connections, see Setting PTTS Connections on the CONVERSANT System in Chapter 3, PTTS Administration.

Monitoring the PTTS Windows NT Servers

As part of your efforts to troubleshoot problems, you may find it helpful to monitor the status of the Windows NT servers from the CONVERSANT system. In particular, you may need to check for server connection status. For the procedures to monitor Windows NT servers from a CONVERSANT system, see Monitoring the PTTS Windows NT Servers from the CONVERSANT System in Chapter 3, PTTS Administration.

Checking PTTS Connectivity

To check connectivity to a PTTS server from the CONVERSANT system, do the following:

Enter **ping *server***

where *server* is the DNS name of the PTTS server.

If the CONVERSANT system and the PTTS server are both running and connected using the LAN, the system displays the following message:

***server* is alive.**

Note: If the voice system is running, you can use the Proxy Text-to-Speech System Status Checker window **F5** (Status) command to view more detailed information on the status of the Windows NT servers (see Monitoring the PTTS Windows NT Servers from the CONVERSANT System in Chapter 3, PTTS Administration).

Checking for PTTS Alarms

If you have established that connectivity is good within your system, you can check the alarm log for PTTS alarms. To do this, enter the following command at the systemp prompt:

logcat -l alarm -t20

If you find a PTTS-related alarm, you can look it up in the PTTS Alarms and Log Messages section of this chapter to find out what it means and what steps to take for remediation.

PTTS Troubleshooting Guidelines

To troubleshoot problems with the PTTS feature, use the guidelines in Table 14.

Table 14. PTTS Troubleshooting Guidelines

Problem	Possible Cause(s)	Possible Solution(s)
The PTTS feature does not work.	• The PTTS server has just been started.	• Wait 10 seconds after the server starts for the status change to affect the system.
	• An alarm condition is causing the feature not to work.	• Run **logCat -lalarm -c** while the PTTS application is failing. If any TTS alarm is generated (such as PTTS019), run the **explain** command for problem explanation and the recommended repair procedure.

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Table 14. PTTS Troubleshooting Guidelines

Problem	Possible Cause(s)	Possible Solution(s)
The server displays a message stating that the application failed to initialize properly.	The PTTS software is installed on the server, but not the PTTS library.	Install the TTS library. For the procedure, see Installing the PTTS Language Engine on the Windows NT Servers in Chapter 2, PTTS Installation and Removal.
The PTTS server is slow to respond after the PTTS server software and the PTTS library have been installed.	• The PTTS processes are respawning. • The PTTS software cannot access the PTTS library.	1 Verify the status of the PTTS service. For the procedure, see Verifying the PTTS Service Status in the Windows NT Task Manager Window in Chapter 2, PTTS Installation and Removal.

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Table 14. PTTS Troubleshooting Guidelines

Problem	Possible Cause(s)	Possible Solution(s)
(continued) The PTTS server is slow to respond after the PTTS server software and the PTTS library have been installed.		**2** If you determine that processes are respawning or if CPU usage exceeds 90%, do the following: **a** Stop the PTTS service. For the procedure, see Starting and Stopping the PTTS Service in the Windows NT Services Window in Chapter 3, PTTS Administration. **b** Verify that the PTTS library is correctly installed (see Installing the PTTS Language Engine on the Windows NT Servers in Chapter 2, PTTS Installation and Removal).

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Table 14. PTTS Troubleshooting Guidelines

Problem	Possible Cause(s)	Possible Solution(s)
(continued) The PTTS server is slow to respond after the PTTS server software and the PTTS library have been installed.		c Start the PTTS service. For the procedure, see Starting and Stopping the PTTS Service in the Windows NT Services Window in Chapter 3, PTTS Administration.
There is no PTTS service on some voice channels.	The maximum number of connections is greater than the available server capacity. The maximum number of connections is greater than the number of PTTS licenses. The required voice, language, or gender is not configured. In this case, a PTTS_NOVOICE alarm is generated.	Reduce the maximum number of connections to match the server capacity or increase the number of servers. For the procedure to use the Text-to-Speech Server Administration window to set the number of PTTS connections, see Administering the PTTS Feature on the Windows NT Servers in Chapter 3, PTTS Administration.

