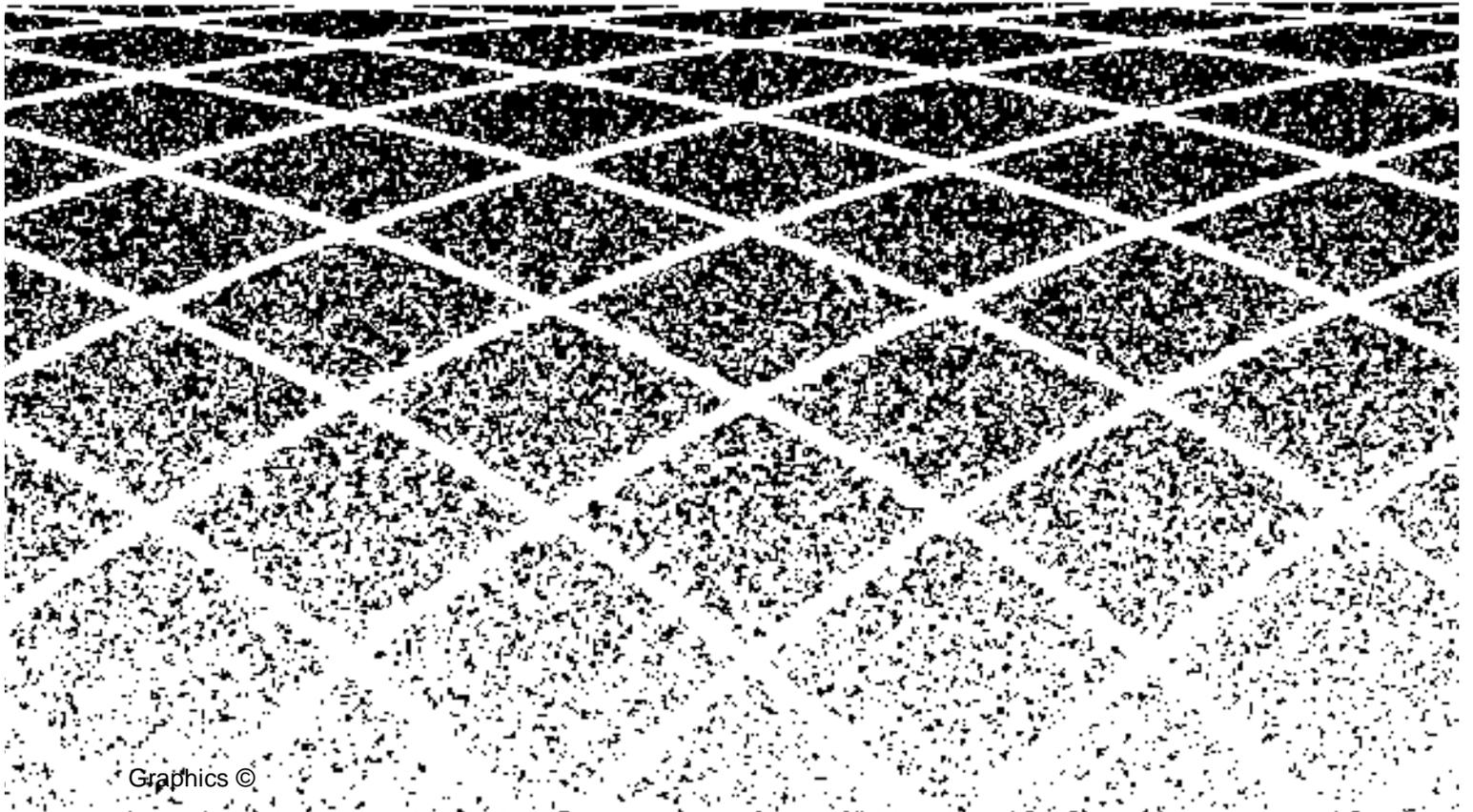




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CONVERSANT® VIS System Description



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About This Book

Purpose

The *CONVERSANT® VIS System Description*, 585-350-207, is designed to answer basic questions about the CONVERSANT Voice Information System (VIS) and its usage. It provides a technical description of the current VIS hardware platforms and software, including specifications, performance, and capacity information. Two appendices are included which contain release history information and application examples.

Intended Audience

This document provides a broad overview of the CONVERSANT VIS for reference purposes. It is intended for use by telecommunications managers, systems consultants, branch office specialists, services support staff, sales and marketing members, and any AT&T employee or customer who wishes to learn about the CONVERSANT VIS and its capabilities.

This guide is to be used in conjunction with *CONVERSANT VIS Version 4.0 Planning*, 585-350-602.

How This Book Is Organized

This document contains the following chapters:

- Chapter 1, "CONVERSANT VIS Introduction"
Gives a brief overview of the CONVERSANT VIS, including its functionality, its hardware platforms, base and package features introduced in the latest version release, and a comprehensive list of its optional feature packages.
- Chapter 2, "CONVERSANT VIS Hardware"
Contains descriptions of the major physical components of the system, including platforms, magnetic peripherals, circuit cards, and external peripherals. This chapter also gives an architectural representation of the VIS, defining internal and external hardware relationships.
- Chapter 3, "CONVERSANT VIS Software"
Contains information about the base and optional software packages, which are divided into the following categories:
 - CONVERSANT VIS UNIX¹ Base Software
 - CONVERSANT VIS V4.0 Base Software
 - CONVERSANT VIS V4.0 Optional Software
 - Product Co-Residency Software
 - Speech Software
- Chapter 4, "CONVERSANT VIS Features and Feature Packages"
Includes descriptions of optional feature packages available on each of the CONVERSANT VIS platforms for V4.0.
- Chapter 5, "CONVERSANT VIS Connectivity"
Includes diagrams and descriptions of external connectivity and cabling for each of the CONVERSANT VIS platforms. The information covers connections to both the public switched network (analog and digital telephone communications) and the private data network (synchronous host computer and asynchronous peripheral communications).
- Chapter 6, "CONVERSANT VIS Requirements and Specifications"
Discusses provisioning concerns such as power requirements, environmental considerations, and equipment specifications for each of the CONVERSANT VIS platforms.

1. UNIX is a registered trademark of Novell, Inc.

- Chapter 7, "CONVERSANT VIS Capacity and Performance Considerations"
Gives an overview of system and application requirements to be considered when installing or designing a CONVERSANT VIS and its applications.
- Appendix A, "Release and Platform History"
Summarizes the hardware and software features introduced with past CONVERSANT VIS releases, including V2.1, V3.0, and V3.1
- Appendix B, "CONVERSANT VIS Application Examples"
Gives five real examples of voice processing solutions provided by the CONVERSANT VIS.

This book also includes a list of Abbreviations, a Glossary, and a cross-referenced Index.

Related Resources

This book supplements other books in the CONVERSANT VIS library. Refer to the appropriate book for specific information on installing, operating, and maintaining the VIS. Books related to CONVERSANT VIS are listed in Table 1 and Table 2. A full description of each document is available in the *CONVERSANT VIS Version 4.0 Documentation Guide*, 585-350-002.

Table 1. CONVERSANT VIS V4.0 Documentation

Description	Order Number
¹ Documentation Guide	585-350-002
Multi-Application Platform 100 Voice Processing Hardware Installation	585-350-107
Multi-Application Platform 100C Voice Processing Hardware Installation	585-350-108
Multi-Application Platform 40 Voice Processing Hardware Installation	585-350-109
¹ Upgrades	585-350-110
¹ Software Installation	585-350-111
¹ Maintenance	585-350-112
¹ Installation Checklists	585-350-113
² System Description	585-350-207
¹ Application Development	585-350-208
¹ Command Reference	585-350-209
² FAX Attendant Co-Residency	585-350-210

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Table 1. CONVERSANT VIS V4.0 Documentation — Continued

¹ 486 CPU Upgrade Kit for MAP/100 and MAP/100C	585-350-211
¹ SCSI Disk Drive Upgrade Kit for MAP/100 and MAP.100C	585-350-212
¹ Upgrade Kit for MAP/40	585-350-213
¹ Change Description	585-350-402
¹ Planning	585-350-602
¹ Operations	585-350-703
² Script Builder	585-350-704
² Graphical Speech Editor	585-350-705

-
1. These titles begin with “CONVERSANT VIS Version 4.0”
 2. These titles begin with “CONVERSANT VIS”

Table 2. CONVERSANT VIS V4.0 Documentation

Description	Order Number
¹ External Alarms	585-350-801
¹ SCSI Mirroring	585-350-204
¹ Primary Rate Interface	585-350-805
¹ Form Filler Plus	585-350-806
¹ Text-To-Speech	585-350-807
¹ CompuLert/SCCS	585-350-808
¹ Local Area Network	585-350-809
¹ NetView Alarms	585-350-810
¹ Call Classification Analysis	585-350-811
¹ Adjunct/Switch Application Interface	585-350-812
¹ WholeWord Speech Recognition	585-350-813
¹ FlexWord Speech Recognition	585-350-814
¹ Host Interface	585-350-815
ORACLE SQL*NET	585-350-901
ORACLE SQL*RDBMS	585-350-902
ORACLE SQL*Forms	585-350-903

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Table 2. CONVERSANT VIS V4.0 Documentation — Continued

Description	Order Number
ORACLE SQL*ReportWriter	585-350-904
ORACLE SQL*Menu	585-350-905
ORACLE PRO*C	585-350-906

1. These titles begin with “CONVERSANT VIS”

Refer to the appropriate optional software feature book for additional information concerning particular VIS features.

Trademarks and Service Marks

The following trademarked products are mentioned in this book:

- CONVERSANT is a registered trademark of AT&T.
- DEFINITY is a registered trademark of AT&T.
- AUDIX is a registered trademark of AT&T.
- 5ESS is a registered trademark of AT&T.
- 4ESS is a registered trademark of AT&T.
- ORACLE is a registered trademark of the ORACLE corporation.
- IBM is a registered trademark of International Business Machines, Inc.
- UNIX is a registered trademark of Novell, Inc.
- Hayes is a registered trademark of Hayes Microcomputer Products, Inc.
- Smartmodem is a trademark of Hayes Microcomputer Products, Inc.
- Voice Power is a trademark of AT&T.
- FlexWord is a trademark of AT&T.

How to Make Comments About This Book

You can help to improve the next release of the *CONVERSANT VIS System Description* by filling out the feedback form located at the front of this document.

If the feedback form has been removed, please send your comments to:

AT&T
Product Documentation Development
Room 22-2C11
11900 North Pecos Street
Denver, Colorado 80234

Please include the name and order number, 585-350-207, of this book.

Overview

This chapter provides a high-level overview of the CONVERSANT Voice Information System (VIS) including:

- A functional description
- A physical description
- Feature and feature package descriptions

CONVERSANT VIS Functional Description

The CONVERSANT VIS is an interactive voice response system for automatic telephone transactions. Using synthesized speech, the VIS can respond to an incoming call, request specific information from the caller, and provide information or services to the caller based on the data received.

The VIS allows either full or partial automation of transactions with callers that would otherwise be performed by an operator-attendant. These automated transactions are referred to as *applications*. Each application is designed and developed to meet a specific customer's need. An application *script* is a set of instructions written for the VIS computer on how to carry out the automated transaction. Scripts define the flow of the call and determine the unique phrases or prompts used.

The CONVERSANT VIS allows either full or partial automation of a telephone transaction. When an incoming call is connected to the VIS, the system prompts the caller with prerecorded synthesized speech. The caller responds by entering touch tones or by speaking into the telephone. The dialog between the VIS and the caller is determined by the particular transaction and its corresponding application script.

The application script can be simple: a caller asks for specific information and the VIS responds with that information, or the application script can be more complex: a caller asks for specific information, and the VIS prompts the caller to provide additional touch tone or spoken format information. The VIS can then access a host computer or its own database for information related to the caller, and forward the call to an operator/attendant who uses that information to respond or interact with the caller. Both situations can be illustrated by the following example.

Sample Application

A bank has several operators whose duties include providing callers with certain information, such as account balances and current interest rates for different types of accounts and loans and account balances. The operators can also answer a variety of other questions. Some of the information, such as interest rates, is located on a sheet of paper in front of the operators. Other information, such as account balances, must be obtained from the bank's computer. When necessary, these operators can also transfer callers to specialized customer service representatives for further information.

The following represents a typical conversation, or transaction, between a caller and an operator:

Operator: "River Bank. How may I help you?"

Caller: "What's the current interest rate on your automobile loans?"

Operator: (referring to a chart of interest rates) "The interest rate for our auto loans is 7.9%. May I help you with something else?"

Caller: "Yes. I'd like to check the balance in my checking account."

Operator: "What is your identification number?"

Caller: "My ID is 00001."

Operator: "What are the last four digits of your Social Security number?"

Caller: "The last four digits are 9087."

Operator: "One moment." (calls up the account balance on a terminal) "Your checking account balance is \$2,010.27. May I help you with anything else?"

Caller: "Yes, I'd like to check my savings account balance."

Operator: "Your savings account balance is \$7,354.63. May I help you with anything else?"

Caller: "Yes, I'd like to speak to someone about an auto loan."

Operator: "I'll transfer you to one of our customer service representatives. One moment." (transfers caller to loan officer, who must then access a computer to gain the customer's credit history)

General Application Rules

Looking at the sample transaction above, the following types of interactions between the caller and the operator can be seen:

1. The operator greets the caller.
2. The operator prompts the caller and receives a request for information:
 - Can include such items as interest rate, account balance, etc.
3. The operator takes the following action on the caller request:
 - If necessary, the operator prompts the caller for further information (type of rate, type of account, ID number, etc.).
 - The operator looks up the information.
 - The operator reports the information.
4. The operator repeats steps 2 and 3.
5. The caller requests information that can only be provided by someone else, which requires a transfer.

Virtually all transactions consist of the five basic steps listed above. The caller's "request for information" shown in step two can be rather diverse depending upon the transaction. For example, a caller request for information may simply be the need to hear their checking account balance, or the latest stock market value. The caller could also request to place a sales order, or want a greater amount of information on a product or service that could be sent to them via FAX.

In the sample banking transaction, when the caller asks for an interest rate, the operator simply looks at a chart and reads the information to the caller. However, when the caller wants to know account balance information, the operator must ask for additional information (the caller's ID and Social Security Number (SSN)), then use a computer terminal to type the caller's account number, verify the SSN, and read the balance displayed on the screen. Finally, when the caller requests information on automobile loans, the operator must transfer the call to a loan officer who has the means to further investigate and service the inquiry.

When automating a transaction using the VIS, the customer must think in terms of an automated VIS application script replacing the operator. The transaction remains the same, but the caller interacts with the computer instead of an operator. The computer uses the application script for instructions about the setting, what to say during a transaction, and possible options that the caller may further wish to investigate.

CONVERSANT VIS Physical Description

The CONVERSANT VIS is a minicomputer consisting of controlling and speech processing hardware, plus the UNIX operating system and CONVERSANT VIS system software. One of three different minicomputers, called Multi-Application Platforms (MAPs), can be used to provide the hardware platform for the system. These three minicomputers may be thought of as being “small”, “medium” and “large”, and a particular platform is selected based upon the projected traffic volume, complexity of the application(s), and additional features.

In addition to the basic hardware and software, all systems contain some form of custom written, or prepackaged, application and database software that is used to automate a particular transaction. Optional feature packages, which consist of hardware and software that perform specific functions toward the application or the VIS in general can also be part of the system. These packages can provide enhancements such as host computer interfaces or additional basic hardware resources. Finally, prerecorded, digitized speech files are usually present on a system. The custom application software and speech is developed independently based on a specific customer's needs.

The VIS has a powerful central processing unit (CPU) and extensive memory. It can be used as a stand-alone system that provides CONVERSANT functionality, or offer co-residency to other services such as AUDIX Voice Power (voice mail) and FAX Attendant (fax mail).

A variety of host computer protocols are supported by the VIS which allow it to interface with other computer systems in order to obtain data during a transaction. These include asynchronous, system network architecture/synchronous data link control (SNA/SDLC), and bisynchronous data communication protocols, with other data communications protocols supported through the use of protocol converters.

On its own, the system can screen and route calls, and interact with a local resident database. To facilitate stand-alone operations, the system includes an industry standard Structured Query Language (SQL) relational database management package and high-capacity onboard data storage devices.

Depending on which of the three CONVERSANT VIS platforms the system software is operating on, the CONVERSANT VIS can support up to 48 simultaneous incoming calls, with a maximum of 96 ports to service the incoming and application-spawned outgoing (bridged) calls. This flexible combination of hardware and software provides a modular architecture that allows customers to add capacity or optional features as needs change. Multiple system arrangements can also be made for larger configurations.

Multi-Application Platform (MAP) Overview

The three platforms upon which the system software operates have different capacities, and can present system resources in various configurations. This allows each CONVERSANT VIS to be tailored to match the customer's projected call volumes and office arrangement, at the most economical price. Based on the customer's needs, the hardware platform that can most efficiently handle the transaction automation is selected. The hardware system that CONVERSANT VIS software operates on is called a Multi-Application Platform (MAP). Most businesses do not have the calling volumes to need more than one CONVERSANT VIS platform to handle the traffic, but certain applications can require multiple CONVERSANT VIS platforms to provide transaction automation for more than the maximum 48 simultaneous calls that a single platform can serve.

MAP Descriptions

The three Multi-Application Platform (MAP) systems are:

- **MAP/100C**

The MAP/100C is a central office frame mounted hardware platform with an AT ISA bus architecture that can handle 48 simultaneous incoming calls, providing a maximum of 96 incoming and bridged outgoing ports for use at any one time. It is a UNIX compatible machine based on either an Intel 80386, 25-MHz, or an Intel 486DX, 50-MHz central processing unit (CPU). The unit can be operated from standard -48 VDC central office power supplies, with an optional AC power interface available. The platform consists of two main physical units; an integral card cage/power supply unit, and a magnetic peripherals (disk bay) unit. The MAP/100C platform accommodates business customers with a large amount of VIS activity and a central office telecommunications hardware area.

- **MAP/100**

The MAP/100 is a convertible freestanding/rack mountable hardware platform with an AT ISA bus architecture that can handle 48 simultaneous incoming calls, providing a maximum of 96 incoming and bridged outgoing ports for use at any one time. It is a UNIX compatible machine based on either an Intel 80386, 25-MHz, or an Intel 486DX, 50-MHz CPU. The unit can be equipped to operate from either standard AC or DC power supplies, and provides battery backup for emergency power when AC connections are interrupted. The MAP/100 platform consists of a single physical unit, and is suited for business customers with moderate to large amounts of VIS activity with or without a central office telecommunications area.

- MAP/40

The MAP/40 is a PC-sized unit, mounted in a deskside, tower configuration, that can handle 24 simultaneous incoming calls, providing a maximum of 48 incoming and bridged outgoing ports for use at any one time. It is a UNIX compatible machine based on either an Intel 80386, 25-MHz, Intel 486SX, 25-MHz, or an Intel 486DX, 50-MHz CPU. The unit is powered from a standard 110 VAC power source, and consists of a single physical unit. Depending on the anticipated use of the system, the MAP/40 platform can be ordered with one of the three CPUs listed above and various magnetic peripheral arrangements, in order to accommodate customers with small or moderate amounts of VIS activity at the most economical price.

For more information on the hardware of each VIS platform, refer to Chapter 2, "CONVERSANT VIS Hardware".

CONVERSANT VIS Feature and Feature Package Descriptions

This section provides a brief overview of the optional functionality provided by the CONVERSANT VIS V4.0. Each subsequent CONVERSANT VIS release contains improvements that provide greater ease of use and improved capabilities to the system. These new (and existing) hardware and software capabilities of the CONVERSANT VIS should be thought of as either CONVERSANT VIS *features* or CONVERSANT VIS *feature packages*.

Definition of a CONVERSANT VIS Feature

A feature is a capability-providing item or functionality within the standard (base) CONVERSANT VIS, either software or hardware in nature, that is offered to the end customer at no additional cost. The CONVERSANT VIS offers many features, both hardware and software oriented, designed to provide the customer with certain benefits. The associated features can:

- Simplify the automation of a telephone transaction
- Enhance the efficiency of an application script
- Increase the productivity of VIS system resources

For example, an automated teller machine, or drive-through teller can be thought of as a *feature* that a bank offers to its customers. It is an optional method of banking, in addition to the normal walk-in service, that allows a customer to shorten the length of time it takes to complete a banking transaction, or to perform the transaction without actually traveling to a bank.

Hardware and software improvements are offered as standard equipment to the end customer and help the user maintain, monitor, and operate the system in a more efficient manner. The improvement described below is an example of a CONVERSANT V4.0 "feature".

The WholeWord Bilingual Speech Recognition capability of CONVERSANT VIS V4.0, described later in this section, is thought of as a feature. In this release, the platform offers the ability to load two different speech recognition language packages simultaneously. This is an improvement over the previous CONVERSANT VIS V3.1 release, in which only one speech recognition package, American English, could be used. The ability to load two different speech recognition packages requires no additional purchase besides the speech recognition packages themselves, and is presented to the customer at no cost.

The number of standard and optional capabilities introduced during a new release varies depending upon market request. Overall, the CONVERSANT VIS V4.0 release contains mostly optional capabilities called "feature packages" which are described below.

Definition of a CONVERSANT VIS Feature Package

Unlike standard features, some capabilities are optional and must be purchased separately from the base system. As an example, the overall CONVERSANT VIS platform offers the functionality of Script Builder, which is an optional "feature package" of the CONVERSANT VIS that separates it from other voice information systems on the market. This functionality is not standard, and must be purchased in addition to the base system. CONVERSANT VIS feature packages can be hardware or software oriented and provide specific functions that enhance the operation or capacities of the base CONVERSANT VIS platform. The CONVERSANT platforms (MAP/100C, MAP/100, MAP/40) support a variety of optional feature packages, that are each ordered with a price element code (PEC) with the base system. A listing of all PECs associated with CONVERSANT VIS V4.0 is provided in *CONVERSANT VIS V4.0 Planning*, 585-350-602.

Introduction to CONVERSANT VIS V4.0 Features and Feature Packages

The CONVERSANT VIS V4.0 offers many improvements over the previous CONVERSANT VIS 3.1 release. A few of these improvements are base features included with the standard purchase. Many, however, are separately ordered "feature packages," that are described in greater detail, in Chapter 4, "CONVERSANT VIS Features and Feature Packages". These feature and feature package introductions are listed here to familiarize the reader with the improved functionality of the CONVERSANT VIS V4.0 over the previous CONVERSANT VIS V3.1 release. The platforms that support each improvement are surrounded by parenthesis after each feature name. If all three platforms (MAP/100C, MAP/100, MAP/40) support the improvement, it will be denoted with "ALL."

CONVERSANT VIS V4.0 Base Features

The following are base feature enhancements that are provided standard by the CONVERSANT V4.0 product.

486 CPU Introduction (ALL)

In CONVERSANT VIS V4.0, MAP/100C, MAP/100, and MAP/40 hardware platforms can be ordered standard with Intel 486 central processing (CPUs). These new CPU circuit cards are equipped with 16-Mbytes of memory installed in the form of one Single In-Line Memory Module (SIMM).

CPU Variations (ALL)

In CONVERSANT VIS V4.0, the hardware platforms can be ordered standard with different Intel central processing (CPUs). A customer with a MAP/100C or MAP/100 may choose a 386, operating at 25-MHz, or 486DX, operating at 50-MHz. A customer with a MAP/40 may choose one of three CPUs, either a 386, operating at 25-MHz, a 486SX, operating at 25-MHz, or a 486DX, operating at 50-MHz. The 50-MHz CPU is required in all platforms if the customer wishes to purchase the Graphical Speech Editor (GSE) feature. Both 486 CPU circuit cards are equipped with 16-Mbytes of memory installed in the form of one Single In-Line Memory Module (SIMM). The 386 CPU is equipped with 12-Mbytes of RAM.