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Table 14. PTTS Troubleshooting Guidelines

Problem	Possible Cause(s)	Possible Solution(s)
(continued) There is no PTTS service on some voice channels.		Increase the number of PTTS licenses. Contact your service representative and remote support center.
Delay occurs when the system speaks a long text phrase.	The input text phrase does not contain any natural text phrase delimiters.	Insert additional puncuation into the text placing it where natural breaks in the speech would occur. For more information, see Fault Tolerance in Chapter 1, Overview of PTTS.
Delay occurs whenever the system speaks a text phrase.	• Insufficient server capacity. • Heavy traffic load on the LAN.	• If most of the available PTTS ports are busy, add more Windows NT server capacity. • The LAN should be dedicated to PTTS. For more information, see Capacity in Chapter 1, Overview of PTTS.

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Table 14. PTTS Troubleshooting Guidelines

Problem	Possible Cause(s)	Possible Solution(s)
The system uses the wrong customized pronunciation dictionary.	The PTTS service was not stopped and restarted on the server after a new customized pronunciation dictionary was installed.	For information on using customized pronunciation dictionaries, see Creating a Pronunciation Dictionary on the Windows NT Servers (Japanese PTTS Only) in Chapter 3, PTTS Administration.
No speech is output.	• The wrong type of speech encoding has been used. • RTU licensing is not valid. • Voices have not been administered on the NT server. • Voice Tags have not been administered or spelled correctly.	• Run **logCat -lalarm -c** while the PTTS application is failing. If a TTS020 alarm is generated, see PTTS020 — PTTS_UNSCODE for the repair procedures. • Use the **F5** (Status) command to verify that: ~ RTU licensing is valid. ~ Voice Tags have been administered and spelled correctly.

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Table 14. PTTS Troubleshooting Guidelines

Problem	Possible Cause(s)	Possible Solution(s)
No speech is output. (cont.)	• The number of channels being requested exceeds the number of channels licensed.	~ The number of available channels (Avail) is less than the maximum number of channels licensed (Max). ~ The status (Stat) of the desired voice is "OK". ~ Voices have been administered on the NT server. If any of these conditions are not what they should be, correct the problem (see Chapter 3, PTTS Administration).

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A Simulation Script Files

Overview

The PTTS Administration tool is used to select and administer "voices" for speech playback (see PTTS Voice Administration on the Windows NT Servers in Chapter 3, PTTS Administration). Part of the process in administering these voices involves running a simulation script to help determine the optimal system configuration for the voices selected.

There are two instances in which you might want to alter or write your own simulation script for a voice:

- When you want to edit or replace an existing script
- When you are creating a new SAPI-compliant language, in which case you *must* create a corresponding simulation file for the language

Note: If you do not create a simulation file for a SAPI-compliant language, the PTTS Administration tool cannot determine a configuration, and system errors may result.

Purpose

The purpose of this appendix is to provide information and guidelines about creating and editing simulation script files for use with SAPI-compliant languages. Topics include the following:

- Structure of a Simulation Script File
- Creating and Editing Simulation Script Files

Structure of a Simulation Script File

Each language listed in the PTTS Administration tool has a corresponding simulation script file. The Proxy Text-to-Speech tool uses this simulation script file to calculate the number of simultaneous PTTS transactions possible on your Windows NT server for each voice tag you select to install. This simulation file must adhere to a set structure, as explained in the following subtopics.

These simulation scripts are executed automatically when you administer voices on the NT server. You should examine them to make sure they contain reasonable text phrases. For the best results, you should have one short, one medium-length, and one long phrase in the script.

File-Naming Convention

The required file-naming convention is as follows:

sim_*voiceTag*.txt

where *voiceTag* is the VoiceTag identifier. For example, if the VoiceTag is **John-T**, then the name of the simulation file must be **sim_John_T.txt**.

Note: When creating simulation script files, the Proxy Text-to-Speech Administration tool converts hyphens (-), commas, spaces, and tabs to underscore symbols (_).

A Sample Simulation File

Figure 27 shows the contents of a typical simulation file. Lines beginning with a # symbol are comments and do not affect the running of the script.

Figure 27.Sample Simulation File Script

```
#gender speed vol pitch accent language numreading voice
INIT 1 5 5 5 5 1033 0 :John-T
#short text sample:
PHRASE Alacrity.
#medium text sample:
PHRASE Daisy, please give me your answer, do.
#long text sample:
PHRASE I’m half crazy all for the love of you. It won’t be a stylish marriage.
#Repeat test this number of times:
REPEAT 2
```

The INIT Line

The initialization line (beginning with **INIT**) sets the initial values for the selected voice. Possible values for entries are listed in order in Table 15.

Table 15. Initialization Values for Simulation Script Files

Value	Possible Values
gender	0 = Female, 1 = Male
speed	1-10 (Slow-Fast)
vol (volume)	1-10 (Quiet-Loud)
pitch	1-10 (Low-High)
accent (intonation)	1-6 (used only for OKI Japanese)
language (Language ID)	4-digit code (see Appendix B, SAPI-Compliant Language IDs)
numreading (Number of reading voice)	(not used)
:*name* (VoiceTag name)	See proxyvoice in Chapter 4, Using PTTS in Voice Applications.

You will rarely, if ever, need to modify these values manually, as they are set automatically when using the Proxy Text-to-Speech Administration tool.

Phrases

Following the initialization line, you must have at least one and may have up to 100 phrases. Each of these phrase lines must begin with the key word **PHRASE**. These phrases may be as long as you want, but it is recommended that you keep them to one line of text in length. Ideally, these should be phrases that you plan to use in your PTTS application.

Repeats

The last line of the file begins with the word **REPEAT**. This line determines how many times all the phrases are to be played before ending the simulation. For example, if this line reads **REPEAT 7** and you have 4 phrases defined, all 4 phrases are repeated 7 times before the simulation is ended.

Creating and Editing Simulation Script Files

Each language listed in the Proxy Text-to-Speech Administration tool must have a corresponding simulation script file. For languages installed with the PTTS feature, these simulation script files are installed automatically during installation. Since they are simple text (.txt) files, you can create or edit simulation script files using a basic text editor such as Notepad. Or, to make it easier, you can use the simulation script file creation and editing utilities included as part of the Proxy Text-to-Speech Administration tool.

CAUTION:
Use care when creating or editing these files. You *must have* the required number of entries in the initialization (**INIT**) line.

If you need to create a new simulation script file for a voice that does not have one, you *can* start from scratch using the text editor of your choice and the information given in Structure of a Simulation Script File above; but it is strongly recommended that you use the template file provided by Lucent. Procedures for creating a simulation script file using this template are provided in Creating a New Simulation Script File below.

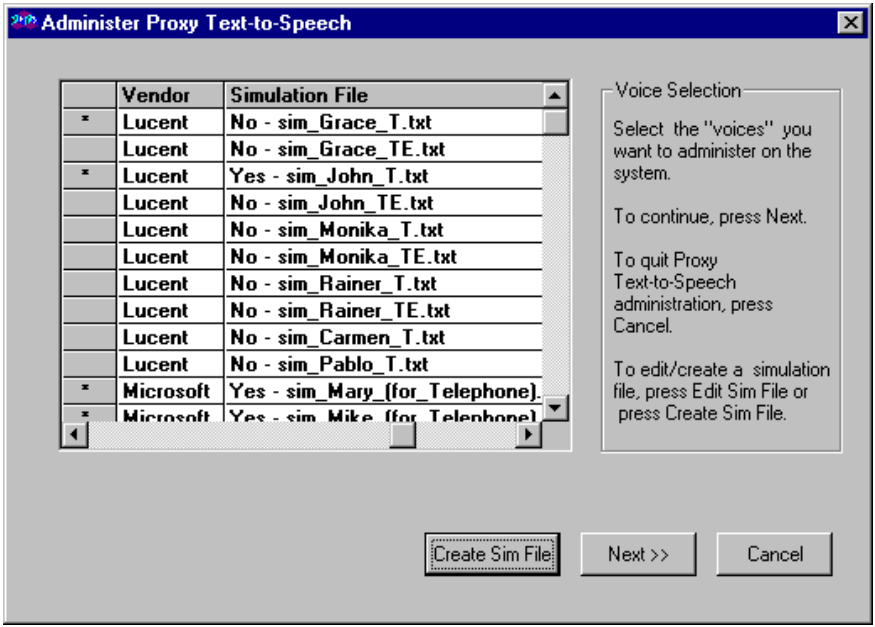
If you want to edit an existing simulation script file, you can either open the file in the text editor of your choice, or edit the file from within the Proxy Text-to-Speech Administraton tool. For details on editing the file from within the Proxy Text-to-Speech Administration tool, see Editing an Existing Simulation Script File below.

Using the Proxy Text-to-Speech Administration Tool

To create or edit simulation script files using the Proxy Text-to-Speech Administration tool, first open the tool (see Chapter 3, PTTS Administration, PTTS Voice Administration on the Windows NT Servers).