DEFINITY Converse Vector Step (ALL)

A new capability referred to as Converse Vector Step (CVS) is being added to PBXs to maintain control of a call while capabilities of CONVERSANT are being used. CONVERSANT VIS V4.0 provides a new Script Builder external action called *converse_data* that supports the DEFINITY Converse Vector Step capability on both T/R and LST1 lines. For detailed information on this feature, refer to the document *CONVERSANT VIS Script Builder*, 585-350-704.

IVP6-IU Tip-Ring Card (ALL)

A new six-channel analog tip-ring circuit card that provides service for CONVERSANT systems interfacing with foreign PBXs is introduced for all CONVERSANT VIS hardware systems. This new circuit card is intended for use with new optional country specific switch integration packages for international deployment of CONVERSANT systems.

The IVP6-IU circuit card has the same functionality as the existing AYC6B circuit card, with the addition of supporting earth recall. Earth recall is a method of call transfer initiation supported by some older PBXs in countries outside of North America.

Remote Maintenance Circuit Card (ALL)

This feature is a slot-installed hardware requirement for all VIS V4.0 platforms. This feature is included as standard equipment with all V4.0 hardware orders, and is also bundled with the 486 hardware upgrade kit feature. The Remote Maintenance Circuit Card feature offers two versions of card. One that provides a standard serial port, and the other that provides a built-in modem. With this standard feature installed in a CONVERSANT VIS platform, a technician or remote system administrator is able to log into the system through the Remote Maintenance Circuit Card over analog T/R lines to observe or administer the platform.

⇒ NOTE:

The Remote Maintenance Circuit Card will not be generally available until the First Quarter of 1994. New CONVERSANT V4.0 systems sold prior to its availability will be shipped without the circuit card, and it will be retrofitted on all such platforms as soon as it is available.

SCSI Hard Disk Drive Support (MAP/40)

This is a feature that introduces a Small Computer System Interface (SCSI) hard disk within the MAP/40 platform. The SCSI disk drive was introduced for the MAP/100 and MAP/100C in V3.1. The following summarizes this improvement:

- SCSI hard disks are 1.2-Gbytes in size, and are currently available with new sales of MAP40 with V4.0 software. SCSI peripherals were introduced in the previous CONVERSANT VIS V3.1 release for MAP/100C and MAP/100 platforms.
- An upgrade path is supported in order for hardware platforms that utilize IDE hard disk drives to convert the drive arrangement to SCSI for better efficiency.
- Mixing IDE and SCSI hard disks on a single system is not allowed, since they both utilize different controller circuit cards.
- V4.0 software will continue to support IDE hard disks for customers who upgrade to V4.0 on existing MAP systems that are equipped with IDE drives.
- The performance of a single SCSI-format hard disk drive is greater than that of two IDE-format disks previously available in the MAP/40 platform.

SCSI Tape Drive Support (MAP/40)

This feature introduces a SCSI cartridge tape drive within the MAP/40 platform. The SCSI cartridge tape drive was introduced for the MAP/100 and MAP/100C in V3.1. The following summarizes this feature:

- The SCSI cartridge tape drive is 525-Mbytes in size, and is newly available with new MAP/40 platforms running V4.0 software. The SCSI cartridge tape drive was introduced in previous CONVERSANT VIS V3.1 release for MAP/100C and MAP/100 platforms.
- Mixing IDE and SCSI magnetic peripherals on a single system is not allowed, since they both utilize different controller circuit cards. Each system must have either all IDE or all SCSI peripherals.
- V4.0 software will continue to support IDE cartridge tape drives for new customers, or for customers who upgrade to V4.0 on existing MAP systems equipped with IDE cartridge tape drives
- Performance of the SCSI cartridge tape drive is as good or greater than that of the previous IDE-format tape drive.

Software Upgrades Assistance Tool (ALL)

This base feature helps to automate the task of software upgrades on the CONVERSANT VIS platform. It consists of a software package that simplifies and increases the efficiency of software upgrades from older CONVERSANT VIS generics to CONVERSANT VIS V4.0. The older software generics upgrades supported by this package include V3.0, V3.0.1, V3.1, and V3.1.1.

This package executes a backup of all local UNIX file systems, including formatting floppy disks as needed. It gathers the information in the system needed for reinstallation, providing this data to the installer in the form of a UNIX file which may then be printed out as an aide to installation. It preserves all of the source system parameters configuration data, application scripts and database contents for use with the new system generic. It removes all optional packages, base CONVERSANT software packages, and some UNIX base packages as required for non-disk change scenarios only. Finally, it restores the preserved files on the target system following the reinstallation of system software. For detailed information on the operation and functionality of this feature, refer to the document *CONVERSANT VIS V4.0 Upgrades*, 585-350-110.

WholeWord Bilingual Speech Recognition (ALL)

This base feature allows a CONVERSANT VIS V4.0 machine to perform speech recognition of two different languages simultaneously. With this feature, two different WholeWord Speech Recognition packages can be installed on the system at the same time, and speech recognition capabilities for two languages can occur simultaneously. For detailed information on this feature, refer to the document *CONVERSANT VIS WholeWord Speech Recognition*, 585-250-813.

CONVERSANT VIS V4.0 Optional Feature Packages

The following are optional feature packages that are being introduced with CONVERSANT V4.0 product. Additional information on each feature listed here is contained in Chapter 4, "CONVERSANT VIS Features and Feature Packages".

WholeWord Speech Recognition Packages (ALL)

CONVERSANT VIS V4.0 introduces an expanded library of WholeWord Speech Recognition (SR) packages to support the recognition of foreign languages. In addition to standard American English, the following languages are supported:

These vocabularies support the recognition of 13 words including "zero" through "nine," "yes," "no" and "oh".

FlexWord Speech Recognition (ALL)

CONVERSANT VIS V4.0 provides an alternate approach to the WholeWord Speech Recognition packages above by allowing each word to be recognized as a set of unique phonemes (subwords). When compared to whole word techniques, the development of a vocabulary based on subword recognition is much faster and cheaper. For CONVERSANT VIS V4.0, FlexWord recognition is used to support fast, low-cost delivery of speech recognition vocabularies on a custom basis.

Country Specific Analog Switch Integration Packages (ALL)

Individual Analog Switch Integration (ASI) packages which allow easy accommodation of telephony interface differences from country to country are available for:

These packages allow the tuning of the VIS analog interface with a DEFINITY PBX or the Public Switched Telephone Network (PSTN). The tunable parameters include all of those available with the previous CONVERSANT VIS V3.1 release plus the new generic parameters introduced as part of the V4.0 U.K. tip-ring card feature. Multiple ASI packages can reside on the system, but only one package may be in use by the system at any one time.

Hardware Upgrade Kits (ALL)

This feature provides hardware kits which allow existing customers to upgrade their systems to newer hardware technology which includes Small Computer System Interface (SCSI) magnetic peripherals (hard disk drive and cartridge tape drive) and Intel 486DX, 50-MHz CPU circuit cards. These upgrade kits can be purchased for any MAP/100C, MAP/100 or MAP/40 machine that is currently equipped with an Intel 386 CPU and ESDI or IDE magnetic peripherals.

The MAP/40 hardware upgrade kit also allows a customer to upgrade from a 486SX, 25-MHz CPU to the more powerful 486DX.

SCSI Disk Mirroring (MAP/40)

This feature introduces mirroring for SCSI hard disks in MAP/40 system. SCSI disk mirroring was introduced for MAP/100 and MAP/100C systems in V3.1. Mirroring configures and manages a system so that each hard disk drive has an independent backup copy kept on another hard disk. The functionality of SCSI disk mirroring is only available if an optional second SCSI hard disk drive is installed. The advantages of mirrored hard disk drives is described in Chapter 2, "CONVERSANT VIS Hardware".

Asynchronous Host Interface Toolkit (ALL)

This feature provides a toolkit for development of VIS applications which access host computers using an asynchronous TTY interface to send and retrieve data. Although the toolkit will not support interaction with screen oriented host applications, it does provide a message-based protocol with Script Builder External Function support to reduce application development intervals and costs. Any host that follows the message-based protocol can use the interface. The customer will however, need to create host software to provide the host side of the interface.

FAX Attendant Co-Residency (ALL)

This feature provides fax services by supporting co-residency of FAX Attendant hardware and software. Up to 12 channels of FAX Attendant can be provided on a single platform, as well as optional integration with AUDIX Voice Power and various switches. The FAX Attendant service offers fax reception and storage in a mailbox, fax printing, fax transmissions and broadcast, fax machine call coverage, multi-level fax bulletin board, and system cover sheet application capabilities. These services can be invoked from a CONVERSANT VIS application script through the use of Script Builder external actions.

Graphical Speech Editor (ALL)

The Graphical Speech Editor (GSE) capability provides the user with an environment for making changes to existing speech files, as well as creating new speech phrases. The GSE feature consists of software, hardware and documentation. The basic hardware, software, and documentation allows a user to cut, paste, splice, and edit speech files.

The documentation describes VIS speech formats, so that customers can build their own graphical speech editor environments using an external product such as BitWorks for editing speech phrases and using the edited speech in a CONVERSANT VIS V4.0 application.

The GSE feature is only available for use with systems equipped with 486DX, 50-MHz CPUs.

General PRI (Restricted)

This feature is an expansion of a currently offered, restricted feature called "Network PRI". General PRI provides some existing PRI capabilities, in that it provides full interfaces to ISDN PRI signaling information at the script level using the VIS script programming language. It also provides a C-level programming interface which requires extensive development expertise, and could lead to serious signaling errors or fraud if misused. Because of this, distribution is limited to AT&T and its direct affiliates.

Speech Collection Toolkit (Restricted)

This restricted feature provides a toolkit consisting of a separately installed software package and documentation to support the collection of speech samples by authorized third-parties, such as Voice Processing Co-Marketers, and AT&T affiliates only. This speech sample data allows a user to construct their own WholeWord Speech recognition vocabulary based on the speech samples they collect with this feature. These samples are also forwarded to AT&T for Speech Recognition modeling and construction of future WholeWord vocabularies.

Line Side T1 (ALL)

This feature package allows the use of a 24-channel, 1.544 Mhz digital interface between a customer-based PBX and the CONVERSANT VIS V4.0 platform. LST1 uses existing T1 card technology with new protocol level software and VIS user interface modifications to significantly improve system connectivity and reduce the number of circuit cards and cables required to support 24 channels of T1 service.

Introduction to CONVERSANT VIS Feature Packages from Earlier Releases

A list of all the major feature packages that have been supported since the CONVERSANT VIS was first introduced is provided below. Depending upon the functionality of each feature, certain software and additional hardware are included in the package.

While the packages are briefly described here, each optional feature is discussed in detail in Chapter 4, "CONVERSANT VIS Features and Feature Packages", and many features have a dedicated document within the CONVERSANT library explaining them in full detail. Refer to Appendix A, "Release and Platform History", to determine when each feature package was introduced within the CONVERSANT VIS generic life cycle.

- Adjunct/Switch Application Interface (ASAI)

This feature supports the AT&T ASAI for communication with the DEFINITY Communications System, Generic 3. One benefit of this feature is voice response application access to information about the calling party number [often referred to as automatic number identification (ANI)], and called party number, along analog tip/ring (T/R) and newly introduced digital Line Side T1 interfaces. Other benefits of this feature include the ability to monitor and route calls, and the ability to pass the status of calls to a host for use in presenting data screens to live agents.

- AUDIX Voice Power Co-Residency

This feature package allows access to AUDIX Voice Power voice mail capabilities by CONVERSANT VIS Script Builder scripts. The ability of AUDIX Voice Power R2.1.1 to operate co-resident with CONVERSANT VIS provides the capability for both AUDIX Voice Power and CONVERSANT VIS applications to run simultaneously on different channels of the system, and allows a CONVERSANT VIS application script to invoke AUDIX Voice Power services, if needed. This feature package can also be fully integrated with the newly introduced FAX Attendant Co-Residency feature package on a single CONVERSANT VIS platform.

- Call Classification Analysis (CCA)

This feature package provides identification and classification of transferred and outgoing calls in inter-switch and intra-switch situations. The benefits include detailed identification of special information tones (SITs) and call progress tone (CPT) classification for outgoing calls over the telephone network.

- CompuLert/SCCS/ARU Interface

This feature package provides an interface to both the CompuLert centralized maintenance system for minicomputers, and the SCCS centralized maintenance system for 4ESS local switching systems. Benefits of this feature include the ability for a user at the CompuLert/SCCS to monitor and remotely administer the CONVERSANT VIS. This feature can also be coupled with an alarm relay unit (ARU) to provide audible and visual local alarm notification.

- Enhanced File Transfer

This feature package provides enhancements to the base file transfer process often used during 3270 Synchronous Host Communications initiated by a CONVERSANT VIS, to be conducted in either direction between an IBM host and the VIS.

- External Alarms

This feature package, used only on the MAP/100C, provides a means for administering externally accessible alarm relay units for central office isle alarms.

- **Form Filler Plus**

This package allows scripts to capture speech from callers for later retrieval and transcription. Benefits of this feature include the ability to capture, by spoken word, information which would be difficult or impossible to enter with touch tones. Examples include information such as name and address, or an exchange of information by a caller with a rotary phone.

- **Local Area Network (LAN)**

This feature package provides the interface for CONVERSANT VIS to either a 10BASE-T (StarLAN-10), 10BASE-5 (ThickNet), or a 10BASE-2 (ThinNet) TCP/IP local area network (LAN). Benefits include the ability to communicate with other systems, including non-CONVERSANT platforms, on the LAN.

- **Multi-Port Asynchronous Communications Interface**

This feature package provides up to eight additional asynchronous ports to the VIS platform, which can provide connections to one or more asynchronous host computer or additional modems, printers, and terminals.

- **NetView Alarm Interface**

The NetView Alarm interface provides a mechanism for transmitting high priority CONVERSANT VIS error messages to an IBM host as operator generated alerts (OGAs) over a single link that is also used for a 3270 host interface.

- **Primary Rate Interface (PRI)**

This feature package allows an interface between the CONVERSANT VIS and a customer's Integrated Services Digital Network (ISDN) Primary Rate Interface (PRI). The benefits include voice response application access to information about calling/called party number (ANI/DNIS) faster call setup, and the ability to choose the Q.931 network specific facilities (NSF) service type for outgoing calls.

This package also provides the following capabilities:

- Allows PRI channels to specify the type of ANI a Script Builder script gets.
- Allows intercepted calls to determine the dialed (redirecting) number.
- Allows Script Builder scripts to determine the service type on incoming calls.
- Allows Script Builder scripts to set the ANI on outbound calls.

With CONVERSANT VIS V4.0 there are three types of PRI support available to various customers by the CONVERSANT VIS:

- Commercial PRI

This is a basic PRI interface available to all customers

- Network PRI

This is an extended form of Commercial PRI that is restricted to use by AT&T and its direct affiliates only.

- General PRI

This is an advanced form of ISDN-PRI that is restricted to use by AT&T and its direct affiliates only.

- Remote Database Access

Employing SQL*NET and a TCP/IP LAN, this enhancement provides a Script Builder developed script with the ability to read and modify tables in remote ORACLE databases. Script Builder access to remote ORACLE databases for table creation, schema modification, and read/modify access during script development is also provided.

- Script Builder

This feature package is designed to assist in the development of customer voice response applications on the VIS. It is a menu-driven, screen-oriented tool that can be used by a broad range of customers. It is targeted toward designers familiar with the specific application, who also have knowledge of logical programming concepts.

The application developer uses Script Builder through its menu-oriented interface. By highlighting steps with cursor movements and keystrokes, the user can build the basic transaction flow. The user then further defines each action, records the appropriate speech phrases, and installs the application on the CONVERSANT VIS in order to automate a transaction.

- SCSI Disk Mirroring

This feature package, supported by all three hardware platforms equipped with SCSI magnetic peripherals, allows a second hard disk drive to be added to the system. This hard disk drive is "mirrored" from the primary, and provides a near-real-time copy of primary disk data if that disk should ever fail, and the data it contains is lost. The functionality of SCSI disk mirroring is only available if an optional second SCSI hard disk drive is installed. This feature package is virtually transparent to the user once the package is purchased and installed.

- **Speech Production Kit**

This optional feature package, designed to be used with the Script Builder and Graphical Speech Editor feature packages, provides an interface to older CONVERSANT VIS Tip/Ring circuit cards for speech recording and storage through the use of a microphone and/or recording/playback equipment, instead of through a telephone handset. The unit accepts audio from a tape recording system or microphone, converts the interface to a modular telephone jack, and feeds it directly through a standard Tip/Ring circuit card port. This direct connection results in a much cleaner recording than if the sound had traveled through air and an inefficient handset before being stored in memory.

- **Text-to-Speech (TTS)**

This feature package allows an application to play speech directly from ASCII text. Benefits of this feature include the use of TTS as an alternative to prerecorded phrases in applications which require speaking frequently changing text (such as names and addresses), or which have a large amount of speakable text (such as electronic news).

- **WholeWord Speech Recognition Packages**

This feature allows the recognition of connected digit strings and isolated key words from callers who do not have touch tone phones. With the prompt interrupt and keyword spotting capabilities of this speech recognition package, callers have added flexibility and ease while participating in an automated transaction.

- **3270 Synchronous Host Communication Interface**

This feature package allows one or two synchronous connections between a CONVERSANT VIS and a front end processor (FEP) or to a single FEP shared by one or more hosts, with each synchronous communications link (up to 56 Kbps) supporting a maximum of 32 logical units (LUs). With this connection, the VIS is able to retrieve and store information to and from host computers, when providing service for an incoming call. This information is often used or obtained by an application script or operator when servicing an incoming call.

Overview

This chapter defines the CONVERSANT Voice Information System (VIS) hardware which includes functional descriptions, illustrations, and lists of supported and orderable devices in the following categories:

- MAP/100C, MAP/100, and MAP/40 hardware system descriptions, including:
 - Standard equipment
 - Optional equipment
- Magnetic Peripherals
- Circuit Cards
- Peripheral equipment
- CONVERSANT VIS Hardware Architecture

CONVERSANT VIS Platform Descriptions

CONVERSANT VIS Version 4.0 software can operate on any of three multi-application platforms — the MAP/100C, MAP/100, or MAP/40. These platforms and their standard and optional hardware are described in this section.

MAP/100C Hardware Platform

The MAP/100C is a central office frame-mounted unit capable of supporting up to 48 simultaneous incoming calls, with a maximum of 96 incoming and bridged outgoing ports. It is used primarily to provide services that enhance the functionality of large central office telecommunication switches and services operated by local, long distance, and foreign telephone companies.

The system can be ordered with one of two different Central Processing Units (CPUs):

- An Intel 80486DX processor running at 50-MHz with 16-Mbytes of RAM
- An Intel 80386 processor running at 25-MHz with 12-Mbytes of RAM

The MAP/100C platform consists of two main physical units — an integral card cage/power supply unit and a magnetic peripherals (disk bay) unit. Regardless of CPU, the machine operates on standard -48 VDC central office power, with an optional 120 VAC power supply also available.

The disk bay has space for three full-height peripherals or six half-height peripherals, or some combination thereof (for example, two full-height and two half-height). The internal 1.44-Mbyte 3.5-inch floppy drive is located in the CPU chassis area and is accessible from the user interface panel. If an internal cartridge tape drive is used, it is located below the floppy drive.

The MAP/100C supplied with CONVERSANT VIS V4.0 is provided with Small Computer System Interface (SCSI)-format magnetic peripherals when ordered. ESDI-format magnetic peripherals, supplied in previous CONVERSANT releases (for example, V3.0) are still fully supported for existing platforms deployed in the field, but are not supplied with new platform orders. As a final note, existing machines with ESDI peripherals are supported by an upgrade path that allows the replacement of ESDI devices with SCSI peripherals. SCSI devices offer advanced methods of data storage that minimize the potential for lost hard disk data.

There is a passive backplane with 25 I/O expansion slots inside the CPU chassis. All slots conform to Intel's 16-bit ISA specification. Slots 17 through 22 also conform to the 32-bit extended industry standard architecture (EISA) in anticipation of an EISA-compatible CPU.

The passive backplane is oriented vertically towards the back of the cabinet. All circuit cards are mounted vertically with any interface cables exiting from the top of the card. Access to the backplane is provided through a hinged door on the front of the unit. 15 of the 25 available backplane expansion slots are dedicated to CONVERSANT VIS circuit cards. An optional analog tip/ring (T/R) distribution panel and a T-bar are located on the top rear of the chassis.

Figure 2-1 shows the front view of the MAP/100C. Figure 2-2 shows the back view.

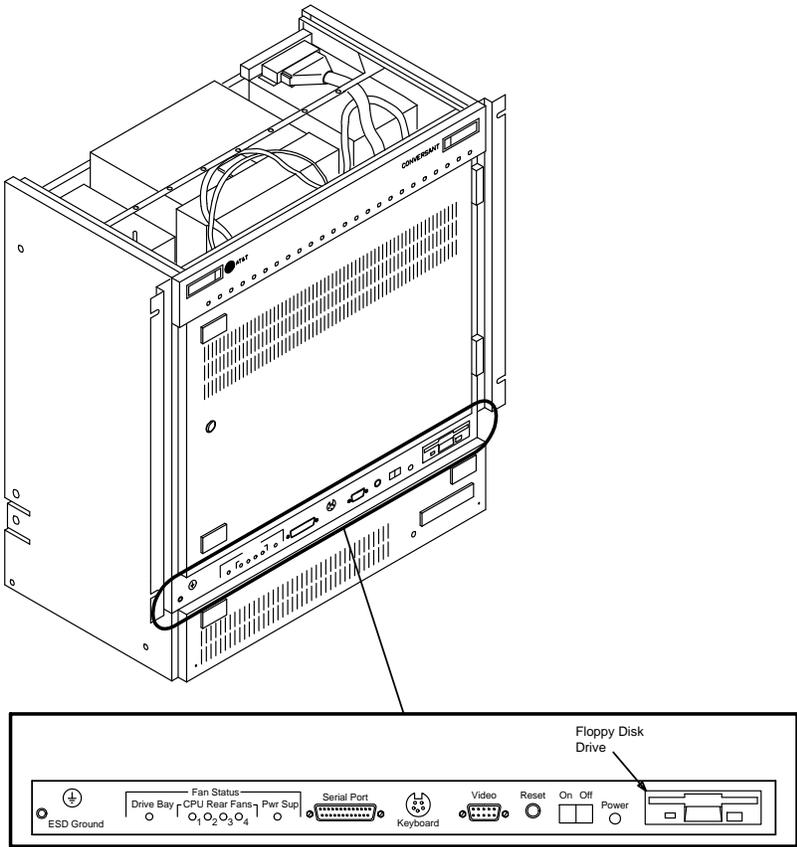


Figure 2-1. Front View of the MAP/100C Platform

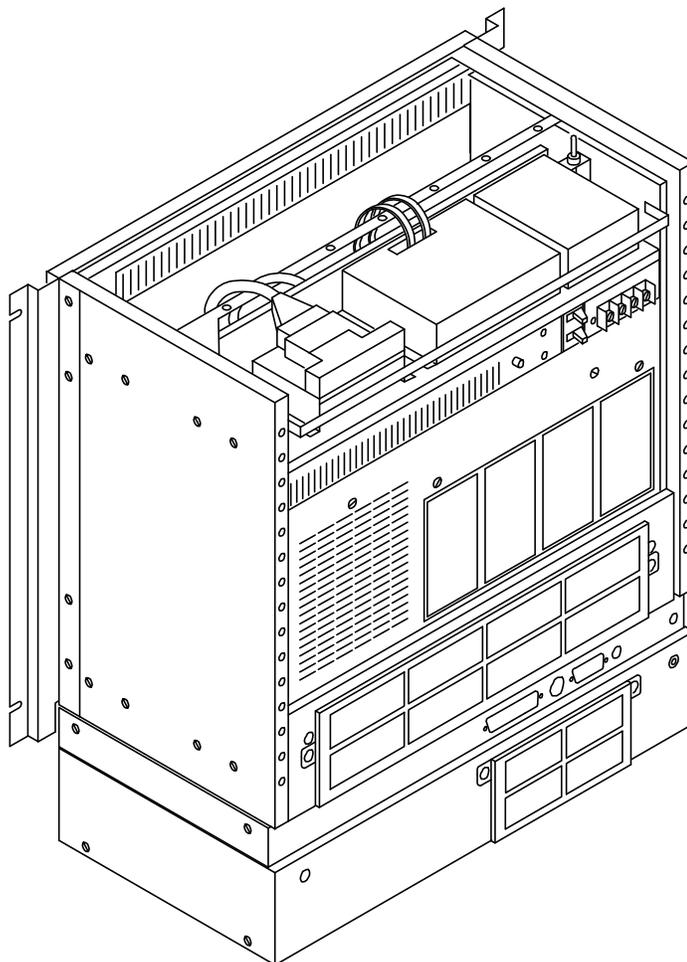


Figure 2-2. Back View of the MAP/100C Platform

Standard CONVERSANT VIS MAP/100C Hardware

The standard *orderable* and *supported* MAP/100C hardware associated with the CONVERSANT VIS V4.0 is listed below. *Orderable* means that the hardware listed is currently available with new CONVERSANT VIS V4.0 MAP/100C systems. *Supported* means that the hardware listed is no longer available, but is fully functional with the new CONVERSANT VIS V4.0 MAP/100C software. Customers who are upgrading existing (pre-V4.0) CONVERSANT VIS platforms with new software and features are interested in the *supported* hardware.