Once the Proxy Text-to-Speech Administration tool has opened to the Administer Proxy Text-to-Speech window, the names of the simulation script files can be viewed by scrolling all the way to the right in the Administer Proxy Text-to-Speech window (Figure 28 on 178). Notice that, if the expected simulation script file exists, the entry says "Yes" and the name of the existing simulation script file follows. If the expected simulation script file does not exist, the entry says "No" and the name of the expected file follows.

Figure 28.Administer Proxy Text-to-Speech Window Showing Simulation Script File Listing



If you try to select a voice that does not have a simulation script file, the system displays a warning message prompting you to create one (Figure 29).

Figure 29.LoadTester Warning Message

If you go ahead and select the voice without creating a simulation script file, the **Next>>** button is disabled until you create one.

Creating a New Simulation Script File

To create a new simulation script file, click **Create Sim File**. The system opens the default text editor for your system (normally *Notepad*) and displays a template file that you can use to create the simulation script file. To use this template file, do the following:

1 Add phrases after each **PHRASE** keyword in the template.

Note: You may add additional phrases by entering on new lines the keyword **PHRASE**, followed by the phrases. You can have as many as 100 phrases to the simulation script file. It is recommended that you use phrases you intend to use in your PTTS application.

2 Add the number of times you want the simulation script phrases to be repeated during the Configuration process. For example, if you want all phrases to be repeated 5 times, add the number 5 after the keyword **REPEAT**.

3 Save the file and exit the text editor.

The system automatically updates the Proxy Text-to-Speech Administration tool and returns you to the Adminster Proxy Text-to-Speech window. The display now shows that the expected simulation script file exists.

Editing an Existing Simulation Script File

To edit an existing simulation script file, first select the voice you want that has a simulation script file, and then click **Edit Sim File**. The system opens the default text editor for your system (normally *Notepad*) and displays the existing simulation script file. As you edit this file, keep in mind the following:

- If you edit phrases, make sure you leave the keyword **PHRASE** intact.

Note: You may add additional phrases by entering on new lines the keyword **PHRASE**, followed by the phrases themselves. You can have as many as 100 phrases to the simulation script file. It is recommended that you use phrases you intend to use in your PTTS application.

- If you want to change the number of repeats, make sure you leave the keyword **REPEAT** intact. Change only the number.

- Do *not* change the number of entries in the initialization (**INIT**) line. It is strongly recommended that you not change this line at all.
- When you are finished making changes, *save the file* before exiting the text editor. If you do not save the file, all your changes will be lost.

The system automatically returns you to the Administer Proxy Text-to-Speech window.

B SAPI-Compliant Language IDs

Overview

Each Speech Application Programming Interface (SAPI)-compliant language has a 4-digit language identification number. These language ID numbers are used by the PTTS feature to determine which language to use in speaking text.

Languages can be assigned using the set_lang command or using the proxylang and proxyvoice external functions. In order to assign a language, you must know its 4-digit ID number.

Purpose

This appendix lists currently supported SAPI-compliant languages, selected and grouped by character sets (such as Latin-1, Latin-2, etc.).

Note: A complete list of all the available language ID codes can be found in the **ptts.ini** file. The codes are given there in hex code only.

Latin-1 Character Set Languages

Table 16 lists the languages ID numbers for the Latin-1 character set.

Table 16. Latin-1 Character Set Languages

Hex Code	Decimal Code	Language Name	Sub-Language/Locale
0x0406	1030	Danish	Danish
0x0413	1043	Dutch	Dutch (Standard)
0x0813	2067	Dutch	Belgian (Flemish)
0x0409	1033	English	American
0x0809	2057	English	British
0x0c09	3081	English	Australian
0x1009	4105	English	Canadian
0x1409	5129	English	New Zealand
0x1809	6153	English	Ireland
0x040b	1035	Finnish	Finnish
0x040c	1036	French	French (Standard)

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Table 16. Latin-1 Character Set Languages

Hex Code	Decimal Code	Language Name	Sub-Language/Locale
0x080c	2060	French	Belgian
0x0c0c	3084	French	Canadian
0x100c	4108	French	Swiss
0x0407	1031	German	German (Standard)
0x0807	2055	German	Swiss
0x0c07	3079	German	Austrian
0x040f	1039	Icelandic	Icelandic
0x0410	1040	Italian	Italian (Standard)
0x0810	2064	Italian	Swiss
0x0414	1044	Norwegian	Norwegian (Bokmal)
0x0814	2068	Norwegian	Norwegian (Nynorsk)
0x0416	1046	Portuguese	Portuguese (Brazilian)
0x0816	2070	Portuguese	Portuguese (Standard)

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Table 16. Latin-1 Character Set Languages

Hex Code	Decimal Code	Language Name	Sub-Language/Locale
0x041D	1053	Swedish	Swedish
0x040a	1034	Spanish	Spanish (Standard/Traditional)
0x080a	2058	Spanish	Mexican
0x0c0a	3082	Spanish	Spanish (Modern)

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Selected Other Character Sets

Table 17 lists the languages ID numbers for selected character sets other than Latin-1.

Table 17. Selected Other Character Set Languages

Hex Code	Decimal Code	Language Name	Character Set
0x0000	0000	Neutral	Special Identifier
0x0400	1024	Process Default Language	Special Identifier
0x041f	1055	Turkish	Latin-2
0x0415	1045	Polish	Latin-2
0x0405	1029	Czech	Latin-2
0x041b	1051	Slovak	Latin-2
0x040e	1038	Hungarian	Latin-2
0x0419	1049	Russian	Cyrillic
0x0408	1032	Greek	Basic Greek

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Table 17. Selected Other Character Set Languages

Hex Code	Decimal Code	Language Name	Character Set
0x0404	1028	Chinese (Taiwan Region)	
0x0804	2052	Chinese (PRC)	
0x0c04	3076	Chinese (Hong Kong SAR, PRC)	
0x1004	4100	Chinese (Singapore)	
0x040d	1037	Hebrew	
0x0411	1041	Japanese	
0x0412	1042	Korean	
0x0422	1058	Ukrainian	

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For a complete list of the SAPI-compliant languages, see the **ptts.ini** file.

C Performance Monitoring on the CONVERSANT

Overview

Various factors can affect the performance of a system using the PTTS feature. The CONVERSANT system provides the capability to monitor your system's PTTS performance.

Purpose

This appendix discusses factors that affect PTTS feature performance, offers a sample of performance test results, and offers procedures for monitoring and viewing system performance of the PTTS feature. Topics include the following:

- Factors That Influence Performance
- Sample Performance Test Results
- Performance Monitoring Procedures

Factors That Influence Performance

Dynamically-related factors affect PTTS performance include the following:

- The number of PTTS connections simultaneously handling speech
- The length of the converted speech in seconds
- The language or languages being used

These factors must be taken into account when making a decision about how many PTTS connections to configure for a system. All three affect a system's ability to support the anticipated usage for the intended applications.

For satisfactory performance, when the converted speech phrases are on the order of 60 seconds or more, the ratio of required CONVERSANT voice channels to PTTS connections is approximately one-to-one. For shorter text phrases, fewer PTTS connections may be needed because text conversion occurs so much more rapidly than speech playback that one PTTS connection may handle requests from multiple voice channels.

In general, if the number of connections needed and the average speech length are both high, serious performance degradation can occur, resulting in:

- Delays of more than one second between the time an application requests PTTS conversion until the speech is ready to be played
- Unnatural sounding pauses in the speech, called speech breaks, as text conversion falls behind speech playback in real time

In addition, the language or languages being used affect system performance. Some languages require substantially more CPU time to accomplish the task of conversion. This factor can affect both the number of PTTS connections required and the length of speech phrases that can be converted without a degradation of performance.

Note: Long text phrases are broken up into shorter segments before being converted to speech. This helps to balance the load between competing channels.

Sample Performance Test Results

Table 18 on page 191 summarizes the results of tests performed using different languages on the same basic system. The system used for these tests consisted of the following components:

- Windows NT server with 400 MHz single CPU and 256 Mb RAM
- CONVERSANT client
- 100 Mbit dedicated Ethernet connection

Notice that the phrase lengths used for these tests were all 60 seconds or greater. Because of this, the ratio of voice channels to PTTS connections was 1:1. In most cases, the phrase lengths would be much shorter, and as a result, this ratio would be different. For example, if the average phrase length were under 13 seconds, then the ratio of voice channels to PTTS connections should approach 4:1.