Orderable MAP/100C Standard Hardware

- A MAP/100C chassis including power supply, backplane, cabling, and associated hardware for rack mounting in 4ESS switch, 5ESS switch, or commercial 24-inch framework.
- 80486DX, 50-MHz CPU circuit card with 16-Mbyte of main memory
- 80386, 25-MHz CPU circuit card with 12-Mbytes of main memory
- VGA video controller card
- SCSI peripheral controller circuit card
- SCSI 1.2-Gbyte hard disk
- SCSI 525-Mbyte cartridge tape drive
- 1.44-Mbyte 3.5" floppy disk drive
- Remote maintenance circuit card with/without modem
- Time Division Multiplexing (TDM) bus

Supported MAP/100C Standard Hardware

- ESDI hard disk controller circuit card
- ESDI 600-Mbyte hard disk
- ESDI streaming tape controller circuit card
- ESDI 150-Mbyte cartridge tape drive

Optional CONVERSANT VIS MAP/100C Hardware

The standard *orderable* and *supported* MAP/100C optional hardware associated with the CONVERSANT VIS V4.0 is listed below, as well as miscellaneous hardware that was certified with previous CONVERSANT VIS releases. *Orderable* means that the hardware listed is currently available with new CONVERSANT VIS V4.0 MAP/100C systems. *Supported* means that the hardware listed is no longer available, but is fully functional with the new CONVERSANT VIS V4.0 MAP/100C software. Customers who are upgrading existing (pre-V4.0) CONVERSANT VIS platforms with new software and features are interested in the *supported* hardware.

Orderable MAP/100C Optional Hardware

- Keyboard, 101 key
- VGA color monitor
- Additional SCSI 1.2-Gbyte hard disk
- Tip/ring circuit card(s): IVP6IU (AYC16), IVP6 (AYC5B), IVP4 AYC6B)
- T1 circuit card(s): AYC3B, AYC11
- SP circuit card(s): AYC2C, AYC9
- SP companion (CMP) circuit card: AYC7
- Ethernet TCP/IP circuit card: NP600A (for InterLan)
- StarLAN 10 network circuit card: PC NAU (for StarLAN)
- Synchronous host communications circuit card: CLEO 3270 PC/XL
- Multi-port asynchronous communications circuit card: CTC Gemini-1000
- PC/ISDN interface circuit card: IPCI (Adjunct/Switch Application Interface)
- PC/PBX interface circuit card: DCP (for AUDIX Voice Power Co-residency)
- Brooktrout FAX circuit card: TR114-I4L (for FAX Attendant Co-residency)
- CONVERSANT operator services interface board (COSIB): (for OSPS only)
- Intelligent personal computer interface board (IPIB): (for OSPS only)
- External alarm circuit card (for External Alarms Interface)
- Speech production kit (for Script Builder or Graphical Speech Editor)
- Serial mouse (for Graphical Speech Editor)

Supported MAP/100C Optional Hardware

- Additional 600-Mbyte ESDI hard disk
- 4-Mbyte memory upgrade for 8-Mbyte 386 CPU card
- Tip/ring circuit card: IVP6 (AYC5)
IVP4 (AYC6)
- TDM bus upgrade kit for IVP4 (AYC6) circuit card use
- IPC-900 multi-port asynchronous communications circuit card

Miscellaneous MAP/100C Optional Hardware

The hardware listed below is optional hardware that was certified with previous CONVERSANT VIS releases. Basic system connectivity and compatibility assurances must be made by the system administrator and system designer when choosing a particular brand or model.

⇒ NOTE:

In some cases, AT&T does not provide or recommend a particular model or brand of each unit when ordering, and it is the responsibility of the customer to inform the CONVERSANT VIS sales representative of the peripheral equipment they wish to interface with the system during the planning of a new CONVERSANT VIS.

- External modems: Hayes 2400 Smartmodems, AT&T 4000, AT&T 2224-CEO, AT&T Paradyne Comsphere 3820SD, UDS V.32
- Parallel printers: AT&T 473, AT&T 570, AT&T 571
- Serial printers: AT&T 572, AT&T 573
- Remote terminals: AT&T 705, AT&T 715
- Asynchronous data unit (ADU)
- Alarm relay unit (ARU)

MAP/100 Hardware Platform

The MAP/100 is a convertible freestanding/rack-mountable hardware unit capable of supporting up to 48 simultaneous incoming calls, with a maximum of 96 incoming and bridged outgoing lines. It utilizes an access tandem (AT) industry standard architecture (ISA) bus architecture, and is UNIX-compatible.

The system can be ordered with one of two different Central Processing Units (CPUs):

- An Intel 80486DX processor running at 50-MHz with 16-Mbytes of RAM
- An Intel 80386 processor running at 25-MHz with 12-Mbytes of RAM

Regardless of CPU, the system can be ordered with either AC or DC power supplies. The AC unit also provides emergency battery backup power supply. It provides power for a maximum of 15 minutes of operation under full load if a blackout situation occurs, and will provide regulated power in the event of brownouts or surges.

The platform provides space for four full height peripherals, an internal 1.44-Mbyte 3.5-inch floppy drive, and an internal cartridge tape drive. Inside the unit is a passive backplane with 25 input/output (I/O) expansion slots. All slots conform to Intel's 16-bit ISA specification. Slots 17 through 22 also conform to the 32-bit extended industry standard architecture (EISA) in anticipation of an EISA-compatible CPU. 15 of the 25 available backplane expansion slots are dedicated to CONVERSANT VIS circuit cards.

The MAP/100 supplied with CONVERSANT VIS V4.0 is provided with Small Computer System Interface (SCSI)-format magnetic peripherals when ordered. ESDI-format magnetic peripherals, supplied in previous CONVERSANT releases (for example, V3.1) are still fully supported for existing platforms deployed in the field, but are not supplied with new platform orders. As a final note, existing machines with ESDI peripherals are supported by an upgrade path that allows the replacement of ESDI devices with SCSI peripherals. SCSI devices offer advanced methods of data storage that minimize the potential for lost hard disk data.

The cards and the passive backplane are mounted in the card cage, located on the unit's left side. The passive backplane is oriented vertically. The cards are mounted horizontally. Easy access to the card cage is provided through a hinged door on the left side of the unit.

Figure 2-3 shows the front view of the MAP/100. Figure 2-4 shows the back view of a MAP/100 that is AC powered. Figure 2-5 shows the back view of a MAP/100 that is DC powered.

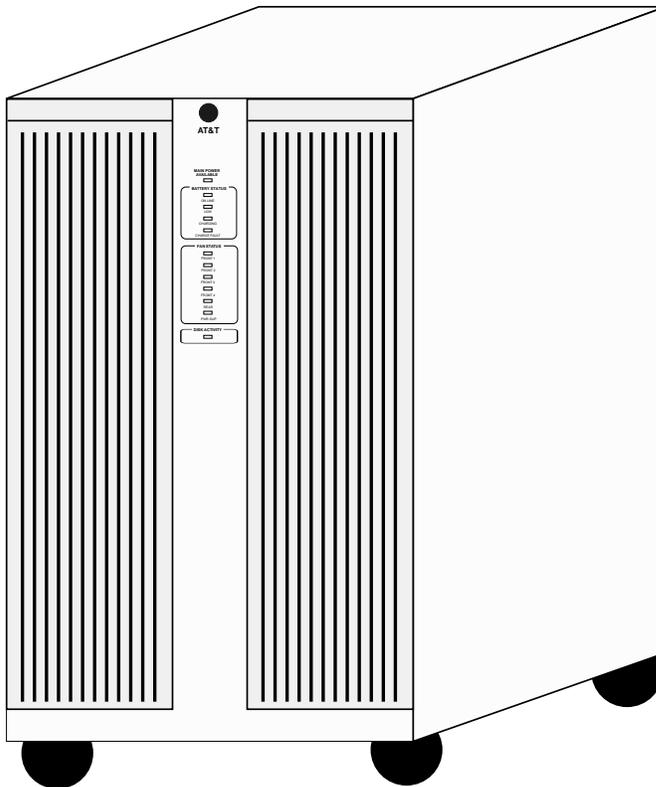


Figure 2-3. Front View of the MAP/100 Platform

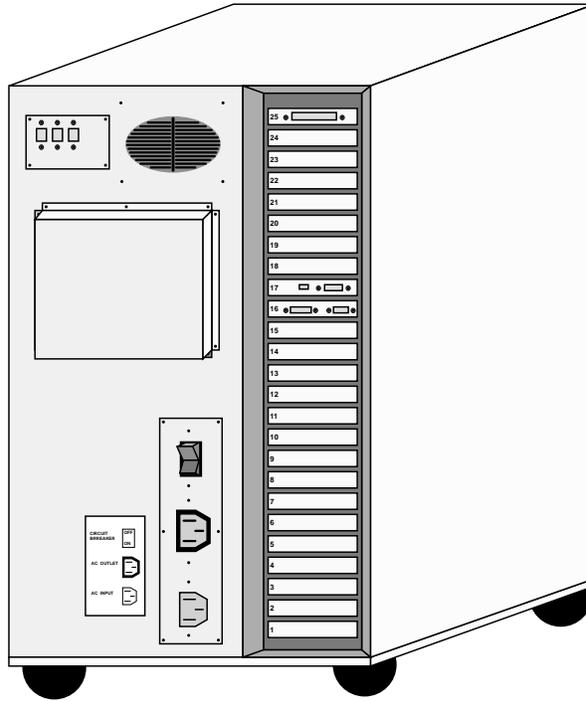


Figure 2-4. Back View of the MAP/100 Platform (AC Powered)

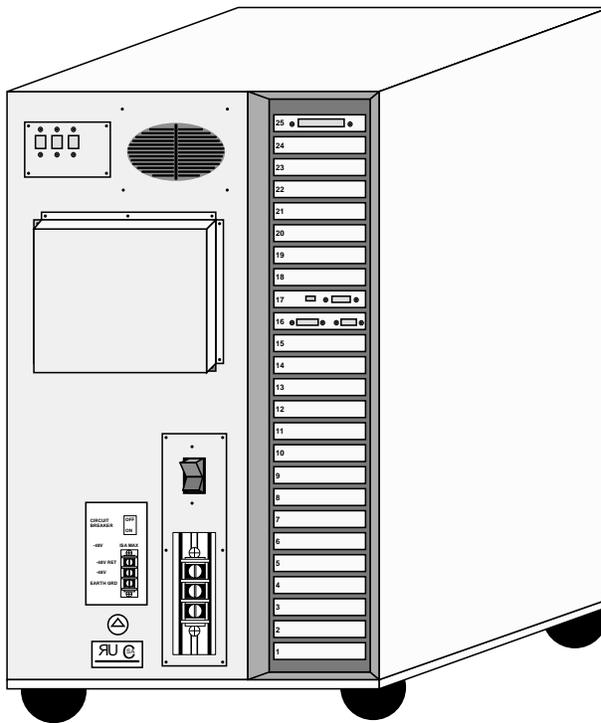


Figure 2-5. Back View of the MAP/100 Platform (DC Powered)

Standard CONVERSANT VIS MAP/100 Hardware

Regardless of the type of application being supported, a MAP/100 requires a minimum amount of hardware to properly function.

The following lists the standard MAP/100 hardware associated with the CONVERSANT VIS V4.0. The information is broken into two groups, *orderable*, and *supported*.

Orderable means that the hardware listed is currently available with new CONVERSANT VIS V4.0 MAP/100 systems.

Supported means that the hardware listed is no longer available, but is fully functional with the new CONVERSANT VIS V4.0 MAP/100 software. This is of particular interest to customers who are upgrading existing (pre-V4.0) CONVERSANT VIS platforms with new software and features.

Orderable MAP/100 Standard Hardware

- A MAP/100 chassis including power supply, backplane, cabling, and associated hardware, with dress panels for freestanding, or brackets for rack mounting in commercial 24-inch framework.
- 80486DX, 50-MHz CPU circuit card with 16-Mbyte of main memory
- 80386, 25-MHz CPU circuit card with 12-Mbytes of main memory
- VGA video controller card
- SCSI peripheral controller circuit card
- SCSI 1.2-Gbyte hard disk
- SCSI 525-Mbyte cartridge tape drive
- 1.44-Mbyte 3.5" floppy disk drive
- Remote maintenance circuit card with/without modem
- Time Division Multiplexing (TDM) bus

Supported MAP/100 Standard Hardware

- ESDI hard disk controller circuit card
- ESDI 600-Mbyte hard disk
- ESDI streaming tape controller circuit card
- ESDI 150-Mbyte cartridge tape drive

Optional CONVERSANT VIS MAP/100 Hardware

The following lists the optional MAP/100 hardware associated with the CONVERSANT VIS V4.0. The information is broken into two groups, *orderable*, and *supported*.

Orderable MAP/100 Optional Hardware

- Keyboard, 101 key
- VGA color monitor
- Additional SCSI 1.2-Gbyte hard disk
- Tip/ring circuit card(s): IVP6IU (AYC16), IVP6 (AYC5B), IVP4 (AYC6B)
- T1 circuit card(s): AYC3B, AYC11
- E1 circuit card: AYC21
- SP circuit card(s): AYC2C, AYC9
- SP companion (CMP) circuit card: AYC7
- Ethernet TCP/IP circuit card: NP600A (for InterLan)
- StarLAN 10 network circuit card: PC NAU (for StarLAN)
- Synchronous host communications circuit card: CLEO 3270 PC/XL
- Multi-port asynchronous communications circuit card: CTC Gemini-1000
- PC/ISDN interface circuit card: IPCI (Adjunct Switch Application Interface)
- PC/PBX interface circuit card: DCP (for AUDIX Voice Power Co-residency)
- Brooktrout FAX circuit card: TR114-I4L (for FAX Attendant Co-residency)
- CONVERSANT operator services interface board (COSIB): AYC15 (for OSPS only)
- Intelligent personal computer interface board (IPIB): (for OSPS only)
- Speech production kit (for Script Builder and Graphical Speech Editor)
- Serial mouse (for Graphical Speech Editor)

Supported MAP/100 Optional Hardware

- Additional 600-Mbyte ESDI hard disk
- 4-Mbyte memory upgrade for 8-Mbyte 386 CPU card
- Tip/ring circuit card: IVP6 (AYC5)
IVP4 (AYC6)
- TDM bus upgrade kit for IVP4 (AYC6) circuit card use
- IPC-900 multi-port asynchronous communications circuit card

Miscellaneous MAP/100 Optional Hardware

The hardware listed below is optional hardware that was certified with previous CONVERSANT VIS releases. Basic system connectivity and compatibility assurances must be made by the system administrator and system designer when choosing a particular brand or model.

⇒ NOTE:

In some cases, AT&T does not provide or recommend a particular model or brand of each unit when ordering, and it is the responsibility of the customer to inform the CONVERSANT VIS sales representative of the peripheral equipment they wish to interface with the system during the planning of a new CONVERSANT VIS.

- External modems: Hayes 2400 Smartmodems, AT&T 4000, AT&T 2224-CEO, AT&T Paradyne Comsphere 3820SD, UDS V.32
- Parallel printers: AT&T 473, AT&T 570, AT&T 571
- Serial printers: AT&T 572, AT&T 573
- Remote terminals: AT&T 705, AT&T 715
- Asynchronous data unit (ADU)
- Alarm relay unit (ARU)

MAP/40 Hardware Platform

The MAP/40 platform is a desktop (tower), PC-sized unit capable of supporting up to 24 simultaneous incoming calls, with a maximum of 48 incoming and bridged outgoing lines. A CONVERSANT VIS V4.0 MAP/40 system can be ordered in one of three different CPU/Disk configurations:

- An Intel 80486DX processor running at 50-MHz with 16-Mbytes of RAM and Small Computer System Interface (SCSI)-format magnetic peripherals
- An Intel 80486SX processor running at 25-MHz with 16-Mbytes of RAM and Small Computer System Interface (SCSI)-format magnetic peripherals
- An Intel 80386 processor running at 25-MHz with 12-Mbytes of RAM and ESDI/IDE-format magnetic peripherals

The three different CPU combinations allow the hardware to be tailored to the customer's specific needs. As an example, an expensive, high-speed 486DX CPU may not need to be purchased for a platform intended to provide simple features and low-traffic service. A less expensive 486SX or even a 386 CPU may provide enough processing power to adequately handle the load. Regardless of CPU/disk combination, the system operates from standard 110 VAC building power.

The peripheral bay within the MAP/40 chassis has space for a 3.5" floppy drive, a cartridge tape drive, and two hard disk drives. The magnetic peripherals can be either SCSI or ESDI/IDE in format, depending upon the configuration that is selected. SCSI-format peripherals offer much greater storage capacity than ESDI/IDE devices, as well as advanced methods of data storage that minimize the potential for lost hard disk data.

A passive backplane with 12 I/O expansion slots is located inside the CPU chassis. All slots conform to Intel's 16-bit ISA specification. Eight of the twelve slots are available for CONVERSANT VIS circuit cards.

The passive backplane is oriented vertically. The cards are horizontally with any interface cables exiting from the top of the card. Access to the backplane is provided by removing an exterior dress cover, an internal card cage access cover, and a circuit card cage retaining bracket.

Figure 2-6 shows the front view of the MAP/40. Figure 2-7 shows the back view of the MAP/40.

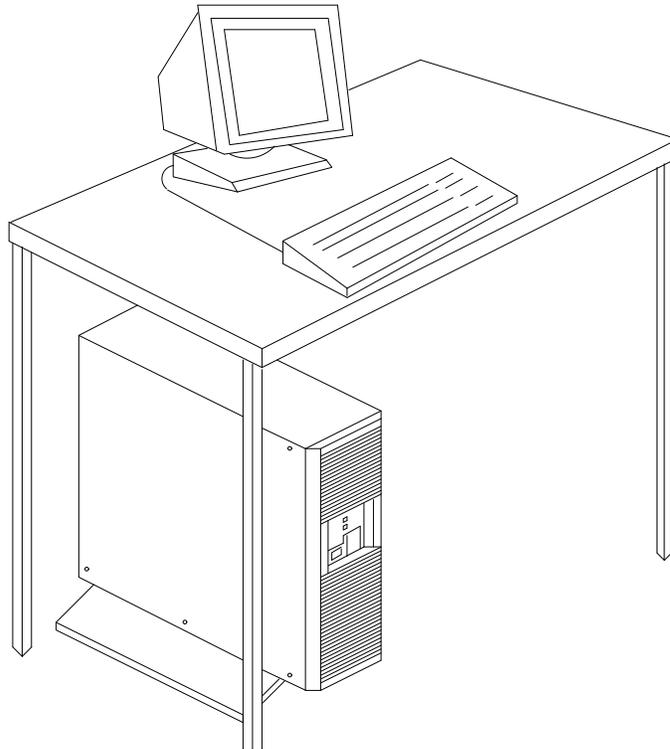


Figure 2-6. MAP/40 Platform System Arrangement

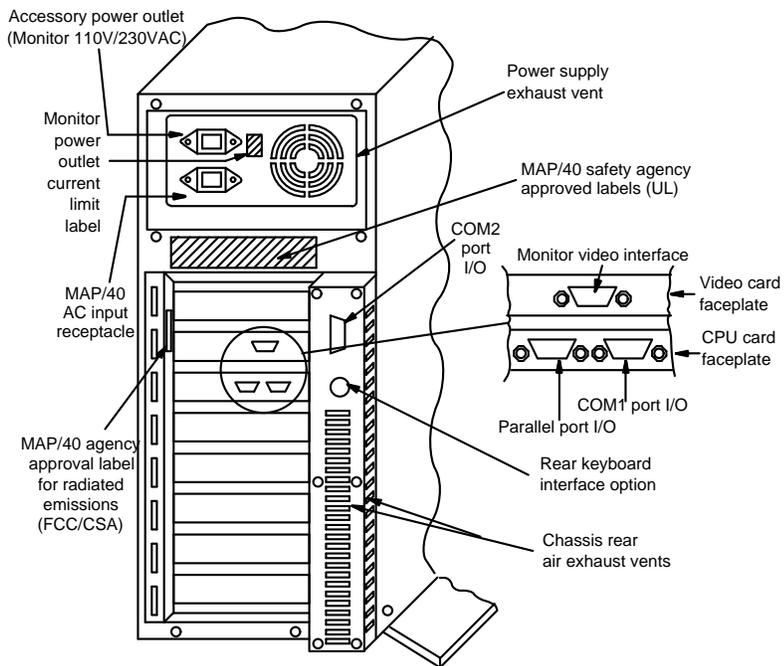


Figure 2-7. Back View of the MAP/40 Platform

Standard CONVERSANT VIS MAP/40 Hardware

Regardless of the type of application being supported, a MAP/40 requires a minimum amount of hardware to properly function, as listed below. The following lists the standard MAP/40 hardware associated with the CONVERSANT VIS V4.0. Please note that the MAP/40 system is available with three different CPU configurations.

Orderable MAP/40 Standard Hardware

- A MAP/40 chassis including power supply, backplane, cabling, and associated hardware for tower mounting.
- 80486DX 50-MHz CPU circuit card with 16-Mbyte of main memory
 - SCSI magnetic peripheral controller card
 - SCSI 525-Mbyte cartridge tape drive
 - SCSI 1.2-Gbyte hard disk
- 80486SX 25-MHz CPU circuit card with 16-Mbyte of main memory
 - SCSI magnetic peripheral controller card
 - SCSI 525-Mbyte cartridge tape drive
 - SCSI 1.2-Gbyte hard disk
- 80386, 25-MHz CPU circuit card with 12-Mbytes of main memory
 - ESDI cartridge tape drive controller card
 - ESDI 150-Mbyte cartridge tape drive
 - IDE hard disk drive controller circuit card
 - IDE 200-Mbyte hard disk
- VGA video controller card
- 1.44-Mbyte 3.5" floppy disk drive
- Remote maintenance circuit card with/without modem
- Time Division Multiplexing (TDM) bus

Optional CONVERSANT VIS MAP/40 Hardware

The following lists the optional MAP/40 hardware associated with the CONVERSANT VIS V4.0.

Orderable MAP/40 Optional Hardware

- Keyboard, 101 key
- VGA color monitor
- Additional SCSI 1.2-Gbyte hard disk
- Additional IDE 200-Mbyte hard disk
- Tip/ring circuit card(s): IVP6IU (AYC16), IVP6 (AYC5B), IVP4 (AYC6B)
- T1 circuit card(s): AYC3B, AYC11
- E1 circuit card: AYC21
- SP circuit card(s): AYC2C, AYC9
- SP companion (CMP) circuit card: AYC7
- Ethernet TCP/IP circuit card: NP600A (for InterLan)
- StarLAN 10 network circuit card: PC NAU (for StarLAN)
- Synchronous host communications circuit card: CLEO 3270 PC/XL
- Multi-port asynchronous communications circuit card: CTC Gemini-1000
- PC/ISDN interface circuit card: IPCI (Adjunct Switch Application Interface)
- PC/PBX interface circuit card: DCP (for AUDIX Voice Power Co-residency)
- Brooktrout FAX circuit card: TR114-I4L (for FAX Attendant Co-residency)
- Speech production kit (for Script Builder and Graphical Speech Editor)
- Serial mouse (for Graphical Speech Editor)

Supported MAP/40 Optional Hardware

- 4-Mbyte memory upgrade for 8-Mbyte 386 CPU card
- Tip/ring circuit card: IVP6 (AYC5)
IVP4 (AYC6)
- TDM bus upgrade kit for IVP4 (AYC6) circuit card use
- IPC-900 multi-port asynchronous interface card

Miscellaneous MAP/40 Optional Hardware

The hardware listed below is optional hardware that was certified with previous CONVERSANT VIS releases. Basic system connectivity and compatibility assurances must be made by the system administrator and system designer when choosing a particular brand or model.

⇒ NOTE:

In some cases, AT&T does not provide or recommend a particular model or brand of each unit when ordering, and it is the responsibility of the customer to inform the CONVERSANT VIS sales representative of the peripheral equipment they wish to interface with the system during the planning of a new CONVERSANT VIS.

- External modems: Hayes 2400 Smartmodems, AT&T 4000, AT&T 2224-CEO, AT&T Paradyne Comsphere 3820SD, UDS V.32
- Parallel printers: AT&T 473, AT&T 570, AT&T 571
- Serial printers: AT&T 572, AT&T 573
- Remote terminals: AT&T 705, AT&T 715, 6386 PC
- Asynchronous data unit (ADU)

CONVERSANT VIS Magnetic Peripherals

The CONVERSANT VIS platforms support magnetic peripheral devices including hard disk, floppy disk, and cartridge tape drives in a variety of formats. The MAP/100C, MAP/100 and MAP/40 are currently supplied with the three data storage/transfer devices in the Small Computer System Interface (SCSI) format. Devices with the Enhanced Serial Data Interface (ESDI) format are supported for older, pre-V4.0 MAP/100C and MAP/100 hardware platforms, but are not available in new platform purchases.

The MAP/40 platform can offer one of two different magnetic peripheral schemes in a new system. In addition to offering an entirely SCSI-format platform, the MAP/40 is also available in a more economical ESDI cartridge tape and IDE hard disk drive package.

Hard Disk Drive

Each CONVERSANT VIS platform is supplied standard with a single hard disk drive. A second hard disk drive is available as an option. A hard disk is a magnetic peripheral device used to provide storage and random access to large amounts of data within the system architecture. This data can include the operating system, application software, and speech data.

Three distinct hard disk drive formats are currently supported by the CONVERSANT VIS V4.0 software in all platforms (MAP/40, MAP/100, MAP/100C). These three hard disk drive formats are as follows:

- 1.2-Gbyte SCSI Hard Disk Drive (orderable in all platforms)
- 600-Mbyte ESDI Hard Disk Drive (supported in MAP/100C, MAP/100 only)
- 200-Mbyte IDE Hard Disk Drive (orderable in MAP/40 only)

Hard Disk Drive Formats

The hard disk drive format within the three CONVERSANT VIS platforms differ between platform types and release dates. New MAP/100C, MAP/100 and MAP/40 systems are delivered standard with a single 1.2-Gbyte, SCSI-format hard disk drive. A second, identical SCSI hard disk drive is available for *mirroring* purposes, to provide protection from failed hard disk operation.

CONVERSANT VIS Version 3.0 and earlier MAP/100C and MAP/100 hardware platforms supported 600-Mbyte ESDI-format hard disk drives. Version 4.0 software is fully compatible with either ESDI or SCSI hard disk drive formats, in order for older hardware platforms to upgrade to the new software release.

As previously listed, the MAP/40 is delivered new with either a single, 1.2-Gbyte SCSI-format hard disk drive, or a 200-Mbyte IDE-format hard disk drive. A second identical drive optional. In SCSI systems, this optional drive is used for data mirroring purposes, while in IDE systems, this optional drive is used to provide increased data storage capacity.

Each hard disk drive format (ESDI, SCSI, IDE) requires a different type of controller circuit card that conform to the particular format. CONVERSANT VIS V4.0 platforms can all contain SCSI magnetic peripherals and a SCSI peripheral controller circuit card, that provide capabilities better than ESDI or IDE components. The SCSI controller circuit card can support up to seven separate SCSI peripherals, but when deployed in CONVERSANT V4.0 systems however, only three peripherals are supported, due to CPU restrictions.

It should be noted that the mixing of ESDI, IDE and SCSI hard disk drives is not supported. Thus, if a user currently maintains ESDI or IDE magnetic peripherals, a single ESDI or IDE peripheral cannot be swapped for a SCSI one. All peripherals must be exchanged, including the controller circuit card(s), if a user desires moving to a SCSI format.

Hard Disk Drive Identification

The following are brief physical descriptions of each that will help to identify the particular format of hard disk drive residing in a particular platform. It should be noted that in most cases hard disk drive identification is not possible without removing the outer dress cover of each machine and examining the internal peripheral bay where the hard drives are mounted.

SCSI 1.2-Gbyte

The 1.2-Gbyte SCSI hard disk drive is a half-height peripheral identified by a MAXTOR model number of MXT-1240S. Its physical dimensions are approximately 5.75x4x1.75 inches, and is mounted in the peripheral bay using a combination of anodized (gold colored) adaptor brackets. This disk drive accepts a 2-row, 50-pin bus connector.

ESDI 600-Mbyte

The 600-Mbyte ESDI hard disk drive is a full-height peripheral identified by its large, unmistakable size. It is black in color, and requires no additional adapter brackets for mounting, with the entire unit measuring approximately 7x6x2 inches.

IDE 200-Mbyte

The 200-Mbyte IDE hard disk drive is a half-height peripheral identified by a MAXTOR model number of 7213AT or 7245A. Its physical dimensions are approximately 5.75x4x1 inches, and is mounted into the peripheral bay using a combination of anodized (gold colored) adaptor brackets. This disk drive accepts a 2-row, 40-pin bus connector.

SCSI Mirroring Advantages

Hard disk drive mirroring improves system reliability by ensuring that operations are not interrupted when a hard disk within a CONVERSANT VIS platform fails. The trend towards larger disks means that loss of a disk in a non-mirrored system is extremely costly from an operational standpoint. Mirroring of hard disk drives minimizes the impact of losing a disk drive, and provides a more efficient method of replacing the information that is lost because of such a failure.

The CONVERSANT VIS software only allows mirroring between SCSI-format hard disk drives. An added 600-Mb ESDI disk drive in a MAP/100C or MAP 100, or 200-Mbyte IDE drive in a MAP/40 only provides extra storage capacity, and if either drive crashes, vital data will be lost. An added SCSI disk drive allows nearly all of the data stored on the first 1.2-Gbyte hard disk drive to be mirrored or copied to the second disk drive, in near real time. A separately installed software package controls the operation and functionality of SCSI disk mirroring by providing the following controls:

- Enable or disable a mirrored disk assignment
- Delete a mirrored disk assignment
- Compare data on a mirrored disk pair
- Display the status of disk mirroring administration

In the event of a mirrored disk failure, the system issues and logs messages that inform the system administrator of the problem. System operation does continue, however, using the hard disk drive which is still operational.

For more detailed information on SCSI hard disk mirroring, refer to the document *CONVERSANT VIS SCSI Mirroring*, 585-350-204.

Floppy Disk Drive

The floppy disk drive is used to load and back up the system software using standard, 3.5-inch (1.44-Mbyte), high-density floppy disks.

The floppy disk drive is located on the front control panel of the MAP/100C, as seen in Figure 2-1.

The floppy disk drive is located in the second peripheral device slot in the MAP/100.

The floppy disk drive is located in Position 2 of the MAP/40 peripheral device bay.

Cartridge Tape Drive

The cartridge tape drive allows a user to back up and restore files from a tape cartridge. This unit eliminates the need to back up and restore files from floppy disks. The location of the cartridge tape drive depends on the type of VIS platform.

New CONVERSANT VIS V4.0 MAP/100C, MAP/100 and MAP/40 platforms are equipped standard with 525-Mbyte, SCSI-format cartridge tape drives. 150-Mbyte ESDI cartridge tape drives, present in pre-V3.1 CONVERSANT VIS systems, are still fully supported by CONVERSANT VIS V4.0 software.

As with the hard disk drive, new CONVERSANT VIS V4.0 MAP/40 systems can be equipped with one of two cartridge tape drive schemes. A system can contain a 525-Mbyte SCSI-format cartridge tape drive, or 150-Mbyte ESDI-format cartridge tape drive and associated controller circuit card.

Circuit Cards

The MAP/100 and MAP/100C platforms have 25-slot backplanes, while the MAP/40 has a 12-slot backplane. Slot allocation is determined by the output of the Hardware Configuration Program, which is described in *CONVERSANT VIS Version 4.0 Software Installation*, 585-350-111, and *CONVERSANT VIS Version 4.0 Software Upgrade*, 585-350-110.

The Hardware Configuration Program is run when the CONVERSANT VIS platform is assembled. Circuit cards are then installed in preassigned slots. Only if hardware is added does the configuration program need to be rerun. When replacing circuit cards, it is very important that the replacement be installed in the correct backplane slot. A hard copy output of this configuration program is included with each CONVERSANT system, and should be referenced whenever questions of backplane slot assignments are raised.

The circuit cards within each MAP chassis perform many different functions. Certain cards are known as "controller" cards, and are used to control the processes of the platform, making it a stable and operational computing environment. These cards provide the standard central processing, video, peripheral and certain basic communication functions of the system.

Other circuit cards are used to perform unique CONVERSANT VIS functions within the computing environment provided by the controller circuit cards. These cards provide analog and digital interface to the public switched (telephone) network, remote alarming, network communications and speech processing capabilities.

Controller Circuit Cards

The following circuit cards are standard equipment in CONVERSANT VIS V4.0 platforms. *Orderable* means that the hardware listed is currently available with new CONVERSANT VIS V4.0 systems.

Supported means that the hardware listed is no longer available, but is fully functional with the new CONVERSANT VIS V4.0 MAP/100 software. This is of particular interest to customers who are upgrading existing (pre-V4.0) CONVERSANT VIS platforms with new software and features.

Orderable Controller Circuit Cards

MAP/100C and MAP100

The following list details the orderable controller circuit cards used in the MAP/100C and MAP/100 CONVERSANT VIS platforms:

- CPU circuit card — The system processor, which is an Intel 80486DX operating at 50-MHz with 16-Mbytes memory.
- CPU circuit card — The system processor, which is an Intel 80386 operating at 25-MHz with 16-Mbytes memory.
- SCSI host adapter controller circuit card — Provides the interface between the system processor and the SCSI bus via the ISA backplane bus. The SCSI bus connects to the three magnetic peripherals in the platforms:
 - Hard disk drive 1
 - Hard disk drive 2 (optional)
 - Cartridge tape drive
- Video display controller (VDC) circuit card — Provides the interface between the system processor and the video monitor.
- Remote maintenance circuit card — Provides a method of remote monitoring and access for off-site technicians. This circuit card is available with or without a built-in modem.

 **NOTE:**

This circuit card will not be available until the first quarter of 1994. It will be retrofitted on all CONVERSANT VIS V4.0 platforms sold prior to its availability.

MAP/40

The following list details the orderable controller circuit cards used in the MAP/40 CONVERSANT VIS platform:

- CPU circuit card — The system processor, which is an Intel 80486DX operating at 50-MHz with 16-Mbytes memory.
 - SCSI host adapter controller circuit card — Provides the interface between the system processor and the SCSI bus via the ISA backplane bus. The SCSI bus connects to the three magnetic peripherals in the platforms:
 - Hard disk drive 1
 - Hard disk drive 2 (optional)
 - Cartridge tape drive

- CPU circuit card — The system processor, which is an Intel 80486SX operating at 25-MHz with 16-Mbytes memory.
 - SCSI host adapter controller circuit card — Provides the interface between the system processor and the SCSI bus via the ISA back-plane bus. The SCSI bus connects to the three magnetic peripherals in the platforms:
 - Hard disk drive 1
 - Hard disk drive 2 (optional)
 - Cartridge tape drive
- CPU circuit card — The system processor, which is an Intel 80386 operating at 25-MHz with 12-Mbytes memory.
 - ESDI cartridge tape drive controller — Provides the interface between the system processor and the ESDI cartridge tape drive.
 - IDE hard disk drive controller — Provides the interface between the system processor and the IDE hard disk drive.
- Video display controller (VDC) circuit card — Provides the interface between the system processor and the video monitor.
- Remote maintenance circuit card — Provides a method of remote monitoring and access for off-site technicians. This circuit card is available with or without a built-in modem.

⇒ NOTE:

This circuit card will not be available until the first quarter of 1994. It will be retrofitted on all CONVERSANT VIS V4.0 platforms sold prior to its availability.

Supported Controller Circuit Cards

The following lists older circuit cards that are no longer orderable, but fully supported by CONVERSANT VIS V4.0 software.

MAP/100C and MAP/100

The following list details the supported controller circuit cards that can be used in V4.0 and earlier MAP/100C, MAP/100 CONVERSANT VIS systems. These are circuit cards that were standard with previous CONVERSANT VIS releases, and are fully compatible with CONVERSANT VIS V4.0 software.

- ESDI hard disk drive controller circuit card — Provides the interface between the system processor and the ESDI 600-Mbyte hard disk drive.
- ESDI cartridge tape drive controller — Provides the interface between the system processor and the ESDI150-Mbyte cartridge tape drive.
- CPU circuit card — The system processor, which includes an Intel 80386 with 8-Mbytes of main memory.



NOTE:

To utilize a pre-V3.1 CPU circuit card with V4.0 software, it must be upgraded from 8-Mbytes to 12-Mbytes of main memory.

MAP/40

All controller circuit cards previously supplied with V3.1 MAP/40 systems are compatible with V4.0 software. Standard MAP/40 CPU restrictions apply towards the compatibility of older controller cards and new V4.0 features. For example, an existing platform with a 386 CPU can upgrade to V4.0 software, but it cannot operate the Graphical Speech Editor (GSE) software package, or SCSI magnetic peripherals without being upgraded to a 486DX or 486SX CPU, respectively.

Additional VIS Circuit Cards

The following circuit cards are additional pieces of CONVERSANT VIS V4.0 hardware that are needed to facilitate telephony interface, speech processing, private data networking, remote monitoring, or specialized public switched (telephone) networking functions for such services as ISDN PRI or ASAI.

Tip/ring (T/R) Circuit Card

The T/R card provides an interface between the VIS and an analog telephone line. Up to six telephone lines can be supported by one T/R circuit card.

The MAP/100C, MAP/100, and MAP/40 each support a maximum of eight T/R cards. In the MAP/100C and MAP/100, all eight cards can be used to process incoming calls. In the MAP/40, four T/R circuit cards can be used for processing incoming calls, and four cards are reserved for outgoing bridged calls.

The following lists the circuit cards that are designated as T/R cards.

IVP6IU (AYC16)

These cards are international, six-port analog T/R cards that can support a method of call transfer known as "earth recall." These circuit cards are only used when interfacing a CONVERSANT VIS to older, non-North American PBX switches that uses the earth recall method of call transfer initiation. This circuit card provides modular connectors for analog tip/ring connections, as well as audio inputs for recording speech on the system.

IVP6 (AYC5 or the AYC5B)

These cards are six-port analog T/R cards. The AYC5 is an early version of the IVP6 that is no longer in production. It was replaced with the AYC5B, which contains new circuit components and enhanced performance. The main difference is that the AYC5B contains a built-in audio jack on the circuit card external faceplate that allows the direct connection of an audio jack for

monitoring and recording purposes. The basic functionality of each card however, is identical.

IVP4 (AYC6 and AYC6B)

These cards are four-port analog T/R cards. The AYC6 is an early version of the IVP4 that is no longer in production. It was replaced with the AYC6B, which contains new circuit components and enhanced performance. The main difference is that the AYC6B contains a built-in audio jack on the circuit card external faceplate that allows the direct connection of an audio jack for monitoring and recording purposes. The basic functionality of each card however, is nearly identical. When implementing an older AYC6 circuit card into an existing system, a TDM bus upgrade kit must be used.

T1 Trunk Interface Circuit Card

The T1 circuit card accepts an ISDN PRI or DS-1 two-way digital trunk and converts it to two-way analog audio channels. Because of bandwidth and transmission differences of each trunk, ISDN PRI and DS-1 offer a different amount of converted channels. A standard 1.544 Mbps DS-1 format trunk converts to 24, 64Kbps DS-0 channels which can provide the same amount of two-way audio channels. The ISDN PRI converts its 1.544 Mbps of bandwidth to 23(B+D) channels, where "B" equals a 64 Kbps channel, and "D" equals a 64 Kbps data channel used to carry control and supervisory signals that accompany the B channels.

An SP circuit card (described next), must be used when supporting one or more T1 cards being used in coding and playback situations. The MAP/100 and MAP/100C support up to four T1 cards: two for incoming calls and two for outgoing bridged calls to service a maximum of 48 simultaneous incoming calls and 48 simultaneous outgoing bridged connections.

The MAP/40 supports two T1 cards: one for incoming calls and one for outgoing bridged calls to service a maximum of 24 simultaneous incoming calls and 24 simultaneous outgoing bridged connections.

The following T1 circuit cards are supported:

AYC3B or AYC11

The AYC11 is the existing T1 circuit card that replaced the older AYC3B. This circuit card contains new circuit components and layout, but the same basic functionality.

■

Signal Processor (SP) Circuit Card

The SP card is used in large-channel-count voice response or voice coding applications or for moderate-channel-count applications that require sophisticated algorithms (for example, speaker-independent speech recognition, robust call classification, etc.). The SP does not connect directly to the telephone network and must be used in conjunction with at least one T1 or T/R card.

A MAP/100C and MAP/100 can support up to eight SP cards. A MAP/40 can support up to four SP cards.

There are two SP cards:

AYC2C

The AYC2C is the current SP circuit card, replacing the older AYC2B. These cards provide normal speech playback and coding for a T1 interface. They are typically used for call classification analysis (CCA) and primary rate interface (PRI).

AYC9

This circuit card includes high-speed (50-MHz) digital signal processor (DSP) chips and additional memory that is only used to support the Text-to-Speech (TTS) feature only. Up to eight SP cards are supported by the MAP/100C and MAP/100, and four can be supported by the MAP/40.

Companion (CMP) Circuit Card

AYC7

The CMP card is an extension of the SP card that is used to support the Speech Recognition feature only. It is connected to the SP card by an individual bus. All of the signal interfaces come from the SP card.

The MAP/100 and MAP/100C can support up to eight CMP cards.

The MAP/40 can support up to two CMP cards.

NOTE:

An SP card may be configured to support a maximum of two CMP cards.

The CMP card is used only in speech recognition applications. Refer to the books *CONVERSANT VIS WholeWord Speech Recognition*, 585-350-813, and *CONVERSANT VIS FlexWord Speech Recognition*, 585-350-814 for additional information.

CLEO PC/XL 3270 Synchronous Host Communications Circuit Card

An optional data communications circuit card that handles synchronous data communication protocols to facilitate the exchange of data between the VIS and a host computer. All CONVERSANT VIS platforms can support one or two of these circuit cards.

NP600A Ethernet TCP/IP (InterLan) Circuit Card

Provides an interface for communication with other voice information systems connected to the LAN using co-axial cable wiring. This card may not be used with the PC NAU card below. A system may only use one or the other.

StarLAN 10 Network PC NAU Circuit Card

Provides an interface for communication with other voice information systems connected to the LAN using twisted pair wiring. This card may not be used with the NP600A card above. A system may only use one or the other.

CTC GEMINI-1000 Eight-Port Asynchronous Communications Circuit Card

This circuit card, along with an 8-port T-bar adapter, provides the interface to eight additional serial ports for remote monitoring, printing and host access capabilities. These additional ports have no impact on the two standard COM1 and COM2 serial ports provided by the CPU circuit card. Only one GEMINI-1000 circuit card may be used in any CONVERSANT VIS platform.

PC/ISDN Interface Circuit Card

Also known as the IPCI circuit card, this hardware item supports the D-channel basic rate interface from the switch for an Adjunct/Switch Application Interface (ASAI) link.

PC/PBX Interface Circuit Card

Also known as the DCP circuit card, this hardware item supports the AUDIX Voice Power R2.1.1 application switch integration with a System 75/DEFINITY G1. This card must be used when utilizing AUDIX Voice Power Co-residency and a System75/G1 switch integration package. Only one PC/PBX circuit card may be used in any CONVERSANT VIS platform.

Brooktrout TR114 FAX Card

This card provides the correct intelligent analog telephony characteristics required by the FAX Attendant Co-residency feature. It provides four analog ports that are dedicated to providing FAX Attendant service. A maximum of three TR114 circuit cards may be in use in any CONVERSANT VIS platform.

External Alarms Interface Circuit Card

This circuit card is only used in the MAP/100C, and provides eight alarm relay contact sets for activating external alarms. The external alarm relay contacts are triggered by maintenance messages from the VIS that are software controlled. Only one Alarm Interface circuit card may be used in a MAP/100C platform.

Peripheral Equipment

The CONVERSANT VIS platforms use a monitor, keyboard, printer and modem as peripheral equipment. In many cases, this equipment is not standard and must be obtained as optional hardware. The location of the connector(s) for these optional peripherals is different for each of the CONVERSANT VIS platforms. Details on peripheral connections for the MAP/100, MAP/100C, and MAP/40 can be found in chapter 3, "Connecting Peripherals and Powering Up," of the documents *Multi-Application Platform 100 Voice Processing Hardware Installation*, 585-350-107, *Multi-Application Platform 100C Voice Processing Hardware Installation*, 585-350-108, and *Multi-Application Platform 40 Voice Processing Hardware Installation*, 585-350-109, respectively.

The peripheral equipment described in this section is not an exhaustive list of devices that are capable of interfacing with the CONVERSANT VIS platforms. It is intended as a reference for some of the more popular models of each equipment. Discuss all questions concerning specific peripheral equipment compatibility with a CONVERSANT VIS V4.0 Sales Representative.

⇒ NOTE:

In some cases, AT&T does not provide or recommend a particular model or brand of each unit when ordering, and it is the responsibility of the customer to inform the CONVERSANT VIS sales representative of the peripheral equipment they wish to interface with the system during the planning of a new CONVERSANT VIS.