Table 18. Sample PTTS Performance Data

Language	Simultaneous Channels Needed	Average Delay of Response	Length of Test Phrase	Client (CONVERSANT) CPU Idle Time (as % of Total Time)
US English	18	0.30 sec.	60 sec.	85%
Mexican (LA) Spanish	20	0.34 sec.	66 sec.	83%
Japanese	47	0.12 sec.	105 sec.	62%

Note: Performance would be even better using two NT servers.

Performance Monitoring Procedures

There may be times when you will want to monitor the performance of the PTTS feature on your system. You can, if you want, generate your own performance monitoring report of the system from the CONVERSANT system.

Generating the Report Log

To generate this performance monitoring report, do the following:

1. Log in to the CONVERSANT system as root.
2. At the command prompt, enter **echo > /vs/data/.PERF**
3. At the command prompt, enter **stop_vs**

   The system displays a number of messages indicating that the voice system is stopping.
4. At the command prompt, enter **stop_wait**
5. At the command prompt, enter **start_vs**
6. Allow the system to take calls for some time period.

   The longer you allow the system to take calls before going on to the next step, the more data will be included in your report.
7. At the command prompt, enter the following:

   logCat -a "*mm/dd/yy hh:mm:ss*" | grep PTTSPERF > *log*

   where *mm/dd/yy* is the starting date and *hh:mm:ss* is the starting time for which you want performance monitoring information; and where *log* is the name of the file into which this information is to be placed.

8 At the command prompt, enter the following:

/vs/bin/util/ptts.sh *log* > *report.perf*

where *log* is the name of the generated log file, and *report.perf* is the name of the output report.

9 At the command prompt, enter **rm /vs/data/.PERF**

10 At the command prompt, enter **stop_vs**

The system displays a number of messages indicating that the voice system is stopping.

11 At the command prompt, enter **stop_wait**

12 At the command prompt, enter **start_vs**

Viewing the Report Log

To view the report that has been generated, do the following:

1 Log in to the CONVERSANT system as root, if not already logged in.

2 At the command prompt, enter **pg *report.perf***

where *report.perf* is the name of the output report file.

This report presents performance monitoring information in a number of different ways. Table 19 on page 194 summarizes the information in this report.

Table 19. Performance Monitoring Report

Section	Contents/Fields	Description/Comments
header	• Report start and end times • Duration of report • Number of channels used • Number of ports used • % usage • Length of minimum phrase used (in seconds) • Length of maximum phrase used (in seconds) • Summary of errors generated • Summary of talkoff events	The % usage line shows the percentage of the voice channel capacity used for speech playback.
hh:mm:ss (displays data based on elapsed time)	• time • number • 1st: avg	• Indicator of hour in which event(s) occurred • Number of events in the designated time period • Average system response delay time*

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Table 19. Performance Monitoring Report

Section	Contents/Fields	Description/Comments
hh:mm:ss (cont.)	• 1st: min	• Minimum system response delay time*
	• 1st: max	• Maximum system response delay time*
	• >1	• Percent of probability that the initial speech delay will be greater than 1 second
	• ahd: avg	• Average conversion lead time†
	• ahd: min	• Minimum conversion lead time†
	• ahd: max	• Maximum conversion lead time†
	• < 0	• Percent of phrases that finished returning late, causing possible speech delays and breaks
Server (displays data for each server in the system)	Same as **hh:mm:ss**	Same as **hh:mm:ss**

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Table 19. Performance Monitoring Report

Section	Contents/Fields	Description/Comments
Language (displays data according to languages used; 4-digit language ID numbers are used)	Same as **hh:mm:ss**	Same as **hh:mm:ss**
Channel (displays data according to active channels used)	Same as **hh:mm:ss**	Same as **hh:mm:ss**

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Table 19. Performance Monitoring Report

Section	Contents/Fields	Description/Comments
Instance (displays data according to express instances, each one requiring its own active connection; in other words, this is the maximum number of simultaneous active connections used, which could be used as an indicator of how many RTU licences you may require)	Same as **hh:mm:ss**	Same as **hh:mm:ss**
Port (displays data according to port numbers used)	Same as **hh:mm:ss**	Same as **hh:mm:ss**

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* System response delay time = Delay between the sending of text and the time that the first speech buffer is ready to play

† Conversion lead time = The number of seconds by which text conversion leads real-time speech playback. If this number is positive, no unnatural-sounding speech breaks will occur.

D For Advanced Users

Overview

There may be times when it is helpful to have information about the PTTS program files, service control information, version numbers, and the like. Advanced users, thoroughly proficient with both Windows NT systems and CONVERSANT systems, are likely to make good use of this information.

Purpose

This appendix provides information on the following topics:

- Program Files
- Service Control
- Reading the Registry
- IRAPI Parameters

Program Files

Windows NT Program Files

The following Windows NT PTTS program files are located by default in the **C:\Program Files\Proxy Text-to-Speech** directory:

- **mttsserv.exe** — This is the TTS server program which serves as the interface to the vendor language library engine.
- **socserv.exe** — This is the socket server program which transfers text and speech data over the network.
- **socalloc.exe** — is the socket allocator which performs dynamic port allocation for the PTTS connections.

CONVERSANT Program Files

The following CONVERSANT program files are located by default in the **/vs/bin/vrs** directory:

- **swtts_dio** — This process takes requests from and supplies speech to the VROP (Voice Response Output Process), which controls voice response operations on the CONVERSANT.
- **express** — This is the child of **swtts_dio** that communicates with socserv.exe on the Windows NT server.
- **pttsHB** — This is a heartbeat process that communicates with socalloc.exe on the Windows NT server.

Service Control

During installation, the PTTS service manager is registered with the service control mechanism on the Windows NT server. The entry **PttsSrvMgr** then appears in the Services dialog box. This **PttsSrvMgr** entry can be used to start or stop PTTS processes or program files. It also respawns the PTTS processes if for some reason they die.

The following executable files are components of the PTTS service manager and are located in the ***<Program Directory>*\chat** directory.

- **PttsSrvMgr.exe** — This is the main service which starts and stops all PTTS processes.
- **Instserv.exe** — This installs and registers the PTTS Service Manager (**PttsSrvMgr.exe**) with the Windows NT Services manager.

Reading the Registry

The Registry can be used to check information about the PTTS software and the vendor language library engines on the Windows NT server.

Finding the PTTS Version Number

To find out which version of PTTS you have installed on the Windows NT server, do the following:

1. On the Windows taskbar, click **Start**.
2. From the popup menu, select **Run...**
3. In the **Open:** field, type **regedit**
4. Click **OK**.

   The Registry Editor window appears.
5. Double click to expand each of the following as it appears in the expanding menu:
   - **HKEY_LOCAL_MACHINE**
   - **SOFTWARE**
   - **Lucent Technologies**
   - **Proxy Text-to-Speech**

   The number which appears on the subdirectory in this directory is the version number of the PTTS software installed on this machine.

Finding a Vendor Language Library Engine Version Number

To find out which version of a vendor language library engine you have installed on the Windows NT server, do the following:

1. On the Windows taskbar, click **Start**.
2. From the popup menu, select **Run...**
3. In the **Open:** field, type **regedit**
4. Click **OK**.

   The Registry Editor window appears.
5. Double click to expand each of the following as it appears in the expanding menu:
   - **HKEY_LOCAL_MACHINE**
   - **SOFTWARE**
   - ***vendor name***

Depending on the vendor, you may have to continue moving down through the directories to get to the version number subdirectory. For example, to find the version number of the Japanese OKI language library engine, you must locate and double click **OKI**, then **SMARTTALK** to find the version number.

Note: The Lucent Speech Solutions language library engine version numbers are located using **Lucent** (rather than **Lucent Technologies**) for *vendor name*.

IRAPI Parameters

The IRAPI parameters listed and described in Table 20 are used by the PTTS feature. They can be modified using the external functions (see Chapter 4, Using PTTS in Voice Applications, PTTS IRAPI Parameters).

Table 20. IRAPI Parameters Used by PTTS

Parameter	Description	Possible Values
IRP_EXT_PARAM_7A	Gender	0 (female) or 1 (male)
IRP_EXT_PARAM_7B	Speed	1 (slow) to 10 (fast)
IRP_EXT_PARAM_7C	Volume	1 (quiet) to 10 (loud)
IRP_EXT_PARAM_7D	Pitch	1 (low) to 10 (high)
IRP_EXT_PARAM_7E	Intonation	1 to 6 (used for OKI Japanese only)
IRP_EXT_PARAM_7F	Language ID	4-digit integer
IRP_EXT_PARAM_7H	Voice Tag	Example: Mary-T
IRP_TTS_TYPE:	SSP-based TTS Software-based TTS (PTTS)	IRD_SPTTS IRD_SWTTS

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