Monitor

A color monitor or remote terminal can be connected to any VIS platform, so that output messages may be viewed on a screen.

The following monitors are recommended:

- Phillips Model 345
- AT&T 705
- AT&T 715

Keyboard

A standard 101-key keyboard can be connected to any VIS platform.

- The Keytronics EO3417098 is recommended.

Printer

Both serial and parallel printers are offered/recommended for use with all of the CONVERSANT VIS platforms.

The following printers are recommended:

Parallel

- AT&T 473
- AT&T 570
- AT&T 571
- AT&T/NCR 6417

Serial

- AT&T 572
- AT&T 573

Modem

An external modem must be connected to a pre-V4.0 CONVERSANT VIS platform for remote login. This allows an administrator, operator, or remotely located technical support personnel to initiate commands and remotely monitor the system for installation and maintenance purposes. Access is gained by dialing into the VIS with a pre-assigned dial string.

For new CONVERSANT VIS V4.0 systems, a modem is only needed if a customer chooses to purchase a remote maintenance circuit card without the built-in modem.

The following modems are recommended:

- Hayes 2400 Smartmodems
- AT&T 4000
- AT&T 2224-CEO (full duplex, 2400 baud)
- AT&T Paradyne Comsphere 3820SD
- UDS V.32 (9600 baud)

CONVERSANT VIS Hardware Architecture

The modular design of the CONVERSANT VIS permits the components described in this chapter to be configured in different ways to satisfy the requirements of many different applications. Not all of the hardware described in this chapter can or will be used simultaneously in a single platform. Many CONVERSANT VIS hardware components are feature-related, network interface related, or are used because of traffic or load considerations.

Based on the anticipated features and traffic the platform will be required to accommodate, different Central Processing Units, network interfaces, feature-related circuit cards, and data storage architectures are available. This allows the CONVERSANT VIS to deliver the appropriate amount of system resources at the most economical price.

Internal and External Connectivity

To help develop a better general understanding of the system, Figure 2-8 depicts an architectural view of a CONVERSANT VIS platform with all optional circuit cards installed. This figure is being used to illustrate the relationships between the internal and external connectivity of the system hardware. As stated before, this figure illustrates each hardware component available for the platform. Because of hardware and feature conflicts, this arrangement is not possible in a real platform configuration.

The generic and application software running on the platform controls the operation of the equipment. The software associated with some of the hardware components is listed and described in Chapter 3, "CONVERSANT VIS Software". The feature packages associated with some hardware components shown are described in detail in Chapter 4, "CONVERSANT VIS Features and Feature Packages".

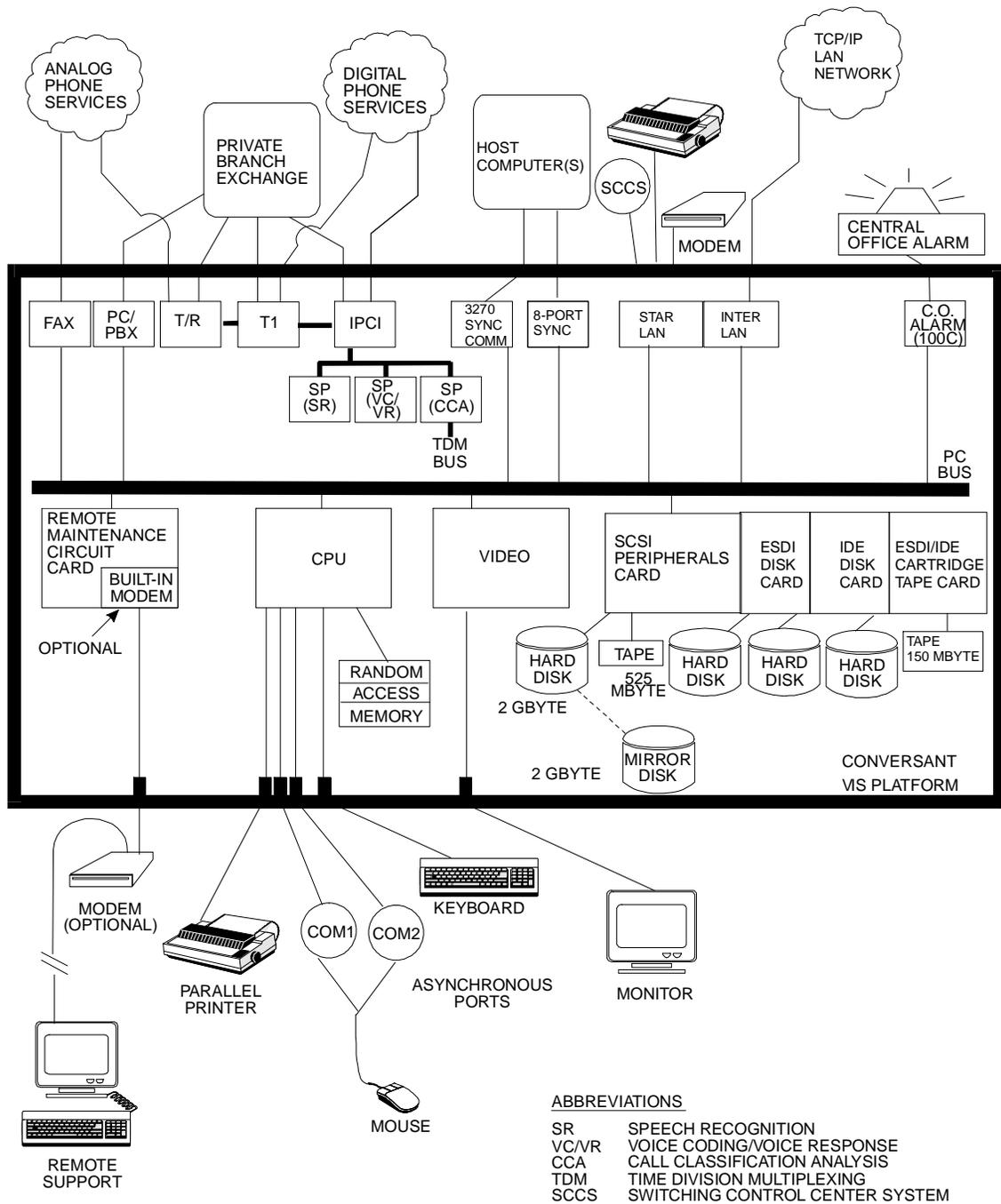


Figure 2-8. CONVERSANT VIS Hardware Architecture

Overview

The purchase of a CONVERSANT Voice Information System (VIS) includes a number of software packages, including the UNIX operating system, CONVERSANT VIS V4.0 base software, as well as speech packages that best suit the need of the customer. In addition, optional CONVERSANT VIS feature packages are available, and are often implemented with some combination of custom software (for example, a speech recognition package) and hardware.

This chapter describes the following CONVERSANT VIS software:

- "CONVERSANT VIS V4.0 UNIX Base Software"
- "CONVERSANT VIS V4.0 Base Software"
- "CONVERSANT VIS V4.0 Optional Software"
- "ORACLE Optional Software"
- "Product Co-Residency Software"
- "Speech Software"

CONVERSANT VIS V4.0 UNIX Base Software

All of the UNIX software listed in Table 3-1 is provided standard with the CONVERSANT VIS V4.0 system. The UNIX operating system is the software platform upon which the CONVERSANT VIS software (including feature packages and applications) runs. Included with this are packages such as FMLI, FACE, and other UNIX utilities

Listing

Table 3-1. CONVERSANT VIS V4.0 UNIX Base Software

CONVERSANT VIS V4.0 UNIX Base Software	Tape/# of Disks
Low Level Format V1.3	1
Base System Boot Floppy (IRQ5)	1
Base System Boot Floppy (IRQ7)	1
Base System Boot Floppy (SCSI)	1
UNIX Base System — UNIX V3.2.2, Includes:	T
SCSI Support Package-UNIX V3.2.2	
C Software Development Set Package Version 4.1.5	
Editing Package Version 2.0	
Forms & Menu Language Interpreter Package V1.2	
Framed Access Command Environment V1.2.1	
Framed Access Command Environment Help Package V1.2.2	
Extended Terminal Interface Package V2.0	
UNIX Extension Package Remote File Sharing V2.0	
Network Support Utilities Package V2.0	
UNIX System V/386 R3.2 Upgrade V2.2 to V2.3	1
Cartridge Tape Utilities Package	1
Remote Terminal Package Version 2.0	1

Definition

Brief descriptions of each software item listed in Table 3-1 are provided by the following list.

- Low Level Format V1.3
This software is used as part of the low level format procedure, on CONVERSANT VIS platforms with ESDI magnetic peripherals.
- Base System Boot Floppy (IRQ5)
This software issued as part of the unit installation procedure for systems with ESDI or IDE magnetic peripherals, and used only on CONVERSANT VIS platforms whose tape drive is configured at IRQ5.
- Base System Boot Floppy (IRQ7)
This software issued as part of the unit installation procedure for systems with ESDI or IDE magnetic peripherals, and used only on CONVERSANT VIS platforms whose tape drive is configured at IRQ7.
- Base System Boot Floppy (SCSI)
This software issued as part of the unit installation procedure for systems with SCSI magnetic peripherals.
- UNIX Base System — UNIX V3.2.2, Includes:
 - SCSI Support Package-UNIX V3.2.2
Used only on CONVERSANT VIS platforms that contain SCSI magnetic peripherals, this package provides the driver and controlling software used by the SCSI hard disk drive(s) and cartridge tape drive controller card.
 - C Software Development Set Package Version 4.1.5
This package provides a software development environment permitting programmers to develop application software products targeted at UNIX System V/386 Release 3.2.3. It features the portable C language compiler and its associated software generation utilities (CPLU 4.1.6), advanced programming debugger, source code maintenance control, miscellaneous programming and productivity tools, and extensions to the terminal interface libraries.
 - Editing Package Version 2.0
This package provides text editors for the UNIX system.

— Forms & Menu Language Interpreter Package V1.2

This package provides a shell-like form and menu definition language with an executable program that reads definition files and posts a character mapped display. It also provides: screen and frame management, field editing, navigation, text of menus and forms, actions and color. These features allows the FMLI package to provide a quick and easy development tool that can be easily customized and provides a standard look and feel.

— Framed Access Command Environment V1.2.1

FACE is a user interface developed on FMLI. It provides the user with a logical view of the system, including file cabinet, folders, and wastebasket. It includes a menu interface to over 20 UNIX commands, user preferences, program services, task scheduling, and can also provide complete system administration. FACE makes the system more accessible to inexperienced users, provides operating system transparency, and refines UNIX system administration.

— Framed Access Command Environment Help Package V1.2.2

This package provides an environment for creating and maintaining context-sensitive help screens. Loading of this package is optional.

— Extended Terminal Interface Package V2.0

This package is a powerful development tool that makes it easier to design and revise sophisticated user interfaces. Applications created with this package have a professional appearance and can be produced in significantly less time than with other development tools. Features of this package include:

- Support for ANSI C as well as CPLUS (K & R)
- Functional interface to new toolkits
- Dynamic sub-menu generation
- User and developer selectable color assignments
- Horizontal scrolling fields
- Addition of nine new field attributes, including protected fields
- A banner line, including a “working” symbol
- Context sensitive help
- Optional end user lock out from access to UNIX.
- Implementation of “Data Store” to improve performance
- Prototype locking during development
- Capability to integrate developer C code with ETIP-generated C
- Field branching

- UNIX Extension Package Remote File Sharing V2.0

This package allows users to share files with other UNIX systems using the Remote File Sharing protocol. Loading of this package is optional.

- Network Support Utilities Package V2.0

This package provides users with UUCP tools for data networking over serial lines and other communication media. Adds support for standard UNIX networking based on STREAMS. Loading of this package is optional.

- UNIX System V/386 R3.2 Upgrade V2.2 to V2.3

This package provides support for a number of new hardware and software products that utilize a UNIX operating system, including:

- VDC800 8514A-compatible video display controller

- System V/MLS secure UNIX add-on

- Simul-Task Release 3.0 MS-DOS operating environments

- SCSI Support Package 2.0

- European Supplements Release 3.2.3

- Cartridge Tape Utilities Package

Used only on CONVERSANT VIS platforms with ESDI cartridge tape drives, this software package provides the cartridge tape controller card driver, command and utility software that the system uses to support the cartridge tape drive and its functions.

- Remote Terminal Package Version 2.0

This package adds support for a number of terminal types. These terminals may be used for text editing or FACE administration.

CONVERSANT VIS V4.0 Base Software

This software acts as the generic software monitor and directs the VIS hardware according to the application software running on the platform. The packages listed here are standard with a new CONVERSANT VIS or a VIS V4.0 upgrade purchase.

⇒ NOTE:

All base software packages are licensed on a per machine basis.

The CONVERSANT VIS V4.0 base software includes the packages listed in Table 3-2.

Listing

Table 3-2. CONVERSANT VIS V4.0 Base Software

CONVERSANT VIS V4.0 Base Software	Tape/# of Disks
CONVERSANT VIS V4.0 Application Software Packages, includes:	T
CONVERSANT VIS V4.0 Configuration Package	
Base ORACLE DBMS 6.0.30	
CONVERSANT VIS V4.0 Application Software	
CONVERSANT VIS V4.0 T1 Board Driver	
CONVERSANT VIS V4.0 SP Board Driver	
Extended ORACLE DBMS 6.0.30	
CONVERSANT VIS V4.0 Feature Test Script Package	1
CONVERSANT VIS V4.0 Voice Mail External Actions Package	1
CONVERSANT VIS V4.0 Script Builder FAX Actions Package	1
Configuration Data Floppy	1
Recovery Boot Floppy (IRQ5)	1
Recovery Boot Floppy (IRQ7)	1
Recovery Boot Floppy (SCSI)	1
Remote Maintenance Circuit Card Utilities	1
CONVERSANT VIS V4.0 Software Upgrade Assistance	1

Definition

■ CONVERSANT VIS V4.0 Application Software Packages

— CONVERSANT VIS V4.0 Configuration Package

This software package is used to configure the hardware of the CONVERSANT VIS platform. When run, the package requests information concerning all of the optional hardware (feature related circuit cards) currently in the system. When all hardware items are identified, this software packages will allocate system and CPU resources, such as memory addresses and interrupt request numbers, in the most efficient manner. It also informs the user if hardware items have been selected or installed that are incompatible.

— Base ORACLE DBMS 6.0.30

This is the core software package that allows a CONVERSANT VIS user to establish and maintain a local ORACLE Relational Database Management System on the CONVERSANT VIS. Other optional ORACLE software packages are used to enhance or extend the operation of the standard ORACLE database.

— CONVERSANT VIS V4.0 Application Software

This is the software package that provides the core of CONVERSANT VIS functionality. It contains all major CONVERSANT process, maintenance, and operations-related software control.

— CONVERSANT VIS V4.0 T1 Circuit Card Driver

This software provides the firmware needed to operate the digital T1 circuit cards installed in the platform.

— CONVERSANT VIS V4.0 SP Circuit Card Driver

This software provides the firmware needed to operate the digital Signal Processing circuit cards installed in the platform.

— Extended ORACLE DBMS 6.0.30

This is an extension of the Base ORACLE DBMS that provides additional utility packages and enhancements to the base software. Loading of this package is optional.

— CONVERSANT VIS V4.0 Feature Test Script Package

This software package provides a library of pre-recorded speech, and short application scripts that allow the CONVERSANT VIS user to test the system's integrity by performing limited voice response tests.

These tests will utilize most of the key system processes and resources of the CONVERSANT VIS based upon the feature packages previously loaded on the system. Four basic tests are always offered by the test regardless of the feature packages installed. They are:

- Call Classification Analysis
- Playback and Coding
- Chantst
- Transfer Test

Five additional test scripts may be installed from this package only if the associated feature packages are previously installed. These scripts test:

- Full Call Classification Analysis
- Text To Speech
- Whole Word Speech Recognition
- Adjunct/Switch Application Interface
- Primary Rate Interface

■ **CONVERSANT VIS V4.0 Voice Mail External Actions Package**

This software package allows a CONVERSANT VIS Script Builder application to invoke AUDIX Voice Mail services through the use of “external actions” within the Script Builder application script.

■ **CONVERSANT VIS V4.0 Script Builder FAX Actions**

This software package allows a CONVERSANT VIS Script Builder application to invoke FAX Attendant services through the use of an “external action” within a Script Builder application script.

■ **Configuration Data Floppy**

This floppy disk drive contains a record of the hardware configuration of the CONVERSANT VIS platform when it was shipped from the factory. Any custom configuration ordered by the customer will be recorded on this disk.

■ **Recovery Boot Floppy (IRQ5)**

In the event of a system crash, the recovery boot floppy is used to restore sanity to the system and retrieve lost data. This disk is used if the system configuration utilizes an ESDI or IDE hard disk drive, and it has an interrupt request number of 5.

■ **Recovery Boot Floppy (IRQ7)**

In the event of a system crash, the recovery boot floppy is used to restore sanity to the system and retrieve lost data. This disk is used if the system configuration utilizes an ESDI or IDE hard disk drive, and it has an interrupt request number of 7.

- Recovery Boot Floppy (SCSI)

In the event of a system crash, the recovery boot floppy is used to restore sanity to the system and retrieve lost data. This disk is used if the system configuration utilizes a SCSI hard disk drive.

- Remote Maintenance Circuit Card Utilities

This software packages provides the driver software and command/utilities package for providing an asynchronous communications link between the VIS and AT&T technical support staff.

- CONVERSANT VIS V4.0 Software Upgrade Assistance

This software package offers automated software upgrade assistance when upgrading a platform that operates on CONVERSANT VIS V3.0 or later software generic to the CONVERSANT V4.0 software.

CONVERSANT VIS V4.0 Optional Software

Table 3-3 and Table 3-4 lists the optional software packages available for the CONVERSANT VIS V4.0 product. Most of the software packages listed here are directly related to a CONVERSANT VIS feature package. The relationships between feature packages and software packages is discussed in Chapter 4, "CONVERSANT VIS Features and Feature Packages".

Listing

Table 3-3. CONVERSANT VIS V4.0 Option Software

CONVERSANT VIS V4.0 Optional Software	Tape/# of Disks
CONVERSANT VIS V4.0 Script Builder	2
CONVERSANT VIS V4.0 Form Filler Plus	2
CONVERSANT VIS V4.0 Intelligent Ports Card Driver	1
CLEO PC/XL 3270 Host Communications Driver	1
CLEO PC/XL 3270 Host Communications Protocol	1
CLEO PC/XL 3270 Host Communications File Transfer Software	1
3270 Enhanced File Transfer	1
3270 NetView Alarm Interface	1
SCSI Mirroring Support Package V2.3	1
CONVERSANT VIS V4.0 Adjunct/Switch Applications Interface	2
Adjunct/Switch Application Interface Library V01.01.18	1
CONVERSANT VIS V4.0 PBX/PSTN Switch Interface Pkg — UK	1
CONVERSANT VIS V4.0 PBX/PSTN Switch Interface Pkg — Mexico	1
CONVERSANT VIS V4.0 PBX/PSTN Switch Interface Pkg — Hong Kong	1
CONVERSANT VIS V4.0 Line Side T1 Interface Package — DEFINITY	1
CONVERSANT VIS V4.0 Line Side T1 Interface Package — Galaxy	1

Table 3-4. CONVERSANT VIS V4.0 Optional Software Packages

CONVERSANT VIS V4.0 Optional Software Packages	Number of Disks
CONVERSANT VIS V4.0 Call Classification Analysis	1
CONVERSANT VIS V4.0 Speech Rec. Pkg. — US English	1
CONVERSANT VIS V4.0 Speech Rec. Pkg. — Mexican Spanish	1
CONVERSANT VIS V4.0 Speech Rec. Pkg. — UK English	1
CONVERSANT VIS V4.0 Speech Rec. Pkg. — Canadian French	1
CONVERSANT VIS V4.0 Text-To-Speech Package	4
CONVERSANT VIS V4.0 Graphical Speech Editor Package	1
AT&T Enhanced TCP/IP WIN/386 Interface, R3.0	4
AT&T 386 Network Interface Driver R2.0	1
NP600A Network Processor V3.2	1
CONVERSANT VIS V4.0 CompuLert SCCS Interface Package	1
CONVERSANT VIS V4.0 External Alarms Package	1
CONVERSANT VIS V4.0 ISDN Primary Rate Interface Package	2
CONVERSANT VIS V4.0 ISDN Network Primary Rate Interface Package	1
CONVERSANT VIS V4.0 General Purpose ISDN PRI Version A ¹	1
CONVERSANT VIS V4.0 FlexWord Recognition Package	2
CSG Asynchronous Host Toolkit Version 1.0	3
CONVERSANT VIS V4.0 Speech Collection Toolkit	1
IPIB Driver ²	1

1. These packages are restricted to internal AT&T and authorized affiliate use only.

2. This package is restricted to OSPS only.

Definition

- **CONVERSANT VIS V4.0 Script Builder**

This package provides the CONVERSANT VIS with Script Builder functionality.
- **CONVERSANT VIS V4.0 Form Filler Plus**

This package provides the CONVERSANT VIS with Form Filler Plus functionality.
- **CONVERSANT VIS V4.0 Intelligent Ports Card Driver**

This package, when used with the CTC Gemini-1000 circuit card, provides the CONVERSANT VIS with eight additional asynchronous communication ports.
- **CLEO PC/XL 3270 Host Communications Driver**

This package provides the driver software to operate the PC/XL circuit card. This card is used to provide the 3270 Synchronous Host Communications Interface.
- **CLEO PC/XL 3270 Host Communications Protocol**

This package provides the communications protocol and synchronous communications transmission software that allows the CONVERSANT VIS to provide the 3270 Synchronous Host Communications Interface.
- **CLEO PC/XL 3270 Host Communications File Transfer Software**

This package provides the CONVERSANT VIS with basic file transfer capabilities through the 3270 Synchronous Host Communications Interface.
- **3270 Enhanced File Transfer**

This package allows the CONVERSANT VIS to perform more advanced file transfer procedures and allows greater capabilities when performing file transfers than the standard CLEO PC/XL 3270 Host Communication File Transfer Software listed above.
- **3270 NetView Alarm Interface**

This package provides the NetView Alarm interface, which allows the 3270 host computer to receive, display and alarm all messages from the CONVERSANT VIS.
- **SCSI Mirroring Support Package V2.3**

This package supports SCSI Disk Drive Mirroring, which allows the CONVERSANT VIS platform to mirror all hard disk information to a second hard disk drive.

- **CONVERSANT VIS V4.0 Adjunct/Switch Application Interface**
This package supports the interconnection of a CONVERSANT VIS to a DEFINITY PBX for the purposes of ASAI communication using analog T/R and Line Side T1 connections.
- **Adjunct/Switch Application Interface Library V01.01.18**
This package supports the interconnection of a CONVERSANT VIS to a DEFINITY PBX for ASAI communication.
- **CONVERSANT VIS V4.0 PBX/PSTN Switch Interface Pkg — UK**
This package provides the Country Specific Analog Switch Integration feature for the U.K.
- **CONVERSANT VIS V4.0 PBX/PSTN Switch Interface Pkg — Mexico**
This package provides the Country Specific Analog Switch Integration feature for Mexico.
- **CONVERSANT VIS V4.0 PBX/PSTN Switch Interface Pkg — Hong Kong**
This package provides the Country Specific Analog Switch Integration feature for Mexico.
- **CONVERSANT VIS V4.0 Line Side T1 Interface Package — DEFINITY**
This package provides the protocol software for a Line Side T1 interface between the VIS and a DEFINITY G2 or G3 PBX switch.
- **CONVERSANT VIS V4.0 Line Side T1 Interface Package — Galaxy**
This package provides the protocol software for a Line Side T1 interface between the VIS and a Galaxy PBX switch.
- **CONVERSANT VIS V4.0 Call Classification Analysis**
This package provides the CONVERSANT VIS with the full Call Classification Analysis feature.
- **CONVERSANT VIS V4.0 Speech Rec. Pkg. — US English**
This package provides the CONVERSANT VIS with WholeWord speech recognition capabilities for the American English language.
- **CONVERSANT VIS V4.0 Speech Rec. Pkg. — Mexican Spanish**
This package provides the CONVERSANT VIS with WholeWord speech recognition capabilities for the Mexican Spanish language.
- **CONVERSANT VIS V4.0 Speech Rec. Pkg. — UK English**
This package provides the CONVERSANT VIS with WholeWord speech recognition capabilities for the U.K. English language.
- **CONVERSANT VIS V4.0 Speech Rec. Pkg. — Canadian French**
This package provides the CONVERSANT VIS with WholeWord speech recognition capabilities for the Canadian French language.

- **CONVERSANT VIS V4.0 Text-to-Speech Package**

This package provides the CONVERSANT VIS with Text-To-Speech capabilities. Various speech processing hardware is required for this software.
- **CONVERSANT VIS V4.0 Graphical Speech Editor Package**

This package provides the CONVERSANT VIS with the Graphical Speech Editor feature package. A 50-MHz 486 CPU is required for this software.
- **AT&T Enhanced TCP/IP WIN/386 Interface, R3.0**

This package provides the base software for Local Area Network Connectivity by the CONVERSANT VIS.
- **AT&T 386 Network Interface Driver R2.0**

This package provides the circuit card driver software to operate the Star-LAN PC-NAU circuit card. This is a form of LAN communications.
- **NP600A Network Processor V3.2**

This package provides the circuit card driver software to operate the Inter-Lan NP600A circuit card. This is a second form of LAN communications.
- **CONVERSANT VIS V4.0 CompuLert/SCCS Interface Package**

This package supports the CompuLert/SCCS Interface feature on the CONVERSANT VIS.
- **CONVERSANT VIS V4.0 External Alarms Package**

This software supports the External Alarms feature available on the MAP/100C. It provides the operational software as well as driver software for the Alarm Circuit card.
- **CONVERSANT VIS V4.0 ISDN Primary Rate Interface Package**

This software provides ISDN-PRI connectivity between the CONVERSANT VIS and a switch. It supports basic PRI features and is available to the general public.
- **CONVERSANT VIS V4.0 ISDN Network Primary Rate Interface Package**

This is an extension of the previous PRI package that supports enhanced PRI features. This software package is restricted to AT&T affiliates who purchase the Network PRI feature package.
- **CONVERSANT VIS V4.0 General Purpose ISDN PRI Version A**

This is an extension of the previous two PRI packages that supports additional restricted PRI. This software package is only available to AT&T affiliates who purchase the General PRI feature package.
- **CONVERSANT VIS V4.0 FlexWord Recognition Package**

This software provides the CONVERSANT VIS with FlexWord Speech Recognition capabilities in American English. Various speech processing hardware must be used with this software.

- CSG Asynchronous Host Toolkit Version 1.0

This package provides a toolkit of protocol software and utilities that help a user create an Asynchronous Host Communications Interface. It is not a turn-key system interface, but rather a package of software tools that will help an application developer create an asynchronous interface.

- CONVERSANT VIS V4.0 Speech Collection Toolkit

This software allows a user to collect and analyze WholeWord speech samples for individual WholeWord vocabulary creation. This package is restricted to AT&T affiliates only.

- IPIB Driver

This is the driver software for a custom circuit card created for the Operator Services Position System (OSPS) application. It is only used by internal AT&T organizations.

ORACLE Optional Software

Numerous ORACLE add-on packages are available to supplement the base and extended ORACLE software. These packages are outlined in Table 3-5 and apply to all CONVERSANT VIS V4.0 platforms.

Listing

Table 3-5. ORACLE Optional Software

ORACLE Optional Software	Tape/# of Disks
SQL*NET TCP/IP V1.2	4
SQL*Menu V5.0.10, includes	4
ORACLE*TERMINAL	1
ORACLE OBJECT*SQL (Toolkit)	1
SQL*FORMS V3.0	4
ORACLE*TERMINAL	1
ORACLE OBJECT*SQL (Toolkit)	1
SQL*ReportWriter	8
SQL*PRO*C V1.3.15	1

Definition

■ SQL*NET TCP/IP V1.2

This software package is the ORACLE communications component that allows the CONVERSANT VIS to share information stored in different remote ORACLE databases. It supports a TCP/IP based StarLAN or Inter-Lan connection between the VIS and a remote ORACLE database located on a host computer, and can operate on a VIS with or without a local ORACLE database.

■ SQL*Menu V5.0.10

This software package is a productivity tool that provides a single menu interface for running multiple data-processing applications. The software provides the functionality to create, modify, and execute menus that control single or multiple linked software applications. As an example, an operator using SQL*Menu to review the data in a customer order-entry application can quickly switch to an inventory application to verify that the requested stock is on hand. The program also uses the following base ORACLE utilities:

- ORACLE*TERMINAL
- ORACLE OBJECT*SQL (Toolkit)

■ SQL*FORMS V3.0

This software package provides a screen-driven interface between the user and an ORACLE database, either local or remote. The screens or "forms," are blank templates that allow a user to enter, update, and query information in the ORACLE database. The program also uses the following base ORACLE utilities:

- ORACLE*TERMINAL
- ORACLE OBJECT*SQL (Toolkit)

■ SQL*ReportWriter

This package provides a general purpose tool for developing and executing custom reports concerning the local or remote ORACLE database in the SQL language. The software allows you to create fully customized reports and provides full control of their generation, output, and storage.

■ SQL*PRO*C V1.3.15

This package is a precompiler that allows a programmer to write C language software that uses embedded SQL database language software to access and manipulate ORACLE data in local or remote databases.

Product Co-Residency Software

Other software products besides CONVERSANT VIS V4.0 can be loaded and operational upon each of the MAP platforms. When more than one product is loaded on a platform simultaneously, the products are considered co-resident. At the current time, only AUDIX Voice Power and FAX Attendant software are allowed to be co-resident on a CONVERSANT VIS platform. The software packages for these two products are listed in Table 3-6.

Listing

Table 3-6. Product Co-Residency Software

Product Co-residency Software	Tape/# of Disks
AUDIX Voice Power Application Software R2.1.1 Speech	2
AUDIX Voice Power Application Software R2.1.1 Software	2
AUDIX Voice Power Application Software R2.1.1 Update 2	2
AUDIX Voice Power Switch Integration Software (For System 75 or DEFINITY G1) R2.1.1	1
AUDIX Voice Power Switch Integration Software (For System 75 or DEFINITY G1) R2.1.1 Update 2	2
AUDIX Voice Power Switch Integration Software (For System 25) R2.1.1	1
FAX Attendant Non-coresident Application Software R2.1.1	8
FAX Attendant S75/DEFINITY Non-Coresident Software R2.1.1	2
FAX Attendant S85/DEFINITY Non-Coresident Software R2.1.1	2
FAX Attendant Co-resident Application Software R2.1.1	6
FAX Attendant S75/DEFINITY Co-Resident Software R2.1.1	3
FAX Attendant S25 Coresident Integration Software R2.1.1	2

Definition

- AUDIX Voice Power Application Software R2.1.1 Speech
This contains all standard pre-recorded speech files needed for the AUDIX Voice Power application. It also allocates hard disk space for speech storage.
- AUDIX Voice Power Application Software R2.1.1 Software
This contains the actual software that provides AUDIX Voice Power functionality.

- **AUDIX Voice Power Application Software R2.1.1 Update 2**

This package is an update to the AUDIX Voice Power software that provides enhancements to various AUDIX Voice Power functionality and fixes to a few internal AUDIX Voice Power process bugs. This software package also incorporates the changes that were made in the previous Application Software Update 1 package. If update 1 is already loaded on a CONVERSANT VIS, the installation of this package will simply re-write the Update 1 files.
- **AUDIX Voice Power Switch Integration Software (For System 75/DEFINITY G1) R2.1.1**

This package contains software needed to interface the AUDIX Voice Power product with an AT&T System 75 or DEFINITY G1 PBX. It allows the tuning of common communication parameters and characteristics within the AUDIX Voice Power package to properly facilitate communication between the two systems.
- **AUDIX Voice Power Switch Integration Software (For System 75/DEFINITY G1) R2.1.1 Update 2**

This package is an update to the AUDIX Voice Power Switch Integration software that provides new enhancements to AUDIX Voice Power Switch Integration with System 75/DEFINITY G1 PBXs, as well as fixes a few internal process bugs. This software package also incorporates the changes that were made in the previous Switch Integration Software Update 1 package. If update 1 is already loaded on a CONVERSANT VIS, the installation of this package will simply re-write the Update 1 files.
- **AUDIX Voice Power Switch Integration Software (For System 25) R2.1.1**

This package contains software needed to interface the AUDIX Voice Power product with an AT&T System 25 PBX. It allows the tuning of common communication parameters and characteristics within the AUDIX Voice Power package to properly facilitate communication between the two systems.
- **FAX Attendant Non-Coresident Application Software R2.1.1**

This package provides FAX Attendant co-residency on a CONVERSANT VIS platform without AUDIX Voice Power Co-Residency.
- **FAX Attendant System 75/DEFINITY Non-Coresident Software R2.1.1**

This package provides switch integration software that allows a non-co-resident FAX Attendant application (with respect to AUDIX Voice Power) on the CONVERSANT VIS to communicate with an AT&T System 75 or DEFINITY G1 PBX.
- **FAX Attendant System 85/DEFINITY Non-Coresident Software R2.1.1**

This package provides switch integration software that allows a non-co-resident FAX Attendant application (with respect to AUDIX Voice Power) on the CONVERSANT VIS to communicate with an AT&T System 85 or DEFINITY G1 PBX.

- FAX Attendant Co-Resident Application Software R2.1.1

This package provides FAX Attendant co-residency on a CONVERSANT VIS platform with AUDIX Voice Power Co-Residency.

- FAX Attendant System 75/DEFINITY Co-Resident Software R2.1.1

This package provides switch integration software that allows a co-resident FAX Attendant application (with respect to AUDIX Voice Power) on the CONVERSANT VIS to communicate with an AT&T System 75 or DEFINITY G1 PBX.

- FAX Attendant System 25 Co-Resident Software R2.1.1

This package provides switch integration software that allows a co-resident FAX Attendant application (with respect to AUDIX Voice Power) on the CONVERSANT VIS to communicate with an AT&T System 25 PBX.

Speech Software

Pre-recorded speech in the form of system software can be obtained in different methods. Depending upon the transaction that is automated by the CONVERSANT VIS, simple speech, such as digits ("one," "two," "ten," "fifty") may be all that is needed to support the transaction. Other transactions, however, may require much more diverse and complex speech patterns, such as entire phrases or sentences. AT&T offers three ways that a customer can obtain speech phrases in support of an application:

- Self-recorded custom speech
- AT&T-supplied Standard Speech Packages
- AT&T-supplied Custom Speech Packages

Self-Recorded Speech

Customers can produce their own speech with the optional CONVERSANT Script Builder and Graphical Speech Editor feature packages (described in the following chapter). Script Builder allows a user to input speech in the form of words or phrases, and store this input to hard disk drive. The Graphical Speech Editor allows a customer to cut and splice pieces of speech already stored on the system. With these two software packages and the proper hardware, full control of speech file creation and deletion is available to the customer.

Standard Speech Package

Customers who choose AT&T's speech production services may purchase a Standard Speech Package, Custom Speech Package, or a combination of the two. Normally, the same voice is used with both. AT&T-recorded speech is available at rates of 16, 24, 32, and 64 kilobytes per second (Kbps). Speech recorded and stored at a higher coding rate provides a much cleaner sound, but may use up to three times as much hard disk space to store. This is a trade-off that must be made based upon the intended use of the system.

The Standard Speech Package provides:

- The most commonly used words and phrases, including the letters of the alphabet pronounced and recorded in three different inflections.
- The essential numbers ("zero" through "twenty," "thirty" through "ninety," "hundred," "thousand," "million")
- The days of the week
- The months of the year
- The ordinal numbers through 31 ("1st," "2nd," "3rd" and so forth up to "31st")
- The words "dollars" and "cents"

For a complete list of the phrases included in the Standard Speech Package, see Appendix D, "Standard Speech Phrases" in *CONVERSANT VIS V4.0 Planning*, 585-350-602. This package of commonly used speech fragments can be used in many different types of applications.

⇒ NOTE:

Version 4.0 and earlier releases do not support spoken output for time, date, or number fields in any language other than English. The reason for this is that the rules for concatenating numbers varies depending on the language. This method forms numbers by combining these standard numbers into phrases which support English only.

⇒ NOTE:

The Standard Speech Package is licensed on a per-system basis. That is, a Standard Speech Package must be purchased for each VIS on which it will be used.

Custom Speech Package

The Custom Speech Package is application-specific. It is produced by AT&T at the customer's request using phrases designated by the customer. A customer can request a Custom Speech Package from AT&T at any time after or during the purchase of a CONVERSANT VIS, although an order for custom speech must include a minimum of 150 phrases. Both Standard and Custom speech packages can be stored and used on a CONVERSANT VIS simultaneously, and if the customer purchases both packages, the phrases in the Standard Speech Package are *not* counted as part of the 150.

⇒ NOTE:

The Custom Speech Package is licensed on a per customer basis. Contact a CONVERSANT VIS salesperson or representative for more information on this feature.

CONVERSANT VIS Features and Feature Packages

4

Overview

This chapter presents a detailed description of the following feature packages available with the CONVERSANT VIS Version 4.0. Most of the feature packages require software described in Chapter 3, and some also require additional hardware, described in Chapter 2.

- Asynchronous Host Interface Toolkit
- Adjunct/Switch Application Interface (ASAI)
- AUDIX Voice Power Co-Residency
- Call Classification Analysis
- CompuLert/SCCS/ARU Interface Package
- Country Specific Analog Switch Integration Packages
- Enhanced File Transfer
- External Alarms
- FAX Attendant Co-Residency
- Form Filler Plus
- Graphical Speech Editor
- Hardware Upgrade Kits
- Line Side T1
- Local Area Network (LAN) Connectivity
- Multi-Port Asynchronous Communications Interface

- NetView Alarm Interface
- Primary Rate Interface
 - Commercial PRI
 - Network PRI
 - General PRI
- Remote Database Access
- Script Builder
- SCSI Disk Mirroring
- Speech Collection Toolkit
- Speech Production Kit
- Speech Recognition
 - FlexWord
 - WholeWord
- TTS Capacities
- 3270 Synchronous Host Communications Interface Capacities

Asynchronous Host Interface Toolkit

This feature provides a toolkit of operational software, source code, user level documentation and design level documentation for the development of VIS applications which access host computers using an asynchronous TTY interface to send and retrieve data. The toolkit does not support interaction with screen-oriented host applications, but it does provide a message-based protocol with Script Builder External Functions support to reduce application development intervals and cost.

This feature will help reduce the cost and amount of time it takes to implement an asynchronous host interface between a CONVERSANT VIS and a host computer. The package is not a general purpose interface, nor is it a terminal emulator. It is designed for rudimentary communications, and is intended as a toolkit to enable development-capable customers to get a solution working quickly because they can modify their known working software. With this in mind, the customer will be responsible for creating the host software to match the interface.

Toolkit Contents

The operational software included with the toolkit implements a simple host protocol that supports DIPs and External Functions between a Script Builder application and an asynchronous host.

In addition, an example Script Builder application which uses the VIS asynchronous host interface software is included for reference and modeling purposes. It also provides an example host application, written in C Language, which can communicate over an asynchronous link with the example Script Builder application mentioned above, as it operates on the VIS. These two example applications allow a customer to start with a known working software base and make small modifications to evolve a more complicated interface.

Toolkit Capabilities

The asynchronous host interface toolkit software provides the following functionality:

- Sends messages of application specified content to the remote host
- Supplies host response data to the application
- Accepts unsolicited messages from the host and makes them available for application processing
- Provides these services simultaneously to independent hosts on multiple asynchronous lines
- Multiplexes messages from multiple channels onto the asynchronous lines

- Handles multiple asynchronous messages per second on a 9.6 Kbps link and still perform normal transaction processing functions on a fully loaded system

This feature requires that the CONVERSANT VIS V4.0 Asynchronous Host Interface Toolkit software, as well as the proper asynchronous communications hardware and software, like the Multi-port Asynchronous Communications Interface feature package be installed and operational.

Asynchronous Host Interface Toolkit Capacities

Table 4-1 lists the capacities associated with the Asynchronous Host Interface Toolkit feature. Refer to the document *CONVERSANT VIS Version 4.0 Planning*, 585-350-602, or consult your account representative for more information about this feature.

Table 4-1. Asynchronous Host Interface Toolkit Capacities

Item	Max. Number	Comments
Number of physical asynchronous connections allowed to the VIS	2	Can be increased by custom modification and the use of an eight-port asynchronous communications interface.
Number of discrete host computers that the VIS may make asynchronous connections to	2	Can be increased by custom modification and the use of an eight-port asynchronous communications interface.
Number of multiplexed channels (sessions) allowed per link.	24	48 channels is the maximum number per system (two links)
Transfer rate, in bits/second	9600 bps	
Message size, in characters	127	
Maximum number of messages recognized by the VIS per link per second.	2	At 9.6-Kbps

Adjunct/Switch Application Interface (ASAI)

The Adjunct/Switch Application Interface (ASAI) provides an Integrated Services Digital Network (ISDN)-based interface between switches and adjunct processors. The CONVERSANT VIS ASAI feature supports this application interface for communications with the AT&T DEFINITY Communications System, Generic 3 (hereafter referred to as DEFINITY G3). This digital signaling interface allows the VIS to monitor and route calls on the DEFINITY G3. When used in conjunction with tip/ring (T/R) or digital Line Side T1 interfaces, the ASAI interface allows the VIS to monitor and control incoming calls delivered to the VIS.

⇒ NOTE:

Various versions of DEFINITY G3 (such as G3i, G3r, etc.) have been, (or are being) certified with the ASAI feature. For the latest G3(x) versions certified for compliance with the ASAI feature, contact the AT&T Design Center.

Access to ASAI capabilities is provided through the Script Builder application generation language (AGL). Access to ASAI capabilities at the Script Builder level greatly reduces the effort required to implement ASAI-based applications. For example, there is no need to receive, parse, and process individual, lower level ASAI messages. Additional Script Builder actions give the script designer high level access to ASAI capabilities. Refer to the information on Script Builder provided later in this chapter. These ASAI capabilities can be used to design the following types of applications, which are discussed below:

- ASAI Voice Response Applications
- Routing Applications
- ASAI Data-Screen-Delivery Applications

These types of applications can run simultaneously on a VIS. This implies that a CONVERSANT VIS ASAI system provides co-resident voice response and DEFINITY G3-to-host gateway capabilities. A single call, for instance, can first be routed by the VIS, handled with a voice response application on the VIS, and then be monitored by the same VIS as the call is ultimately delivered to a live agent. Furthermore, integration of the voice response and gateway capabilities allows agents to interact with callers based on the data collected in a voice response script through a host screen. The delivery of a data screen to an operator that contains information about the incoming caller they are about to service is called a "screen pop."

In order for the ASAI feature to be implemented on the VIS, the following software packages must be installed:

- CONVERSANT VIS V4.0 Adjunct/Switch Application Interface Package Version 01.01.18
- CONVERSANT VIS V4.0 Adjunct/Switch Application Interface Library, Version 01.01.18

Inherently, the VIS must also be fully integrated with a switch or PBX, using analog Tip/Ring or digital Line Side T1 (LST1) cabling. Consult the DEFINITY PBX documentation library for information on hardware and software requirements when interfacing the CONVERSANT VIS with a DEFINITY system.

ASAI Voice Response Applications

In ASAI voice response applications using the ASAI feature, incoming calls can be routed to the VIS over T/R or LST1 channels as an automatic call distribution (ACD) split on the DEFINITY G3 as depicted in Figure 4-1.

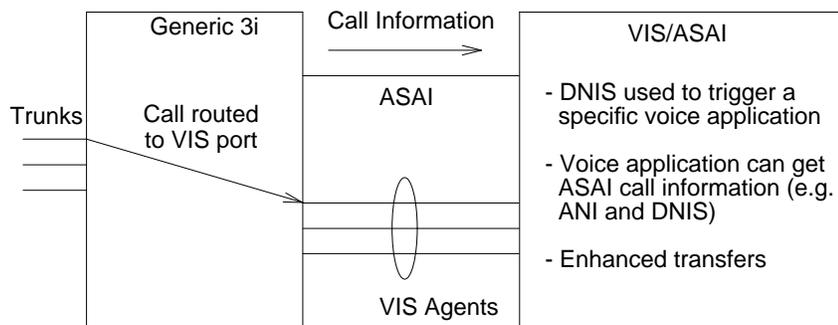


Figure 4-1. ASAI Voice Response Applications

As a call is delivered to the VIS, the VIS receives ASAI information related to the call through a dedicated link (D-link) connected to an IPCI circuit card within the CONVERSANT VIS. ASAI allows the VIS to receive the dialed (called) number, and the calling number of an incoming call to an analog T/R or digital LST1 line over this D-link. These capabilities are sometimes referred to as dialed number information service (DNIS) and automatic number identification (ANI), respectively. This information can be used to control the voice application used for the call. The ASAI information related to the call is made available to the specific voice application that interacts with the caller. In addition, the call control capabilities of ASAI can be used to transfer the call away from the VIS if the caller needs to speak to a live agent. The ASAI feature provides the following for voice response applications:

- Channel sharing. The DNIS information associated with the incoming call is used to select a particular Script Builder script to service the call. This allows T/R and LST1 ports to be shared across many applications. With port sharing, the same number of ports can handle more calls while maintaining the same grade of service. Alternatively, the same number of calls can be handled at a higher grade of service.

- Call information. Once the call has been answered by the VIS, the ASAI information related to the call (such as ANI and DNIS) can be retrieved for use in the voice script handling the call.
- Enhanced transfer. The use of ASAI call control capabilities allows the transfer to be faster, quieter (from the caller's perspective), and more reliable. In addition, the G3 ASAI feature of direct agent calling can be used to transfer the call. This allows the call to be delivered to a specific agent while maintaining accurate ACD split statistics. Calls placed to specific agents without the direct agent calling feature do not count as ACD calls in calculating and reporting ACD split statistics. Finally, data captured in the voice script can be saved and associated with the transferred call. This enables a host application to deliver data screens to agents that are based on data collected by the voice script that previously serviced the caller and any combination of ANI and/or DNIS information. Refer to "ASAI Data-Screen-Delivery Applications" later in this chapter. The availability of ANI within the voice script permits the design of unique voice-response applications. Examples include:
 - Locator service. A local or host database can be used to determine the closest car dealers, ATMs, stores, etc.
 - Weather reports. A weather report for the caller's area can be provided.
 - Pay-per-view. A cable company can use ANI to automate customer selection/billing of pay-per-view programs.
 - Caller-dependent transfers. The full 10-digit ANI can be used to identify callers and determine where they should be transferred if they need to speak to a live agent. This is desirable if, for instance, the caller is a preferred customer or is usually handled by a specific agent.
 - Geographically-Based Call Transfers. The area code and/or exchange could be used to determine where callers should be transferred if they need to speak to a live agent. This would be desirable if, for instance, agents handle calls from specific geographic regions.

Routing Applications

In routing applications using the ASAI feature, the VIS is used as a routing server to support the routing capabilities of ASAI and the call-vectoring feature on the DEFINITY G3. As depicted in Figure 4-2, a routing application on the VIS receives and responds to call-routing requests sent by the DEFINITY G3. Note that it is not always necessary to have T/R lines on the VIS for routing applications, Line Side T1 (LST1) connections may be used. However, T/R lines are required to route the call to the VIS agent ports.

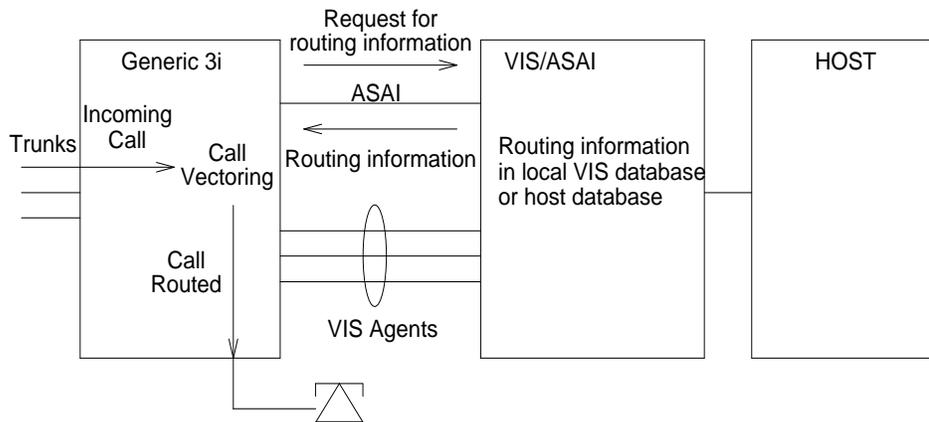


Figure 4-2. ASAI Routing Applications

These call-routing requests are generated by the DEFINITY G3 when a call is processed by specific call vectors on the DEFINITY G3.

Information as to where calls should be routed can reside on the VIS in a local database or can be provided by a host to which the VIS is connected. Call-routing is typically based on ANI or call-prompting data collected by the DEFINITY G3.

The use of routing capabilities can significantly improve the efficiency of a call center environment. Examples of how routing may be used include:

- Priority service. Important or "priority" callers such as major clients can be given priority treatment. Priority callers can be routed to a common agent group but queued at a higher priority so that they are serviced faster. Alternatively, priority callers can be routed to the specific agent who normally handles their transactions.
- Call redirection. Callers dialing into a particular call-center application can be redirected to other call-center applications. For example, callers who have delinquent accounts can be redirected to a collections department when they call a sales department.
- Call screening. Fraudulent callers can be disconnected before being connected to an agent so that no network costs are incurred.
- Geographically-based service. Where service is provided on a regional basis, callers can be routed to the agent group responsible for their region.

ASAI Data-Screen-Delivery Applications

In data-screen-delivery applications, a host application delivers a specified data screen of a caller or dialed number to an agent at the same time a voice call is delivered to the agent's telephone. This reduces both the agent time and network time required to service the caller. Data-screen-delivery applications are also known as "coordinated voice/data screen delivery" or "screen pop" applications. A data-screen-delivery application is depicted in Figure 4-3.

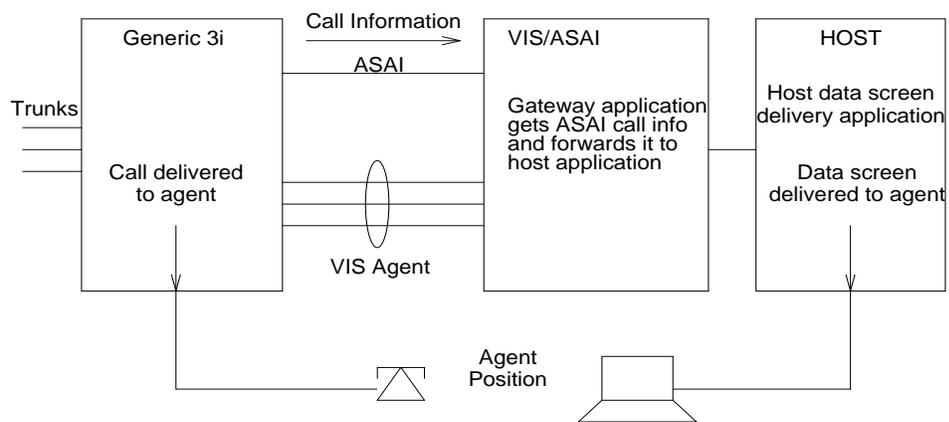


Figure 4-3. Data Screen Delivery Applications

Note that the delivery of data screens is not a function of the VIS itself. A special host application is developed by the customer or a third party vendor to perform this function. The VIS acts as a communications gateway between the DEFINITY G3 and the host computer. A monitoring application on the VIS provides the ability to track the status of calls on the DEFINITY G3. This monitoring application receives information about calls delivered to live agents and forwards this information to the host application. The host application in turn uses this information to deliver a data screen to the agent receiving the call.

The information made available to the host includes which agent receives a particular call and the ASAI information associated with the call, such as ANI, DNIS, and any DEFINITY G3 call-prompting information collected from the caller. In addition, the call may have been serviced by a VIS voice script and then transferred to a live agent. In this case, information collected in the voice script can be saved and then passed to the host at the time the call is delivered to the agent. Monitoring applications on the VIS can therefore be used to support data screen delivery for three different call-flow scenarios:

- VIS-to-agent transfers. In this scenario, calls are delivered to the VIS and then transferred to a live agent. As described previously, data screens delivered to agents in this scenario can be based on information collected in a voice script in addition to ASAI information such as ANI and DNIS and call-prompting information collected by the DEFINITY G3.
- Incoming call directly to agent. In this scenario, incoming trunk calls are delivered directly to live agents. Data screens delivered to agents are based primarily on ANI and DNIS and/or call-prompting information. Data screens are not based on data collected in a voice script, since a VIS voice script is not used to collect data from the caller.
- Agent-to-agent transfers. In this scenario, calls are transferred between live agents. Here, for example, "screening" agents can be used to collect information from the caller and handle simple transactions. The call can subsequently be transferred to "specialized" agents to handle more complex or detailed transactions. In these scenarios, data screens can be based on information keyed in to the host application by live agents. The host application can save data collected and entered by a screening agent and then use this data as the basis for data screens delivered to specialized agents who can receive the call. Note that the information available for the other two call flow scenarios (that is, ANI, DNIS, call-prompting information, and voice-script data) is also available in this scenario. This information can be used in conjunction with data entered by a live agent to provide the basis for data screens.

The VIS-to-agent transfer scenario described above is supported using the enhanced-transfer capability provided for ASAI voice-response applications. The enhanced-transfer capability allows data collected in the voice script to be saved and associated with the transferred call. Data saved in this fashion can be included in the call-event information passed to the host at the time the transferred call is delivered to an agent.

The ability to save voice script data is useful in many ways. A voice script can be used to collect a variety of information such as account number, social security number, personal identification number, desired service, etc. In many cases, this type of information is more useful than ASAI information such as ANI to both the host application and the live agents handling calls.

The ability to save voice script data with the enhanced transfer capability provides a useful bridge between voice-response and data-screen delivery applications. It provides true integration (in addition to co-residency) of the voice-response and PBX-to-host gateway capabilities offered with the VIS ASAI feature. This mechanism for embedding voice script data in call-event information for the transferred call can significantly reduce the complexity of the host application. Without this mechanism, the host application is typically required to associate information from two different physical interfaces (one interface from the voice response unit to receive data collected from the caller and another interface from the monitoring device over which call events are received). Also, the host application is typically required to track and associate multiple events for multiple calls (the initial incoming call to the voice response

unit and the second, transferred call that is delivered to an agent). With the VIS ASAI feature, a single message to the host over a single interface provides all the information needed to deliver a data screen based on data collected in a voice script.

Using ASAI in a Call Center

The VIS ASAI feature can significantly improve the operations in a call center environment. The capabilities this feature offers provide the following benefits to any company that receives customer calls:

- **Enhanced customer service**

Caller and region-dependent treatment for incoming calls is possible in routing and voice response applications. In addition, the direct agent calling feature available with these applications allows calls to be delivered to specific agents while maintaining accurate split measurements. These capabilities help ensure that calls are quickly and reliably directed to the call center resource best suited to handle them. This minimizes the number of transfers a caller experiences and allows callers to be serviced in a rapid, consistent, and personalized fashion.

In data-screen-delivery applications, information associated with a given call is available to each agent receiving the call. This eliminates the need for customers to repeat information to each agent. For example, a caller may be directed initially to a VIS T/R or LST1 channel where the caller is prompted through an automated voice response application. At some point the caller may request to be transferred to a live agent to discuss a topic in more detail. With the VIS ASAI feature, the identity of the caller and additional information collected from the caller by the voice-response application is not lost. Pertinent information from the voice-response application can be saved and presented in a data screen to the live agent receiving the transferred call, thereby eliminating the need for the customer to repeat information already collected. This reduces call holding time. This benefit holds true even when calls are transferred multiple times or are transferred between live agents.

- **Improved price/performance**

The co-residency of voice-response and PBX-to-host gateway applications greatly improves the price and performance of the VIS ASAI feature over prior and competitive offerings. The VIS ASAI feature eliminates the need for multiple boxes with multiple interfaces to the host computer, thereby simplifying host application development. Access to ASAI capabilities using Script Builder minimizes the effort required to implement the VIS piece of the overall VIS/host application. In addition, the use of DNIS in voice response applications to enable T/R or LST1 channel sharing means that more calls can be serviced with the same number of VIS channels.

- Reduced cost of doing business

The use of data-screen-delivery applications reduces the time needed to service calls. This is because the host screen application is ready to provide or accept information at the same time the agent begins to speak with the caller. The reduction in per-call service time translates directly into reduced network and agent costs. Because calls are shorter, 800 network charges are lower. The same number of agents can handle an increase in call volume since per-call service time is reduced. Also, certain calls can be eliminated entirely via the use of routing applications (for example, call screening for the identification of fraudulent calls). In this case, no network costs are incurred for the call and no agent time is wasted on the call.

ASAI Capacities

Table 4-2 lists the capacities associated with the Adjunct/Switch Application Interface (ASAI) feature. Refer to the *CONVERSANT VIS Adjunct/Switch Application Interface*, 585-350-812, feature package book for additional information.

Table 4-2. ASAI Capacities

Item	Max. Number	Notes
Number of ASAI BRI data links (D-channels) between PBX and VIS	1	
Number of Analog T/R lines between PBX and VIS	48	
Number of Line Side T1 lines between PBX and VIS	2	Represents the equivalent of 48 incoming analog channels.

AUDIX Voice Power Co-Residency

The CONVERSANT VIS supports co-residency with the AUDIX Voice Power R2.1.1 application package. AUDIX Voice Power is a software package that can provide up to 12 channels of the following services when co-resident with CONVERSANT VIS V4.0:

- Automated Attendant Service — This directs callers through a series of prompts to the desired extension. If there is no answer or the line is busy, the caller can either leave a message or try another extension.
- Call Answer Service — Allows a caller to either leave a message or transfer to another extension when the original extension has failed to answer (for example, no answer or the line is busy).
- Voice Mail Service — Allows subscribers to send messages to other people in the system, retrieve their own messages, and administer their own greeting message, name and password.
- Message Drop Service — Similar to an answering machine in that it is used for callers to leave a message, and callers can direct their messages to specific extensions.
- Information Service — A customer oriented call-in information line. The caller will hear a message and then be disconnected. The message might be similar to "I'm sorry, ACME Manufacturing is not open now. Our normal business hours are nine to five, Monday through Friday, except holidays."

This feature allows both AUDIX Voice Power and VIS applications to run simultaneously on different channels of the VIS. It also allows access to AUDIX Voice Power capabilities from VIS scripts. The AUDIX Voice Power administration is integrated with the VIS administration menus. When the AUDIX Voice Power package is co-resident with the VIS, the Integrated Voice Processing System Software (IVPSS) R2.0 package that is normally loaded for stand-alone AUDIX Voice Power service is not used. The term "co-residency" implies that the software needed to provide the AUDIX Voice Power functionality is an individual service in itself, and is not considered a CONVERSANT VIS software package.

In order to implement this feature, the following software packages must be loaded and fully operational on a VIS platform. Only one of the switch integration packages is required depending upon the particular switch the VIS interfaces with.

- AUDIX Voice Power Application Software R2.1.1: Speech
- AUDIX Voice Power Application Software R2.1.1: Software
- AUDIX Voice Power Application Software R2.1.1: Update 2
- AUDIX Voice Power Switch Integration Software (System 75, DEFINITY G1)
- AUDIX Voice Power Switch Integration Software (System 75, DEFINITY G1) Update 2

- AUDIX Voice Power Switch Integration Software (System 25)
- CONVERSANT VIS V4.0 Voice Mail External Actions Package

AUDIX Voice Power Co-residency Abilities

The VIS supports the AUDIX Voice Power System 25, System75/DEFINITY G1 switch integration packages. The System 75/DEFINITY G1 switch integration package requires a special circuit card, the Digital Communications Protocol (DCP) circuit card. Hardware-related resource conflicts (slots, interrupts, I/O addresses, memory addresses) can limit the combinations of features available on a single machine. Note that AUDIX Voice Power scripts are only available for assignment to analog (T/R) channels, and they will not run on digital T1 or Line Side T1 (LST1) channels.

Four Script Builder external actions provide the capability to save and retrieve messages within the context of the VIS application and to determine relevant information about subscribers. These actions can:

- Get information about an AUDIX Voice Power subscriber's mailbox, such as the subscriber's extension, the subscriber's recorded name and greeting, and the number of messages currently in the mailbox
- Get messages from the subscriber's mailbox
- Record and send a message to a subscriber's mailbox
- Connect the caller with AUDIX Voice Power voice mail service on the same channel (without transferring via the switch)

Adding AUDIX Voice Power co-resident with the CONVERSANT VIS on the same platform provides several benefits that include the following:

- Hardware can be shared among voice applications. Customers that need voice mail and other voice applications, but not many channels of either, will have the cost effective option of putting the two applications on one machine. This is frequently the case with large customers with remote sites and small offices.
- Information can be shared between AUDIX Voice Power and a CONVERSANT VIS application. An example of a customer situation that would benefit from this sharing, is a stock quote application that provides stock prices and allows the caller to leave a message for a broker.
- Allowing CONVERSANT VIS users to develop or use customized application packages and also use an off-the-shelf, sophisticated voice mail package.
- Menu screens specific to AUDIX Voice Power are available through the administrative menu screens of the CONVERSANT VIS. Once the AUDIX Voice Power package is installed, the AUDIX Voice Power application appears as a choice in the Application Package Administration menu, and the AUDIX Voice Power reports are available through the Reports menu.

AUDIX Voice Power Co-Residency Capacities

Table 4-3 lists the capacities associated with the AUDIX Voice Power Co-Residency feature. Refer to the document *AUDIX Voice Power Planning Guide and Forms*, 585-310-901, for additional information.

Table 4-3. AUDIX Voice Power Co-Residency Capacities

Item	Max. Number	Notes
Number of AUDIX Voice Power channels co-resident with CONVERSANT VIS V4.0	12	A maximum of 24 incoming analog channels is allowed on all CONVERSANT platforms. AUDIX Voice Power service can utilize up to 12 of these channels, limiting the number of analog channels for other VIS use
Number of AUDIX Voice Power subscriber mailboxes or accounts	300	

Call Classification Analysis

Call Classification Analysis (CCA) allows application developers to classify the disposition of originated and transferred calls. Some of the dispositions include busy, answered, ring-no answer, and reorder. There are several types of call classification analysis. The standard level, referred to as "Intelligent," was available with the Version 3.0 software. Intelligent call classification analysis is needed to make call transfers and call bridges, which is described in the discussion of transfer call, call bridge, and make call in Chapter 9, "Defining the Transaction" of the *CONVERSANT VIS Script Builder*, 585-350-704.

An enhanced level of call classification, "Full CCA," is available as an optional package in Version 4.0. This section compares intelligent CCA to the optional Full CCA feature.

This feature package requires the Call Classification Analysis Package software package, and at least one signal processor (SP) circuit card to be installed and operational. A single SP card can handle six simultaneous channels of CCA, and must be installed in the VIS prior to loading the full CCA software. If, during normal operations the script tries to use full CCA and finds that the maximum CCA instances are running, an error code is returned to the script.

⇒ NOTE:

The term "CCA," when used alone in this document or in on-line screens, means "Full CCA."

Intelligent CCA

The capabilities provided by intelligent call classification analysis are standard with each VIS purchase, and provide a rudimentary voice-energy detector for identifying answered calls. Intelligent call classification analysis on TR cards recognizes the following precise call progress tones:

- Busy
- Fast busy (reorder)
- Audible ring
- Dial tone
- Stutter dial tone

Intelligent call classification analysis on T1, Line Side T1 (LST1) or Primary Rate Interface (PRI) digital lines provides answer and disconnect supervision only. However, these types of lines can return additional information, therefore, if the detection of call progress tones with T1, LST1 or PRI lines is required, the optional Full CCA package is needed.

Full CCA

Full CCA provides the following advantages over the base intelligent call classification analysis:

- Better answer detection using a more sophisticated voice-energy detector
- Detection of busy and audible ring tones generated by older or faulty equipment that does not conform to the precise tone plan standards
- Detection of special information tones (SITs) that indicate why an originated call failed (this feature allows for reliable call classification over the public-switched network)
- Detection of modem tones
- Detection of all call dispositions on analog TR, T1, LST1 and PRI lines

Applications created with earlier versions of VIS software that use intelligent CCA are compatible with the VIS Version 4.0 software. An exception to this are applications generated using Script Builder that rely on the \$TRANSFER_RESULT field. For more information on upgrading applications for Full CCA transfer, refer to Chapter 9, "Defining the Transaction", in the *CONVERSANT VIS Script Builder*, 585-350-704.

Intelligent call classification or Full CCA can be activated when a call is dialed out during a flash transfer, a call bridge (internal transfer), or a make call (call originate), as defined in Script Builder.

CCA Limitations

There are two caveats one should be aware of before using CCA:

- The CCA feature is designed to work with calls placed to destinations in North America only. It is not guaranteed to work with calls placed to other parts of the world.
- Even in North America, CCA should not be expected to be 100% accurate. Various conditions, such as noisy lines and substandard central office call progress tones, can cause a small percentage of errors.

Testing experience indicates that this percentage is less than 2%, excluding voice energy detection errors. When voice energy detection is used, the expected percentage of errors is approximately 4%.

- CCA performance may be slightly less if used with Analog Tip/Ring lines instead of T1 or PRI lines. Analog lines tend to be more noisy than digital ones and may lead to occasional false identification of tones.

An "Answer" condition can be detected with nearly 100% accuracy when answer supervision is used on T1 and PRI lines.

CCA Capacities

Table 4-4 lists the capacities for the Call Classification Analysis feature. Refer to the *CONVERSANT VIS Call Classification Analysis*, 585-350-811, feature package book for additional information.

Table 4-4. Call Classification Analysis (CCA) Capacities

Item	Max. Number	Notes
Number of concurrent instances of full CCA on one dedicated AYC2C SP card	6	An error is generated if a script attempts to use full CCA and the maximum number of CCA instances are running; no further attempts are made after the error is logged
Number of call dispositions detected	48	Using Script Builder; application depends on the call-holding time and the strategy for handling blocked calls

CompuLert/SCCS/ARU Interface Package

This feature provides remote monitoring and alarming capabilities to customers who have many CONVERSANT systems in a central office environment. CompuLert is a centralized maintenance system for monitoring minicomputers, computer mainframes, and similar devices. The Switching Control Center System (SCCS) is a centralized maintenance system for 4ESS switch, 5ESS switch, and other central office switching equipment. The CompuLert/SCCS interface allows a central office based CONVERSANT VIS user to monitor and administer the VIS remotely from the CompuLert/SCCS location. In addition, this feature can be coupled with an Alarm Relay Unit (ARU) to provide an alarm notification at the central office site.

The standard VIS product contains a process that logs system data into a message log and optionally prints that data to the system console. This message log contains both system event and alarm data. The message data is generated by the various processes running on the VIS. The messages are sent to a process that reformats the data into SCCS MML language syntax and transmits the message to the SCCS through an RS-232 connection over standard 9.6-Kbps serial asynchronous data connections. This process also provides a "heartbeat message" which consists of a date and time from the VIS to the SCCS every 15 minutes as an indication that the link between the two systems is functional. In addition to the unidirectional transmission of heartbeat and alarm indications from the CONVERSANT VIS to the SCCS, SCCS has the capability to use the same connection in a monitor mode to exercise VIS commands on the CONVERSANT VIS.

This feature requires the CompuLert/SCCS Interface Package software and an alarm relay unit (ARU) to be installed and operational. Additional asynchronous ports may need to be added with the Multi-Port Asynchronous Communications Interface feature, because this feature requires one or two dedicated serial ports.

The alarm relay unit (ARU) is a small microcomputer-based external unit attached to an asynchronous port on a VIS. The ARU is driven by control character sequences that activate the audible and visual alarms. It displays alarm conditions on a small LED display on its front panel and can sound an audible tone for each alarm type (critical, major, and minor). When an Alarm Relay Unit is provided, it can share the RS-232 port connected to the CompuLert/SCCS systems, or it can be connected to its own RS-232 port. Alarm relays are closed by critical, major and minor alarm messages, and by processor failure, as determined by a 2-minute watchdog timer.

For more information on this feature, refer to the document *CONVERSANT VIS CompuLert/SCCS*, 585-350-808.

Figure 4-4 depicts two different connectivity arrangements for the SCCS/ARU interface.

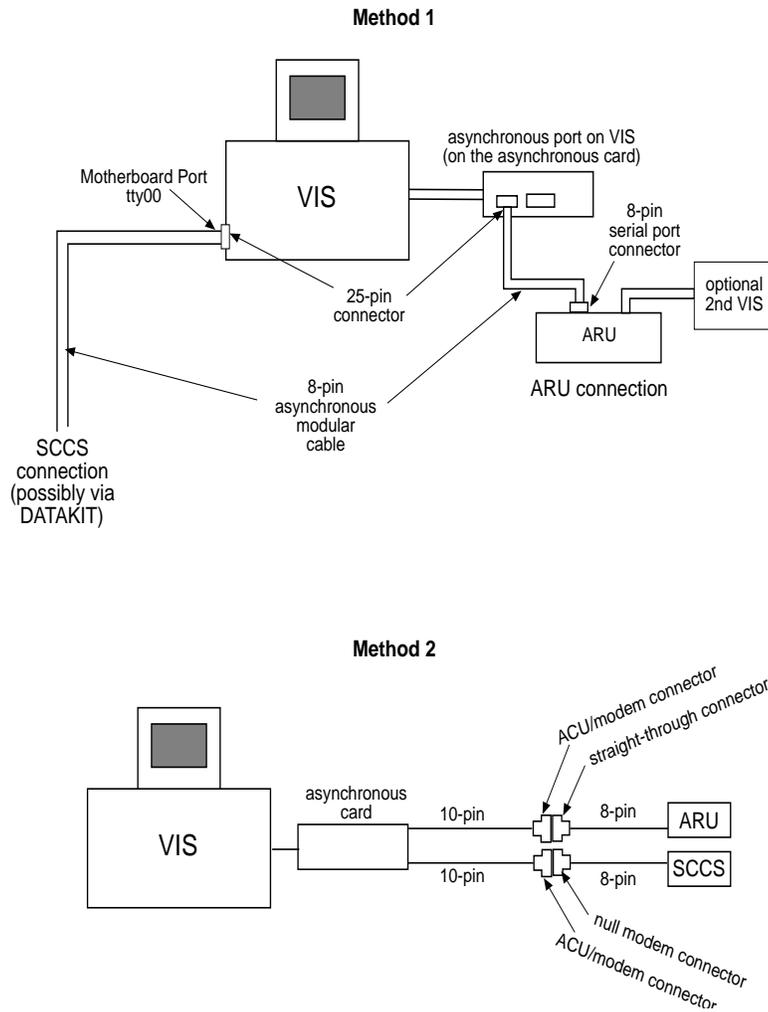


Figure 4-4. VIS and SCCS/ARU Connectivity

CompuLert/SCCS/ARU Interface Capacities

Table 4-5 lists the capacities associated with the CompuLert, Switching Control Center System (SCCS), and Alarm Relay Unit (ARU) feature. Refer to the *CONVERSANT VIS CompuLert/SCCS*, 585-350-808, feature package book for additional information.

Table 4-5. CompuLert/SCCS/ARU Interface Capacities

Item	Max. Number	Notes
Number of supported data links per system	2	One serial port can simultaneously support both SCCS and ARU or two serial ports can simultaneously support SCCS and ARU
Number of alarms reported by either SCCS or ARU	Unlimited	All system alarms are logged by the system message log, the SCCS and the ARU
Number of systems connected to one ARU.	2	An ARU can monitor up to two CONVERSANT systems

Country Specific Analog Switch Integration Packages

This feature consists of individual Analog Switch Integration (ASI) packages that allow accommodation of telephony interface differences from country to country. At a most basic level, these packages allow the VIS to interface with, and interpret data from, analog switches in foreign countries. These packages include tunable parameters found in the domestic ASI package, as well as other specific parameters as needed by each foreign country or switching system.

Each package allows the tuning of the VIS tip-ring interface to properly operate with a DEFINITY PBX or the Public Switched Telephone Network (PSTN) in the specific country. When a switch package is installed, the user is able to select the installed switch from the analog switch administration menu to be the current switch with which the VIS is interfacing, and modify key parameters that affect the VIS-to-switch interface. If no ASI package is installed, the VIS relies on built-in switch-VIS interface defaults based on AT&T System 75 parameters.

The default package allows the tuning of the following standard parameters:

- Call Transfer Sequences (Flash, Pause, etc.)
- Input and Output Volume Multipliers (IVOL, OVOL)
- Method of out dialing (DTMF, Dial-Pulse)
- Loop interruption durations (Wink disconnect, Flash)
- Frequencies that make up Call Progress Tones (CPTs) (such as Dial tone, Busy, Ringback, Reorder, etc.)
- Cadence of the call progress tones (for example, 200 msec ON, 400 msec OFF)
- Dial tone training enabled/disable

In addition to providing basic default settings, these packages allow a developer to design a set of files that tune the CONVERSANT VIS to work with a specific analog interface in a foreign country. These additional parameters include:

- DTMF Generation

These tunable parameters allow the adjustment of DTMF touch tone output levels (high/low group) as well as ON/OFF duration settings with 20 msec granularity.

- Dial Pulse

This parameter will allow the adjustment of dial pulse characteristics for use with analog switches that require dial pulse addressing. Three adjustments can be made:

- Digit Pulse On-Time — in 20-msec granularity
- Digit Pulse Off-Time — in 20-msec granularity

- Interdigit duration — The length of time between digits, in 20-msec granularity
- Clipping
This parameter allows the tuning of the maximum speech energy output over the network.
- Earth Recall
This parameter allows the VIS to determine that either the Earth Recall, or timed break (flash) method of call transfer is being used by the switch. This parameter is only set to Earth Recall when in use with IVP6-IU (AYC16) circuit cards.
- Trans-hybrid resistor
This tunable parameter allows the setting of a software controlled potentiometer used in the trans-hybrid tuning circuit. By setting this resistor to the appropriate value, the VIS can better match the network impedance of the foreign countries phone network, resulting in better quality signals and network tone detection. This parameter is only set to Earth Recall when in use with IVP6-IU (AYC16) circuit cards.
- Answer delay
This parameter allows a setting of an answer delay within the VIS, that prevents the system for answering the incoming call until some predefined amount of time (number of rings) after the first ring, as dictated by individual country specifications.
- Single Frequency Dial Tone Training
This is a capability of the switch integration packages that allow a VIS to interpret dial tones that are different than those used in the United States and Canada. Some countries use a single-frequency dial tone, while most U.S. and Canadian systems use a two-frequency system.

The three switch packages will accommodate the interface of a CONVERSANT VIS to the Public Switched Telephone Network (PSTN) or a DEFINITY PBX in service in one of the following countries:

- Mexico
- Hong Kong
- U.K.

If the VIS is to interface with a non-DEFINITY PBX, the same switch package can be used, however, more extensive parameter modifications are necessary, and the interface procedure should be performed with the help of AT&T Technical Support personnel. Refer to the document *CONVERSANT VIS Version 4.0 Planning*, 585-350-602, for a list of parameters that need to be noted and/or modified.

In order to support this feature, at least one of the following software packages must be installed and operational:

- CONVERSANT VIS V4.0 PBX/PSTN Switch Interface Package — Mexico
- CONVERSANT VIS V4.0 PBX/PSTN Switch Interface Package — Hong Kong
- CONVERSANT VIS V4.0 PBX/PSTN Switch Interface Package — U.K.

Multiple switch integration packages can reside on the VIS, but only one package may be in use by the system at any one time.

Country-Specific Switch Package Parameters and Capacities

Table 4-6 lists the capacities associated with the Country-Specific Switch Packages offered with CONVERSANT VIS V4.0. This table shows the new parameters available for tuning and their associated capacities. Refer to the *CONVERSANT VIS Version 4.0 Operations*, 585-350-703, book for additional information concerning switch integration.

Table 4-6. Country Specific Switch Package Parameter Capacities

Item	Value	Notes
TR_DTMF_ONTIME	20 - 300000	DTMF tone duration in milliseconds. (Default = 100ms)
TR_DTMF_OFFTIME	20 - 300000	DTMF interdigit pause time, in milliseconds. (Default = 60ms)
TR_DTMF_H_LEVEL	-40 - 0	Level for the high frequency tone, in decibels, used to set level and create twist. (Default = -1.7dBm)
TR_DTMF_L_LEVEL	-40 - 0	Level for the low frequency tone, in decibels, used to set level and create twist. (Default = -1.7dBm)
TR_PULSE_ON	20 - 300000	Dial pulse on duration, in milliseconds (Default = 60ms)
TR_PULSE_OFF	20 - 300000	Dial pulse off duration, in milliseconds (Default = 40ms)
TR_PULSE_INTERDIGIT	20 - 300000	Pulse interdigit time, in milliseconds (Default = 600ms)
TR_CLIPPING_THRESH	-25 - +3	The level at which signal clipping occurs, in decibels. (Default = -8.8dBs)
TR_CLIPPING_DUR	0-30000	Length of time the output level can exceed the TR_CLIPPING_THRESH before clipping is activated, in milliseconds. (Default = 500ms)
TR_CLIPPING_LIMIT	-25 - +3	Level the signal is clipped when clipping is active, in decibels (Default = -11dBs)
TR_TRANSHYBRID_LOSS	0 - 1000	Trans-hybrid loss, in Ohms. (Default = 330 ohms)
TR_RECALL_TYPE	0 or 1	Method to use for recall. 0 = Timed Break, 1 = Earth Recall (Default = 0)
TR_ANSWER_DELAY	0-50	Time to delay before answering, in rings (Default = 0 rings)

Enhanced File Transfer

The Enhanced File Transfer feature uses the file transfer system to interactively or directly transfer files between the VIS and a synchronous host processor on a designated Logical Unit (LU). File transfer is performed directly from the UNIX system command line, shell script, or a program using the system call. This feature allows the transfer of speech, applications, and database data, and adds significant enhancements to the existing file transfer capabilities provided by the standard 3270 Host Communications Package.

This feature requires that the CONVERSANT VIS V4.0 3270 Enhanced File Transfer software be installed and fully operational. Inherently, communications between the VIS and a host processor must be established through the installation of the following software:

- 3270 Synchronous Host Communications Package Driver
- 3270 Synchronous Host Communications Package Protocol
- 3270 Host Communications Package FTS

The file transfer enhancements provided by this feature package include:

- A procedure for modifying the application dependent features of the file transfer capability in a way that is transparent to the software.
- Establishing and maintaining an LU-LU session between the VIS and IBM Main over a dedicated LU.
- Sending files from the VIS to a specified destination on the IBM mainframe when available and/or on demand.
- Requesting files from the IBM mainframe at configurable times.
- Executing batch files and sending the output to the IBM mainframe.

This feature provides remote OA&M capabilities over an existing SNA link. With this capability, a user can link the VIS OA&M into network management on the host, such as NetView, through a defined interface. Thus, a user must develop application software to make use of this defined interface for each variation of host communications.

Enhanced File Transfer Capacities

Table 4-7 lists the capacities associated with the Enhanced File Transfer feature. Refer to the document *CONVERSANT VIS Host Interface*, 585-350-815, or Chapter 1, "User Interface," and Appendix D, "Information for Advanced Users," of *CONVERSANT VIS Version 4.0 Operations*, 585-350-703, for additional information about 3270 Synchronous Host Communications, and the Enhanced File Transfer feature. Also refer to the heading "3270 Synchronous Host Communications Interface Capacities" later in this chapter for more capacity-related information.

Table 4-7. Enhanced File Transfer Capacities

Item	Max. Number	Notes
Simultaneous Enhanced File Transfer sessions	1	Enhanced File Transfer may only be initiated on a single LU of one link
Transmission Speed	56 Kbps	Is dependent on the hardware connections between the machines; may operate between 4.8 Kbps and 56 Kbps

External Alarms

The External Alarms Interface package, used only on the MAP/100C, provides a means for administering external alarms in a central office environment. The alarm can use lights or audible alarm indicators based on the hardware that is installed. Most central office telecommunications equipment separate their system maintenance and alarm messages into three classes, Critical, Major, and Minor. This feature allows a programmer to classify VIS messages into one of the three classes above, and to subsequently trigger separate alarms corresponding each alarm class.

The circuit card included with the External Alarms Interface package includes eight relay contacts. One relay contact operates as a sanity timer control jumper and another relay contact operates as a power fail indicator. The other contacts are used to trigger specific alarms.

These alarms are associated with one of four available contact sets; Alarm Contact Set 1, Alarm Contact Set 2, Alarm Contact Set 3, and Alarm Contact Set 4. Contact Set 1 through Contract Set 3 correspond to critical through minor alarms, respectively, and Contact Set 4 is associated with all alarm level messages and Alarm level messages also operate a separate relay.

In addition to the hardware described above, this feature requires that the Central Office External Alarms Package software must be installed and operational.

The External Alarms Interface provides the following capabilities using the commands included with the External Alarms Interface package:

- **Enable/disable.** The External Alarms Interface enable and disable features allow you to enable or disable a specified alarm contact set. By default, all alarm contact sets are set to "enable," that is, the alarm contact set is operational. Note that if the alarm contact set is enabled, the contacts will close upon receiving an assigned message or performing the alarm test command.

- **Status.** The External Alarms Interface status feature allows you to display which alarm contacts are currently OFF (that is, the contacts are open, indicating that no assigned message has occurred) or ON (that is, the contacts are closed due to the occurrence of an assigned message).
- **Display.** The External Alarms Interface display feature allows you to display the state and status of the specified alarm contact set. The default alarm contact set assignments are as follows:
 - Critical message IDs are assigned to Alarm Contact Set 1.
 - Major message IDs are assigned to Alarm Contact Set 2.
 - Minor message IDs are assigned to Alarm Contact Set 3.
 - All alarm level messages are assigned to Alarm Contact Set 4.

The External Alarms Interface display feature allows you to show which system message ID is associated with a particular alarm contact set.

⇒ NOTE:

If DIP alarms have been defined and the above default alarm contact set assignments have been made, any alarms that are defined will be included in the default assignments.

- **Retire.** The External Alarms Interface retire feature allows you to turn off each alarm contact set while updating the status of the specified alarm contact set. The alarm retire command opens the set of contacts associated with an external alarm, thereby deactivating the alarm.
- **Test.** The External Alarms Interface test feature allows you to test the functionality of each alarm contact set without having to generate a system alarm message. The alarm test command closes the set of contacts associated with a specified alarm, thereby activating the alarm.
- **Assign.** The External Alarms Interface also provides the capability to assign message IDs to and remove message IDs from external alarms.

Figure 4-5 provides a detailed wiring diagram for the External Alarms feature.

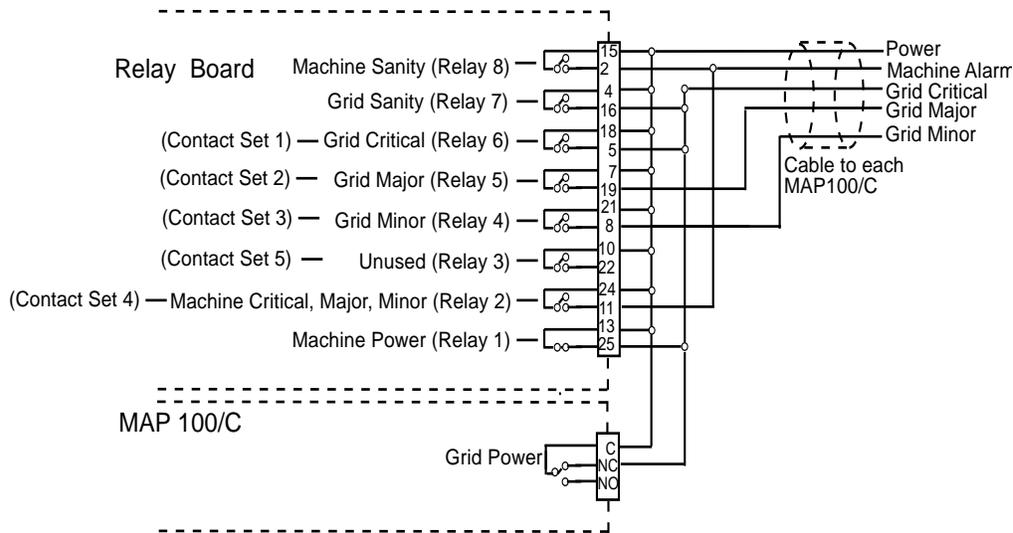


Figure 4-5. External Alarms Interface Connectivity

External Alarms Capacities

Table 4-8 lists the capacities associated with the External Alarms feature. Refer to the document *CONVERSANT VIS External Alarms*, 585-350-801, for additional information.

Table 4-8. External Alarms Capacities

Item	Max. Number	Notes
Amount of time between system sanity checks	60	Any integer value, in seconds, can be specified in the UNIX file controlling this function, although 60 is the recommended maximum. (20 seconds is default)
Maximum current capacity of External Alarm Interface hardware, in amps:	5	Operating at 250 VAC
	1	Operating at 125 VDC
	5	Operating at 30 VDC

FAX Attendant Co-Residency

This feature provides FAX Attendant features in VIS V4.0 by supporting the co-residency of FAX Attendant R2.1.1 V2 hardware and software in much the same fashion that AUDIX Voice Power co-residency is supported. This co-residency provides up to 12 channels of FAX attendant service. In CONVERSANT VIS V4.0, there are two ways to configure the FAX Attendant system, as shown below.

- **CONVERSANT VIS V4.0 + FAX Attendant**

(Switch Integration and FAX External Actions are optional)

The feature can be provided as a stand-alone co-resident product on the CONVERSANT VIS. It can also utilize one of two FAX Attendant Switch Integration packages and a Script Builder FAX Actions package.

- **CONVERSANT VIS V4.0 + FAX Attendant + AUDIX Voice Power**

(Switch Integration, and FAX/Voice Mail External Actions are optional)

The feature can also be co-resident with AUDIX Voice Power. This configuration can utilize one of two combination AUDIX/FAX Attendant Switch Integration packages along with Voice Mail External Actions and Script Builder FAX Actions package.

As with AUDIX Voice Power Co-Residency, FAX Attendant administrative screens are accessible directly from the VIS main menu screens. FAX Attendant processes fax messages and controls announcements that are stored in the disk memory. FAX Attendant prompts internal and external callers to make menu choices by pressing the appropriate touch tone button.

With FAX Attendant co-residency, the CONVERSANT VIS can invoke the following FAX Attendant services through Script Builder application scripts:

- **FAX Mail**

Allows subscribers to send fax messages to one or more fax numbers or use a distribution list, retrieve fax messages from their mailbox, record personal greetings, change their account passwords, delivery report setting, administer outcalling, and create fax distribution lists.

- **FAX Call Answer**

Allows FAX Attendant to receive fax messages for subscribers whose fax machines are busy or out of paper. This feature also allows subscribers to use personal fax mailboxes for confidential receipt and remote access to fax messages.

- **FAX Response**

Allows companies to dedicate a phone number for their prospective customers to call and retrieve information on their products or services, news or virtually any other hard copy information by fax.

A maximum of 12 tip-ring fax channels are supported for FAX Attendant co-residency with VIS V4.0 through the use of Brooktrout TR114 4-channel circuit cards. Because of hardware limitations, CONVERSANT VIS V4.0 does not support the migration of a deployed FAX Attendant product to a new or existing VIS V4.0 platform. As a final note, FAX Attendant is not supported on T1 or Line Side T1 (LST1) channels because they cannot provide dial tone detection.

FAX Attendant Co-Residency feature can be utilized on the CONVERSANT platform in conjunction with AUDIX Voice Power as well as CONVERSANT VIS V4.0. This creates an extremely flexible offering with many potential uses. Because of this, the feature can be configured as co-resident, or non-coresident (stand-alone), with respect to AUDIX Voice Power. It is always considered co-resident with CONVERSANT VIS. In the co-resident configuration, the FAX Attendant operates with the AUDIX Voice Power, and in the non-coresident (stand-alone) configuration, it operates without AUDIX Voice Power present on the CONVERSANT VIS system. In either configuration, FAX Attendant can operate in either a switch-integrated or non-switch-integrated mode.

These different configuration require unique combinations of FAX Attendant software to be used. These combinations are listed below, and are installed on top of the CONVERSANT VIS software platform. Please keep in mind that the terms "Stand-alone", "Co-Resident", and "Non-Coresident" when used in these listings are in reference to AUDIX Voice Power. CONVERSANT VIS software will always be present.

- AT&T FAX Attendant Stand-alone System without Switch Integration
 - AT&T FAX Attendant Non-Coresident Application Software R2.1.1 V2
- AT&T FAX Attendant Stand-alone System with Switch Integration
 - AT&T FAX Attendant Non-Coresident Application Software R2.1.1 V2
 - AND ONE OF THE PACKAGES BELOW:
 - AT&T FAX Attendant S75/DEFINITY Non-Coresident Integration Software R2.1.1 V2
 - AT&T FAX Attendant S75/DEFINITY Non-Coresident Integration Software R2.1.1 V2
- AT&T FAX Attendant System Co-Resident with AUDIX Voice Power
 - AUDIX Voice Power Application Software R2.1.1: Speech
 - AUDIX Voice Power Application Software R2.1.1: Software
 - AUDIX Voice Power Application Software R2.1.1 Update 2
 - AT&T FAX Attendant Co-Resident Application Software R2.1.1 V2

- AT&T FAX Attendant System Co-Resident with AUDIX Voice Power and Switch Integrated
 - AUDIX Voice Power Application Software R2.1.1: Speech
 - AUDIX Voice Power Application Software R2.1.1: Software
 - AUDIX Voice Power Application Software R2.1.1 Update 2
 - AT&T FAX Attendant Co-Resident Application Software R2.1.1 V2
 - AND ONE OF THE PACKAGES BELOW:
 - AT&T FAX Attendant S75/DEFINITY Non-Coresident Integration Software R2.1.1 V2
 - AT&T FAX Attendant S75/DEFINITY Non-Coresident Integration Software R2.1.1 V2

FAX Attendant Co-Residency Capacities

Table 4-9 lists the capacities associated with the FAX Attendant Co-Residency feature. Refer to the document *CONVERSANT VIS FAX Attendant Co-Residency*, 585-350-210, for additional information.

Table 4-9. FAX Attendant Co-Residency Capacities

Item	Max. Number	Notes
Maximum number of FAX Attendant channels	12	These are provided by the analog FAX cards and do not subtract from the total number of analog ports available to CONVERSANT VIS
Maximum number of FAX Attendant circuit cards	3	Four-channel Brooktrout TR114 cards

Form Filler Plus

Form Filler Plus is a high-capacity, multi-application, multi-user feature package supported by AT&T. The Form Filler Plus feature provides the capability for application scripts to record callers' verbal or spoken responses to prompts for later transcription and review. As many as ten 1-second through 999-second responses can be recorded per call session. Caller responses are recorded and then stored in the Form Filler Plus database, where they can be retrieved at a later time using the form retriever transcription script.

Application voice "forms" that prompt for and record caller input for Form Filler Plus are available through a high-level Script Builder application template provided with the Form Filler Plus package. By copying and modifying this template to suit individual needs, customized Form Filler Plus applications can be developed. The FF_Code and FF_Store actions can be used with the Form Filler Plus package to develop a customized Form Filler Plus application.

Whether using the Form Filler application template, or the actions provided with the Form Filler Plus package to develop a customized application, this feature package facilitates the development of voice capture and transcription scripts. Form Filler Plus application developers are able to select the coding rate that best suits their application and are given access to the advanced error-handling capabilities available with this feature, including the ability to store partial messages in the event of error or caller hangup.

The Form Filler Plus feature also includes the Form Filler Plus Call Record Summary Report and the Form Filler Plus Audit. The Call Record Summary Report lists a summary of call records in the Form Filler Plus database for each script ID and provides disk-usage statistics for the speech file system. The Form Filler Audit runs each time the voice system is started and checks the Form Filler Plus database for consistency with the talkfile where caller responses are stored.

The Form Filler Plus feature package can be used on all available VIS channels (a maximum 48 on the MAP/100C and MAP/100, 24 on the MAP/40). Any number of applications may simultaneously use Form Filler Plus. In addition, within any given Form Filler Plus application, a number of individuals may simultaneously use Form Filler Plus. The feature requires that the following software packages be installed and operational:

- CONVERSANT VIS V4.0 Form Filler Plus
- CONVERSANT VIS V4.0 Script Builder

Form Filler Plus Capacities

Table 4-10 lists the capacities for the Form Filler Plus feature. Refer to the *CONVERSANT VIS Form Filler Plus*, 585-350-806, feature package book for additional information.

Table 4-10. Form Filler Plus Capacities

Item	Max. Number	Notes
Number of channels simultaneously using FF Plus	48	
Number of channels simultaneously running transcribe script	48	
Number of coding rates supported	4	16, 24 SBC;16,32 ADPCM
Responses recorded per call session (or application)	10	
Maximum coded phrase length	999 sec	Default is 20 sec
Number of Phrases coded and stored on system	16,000	The number will be the lesser of either 16,000 or the maximum amount of phrases that exceed the capacity of the disk; also dependent on amount of memory: 12-Mbyte = 32,000 phrases (old platforms), 16-Mbytes = 48,000 phrases (new platforms)
Number of talkfiles coded and stored	1	Talkfile 8 is dedicated for storage; talkfile 9 is dedicated to transcription
Initial time-out to detect speech during a code session	5 sec	
Inter-word time-out to detect silence during a code session	5 sec	

Graphical Speech Editor

This feature provides a simple way of making changes to existing speech phrases, by allowing a customer to cut, copy, and paste speech segments in either a speech file or across multiple speech files, as well as the ability to change the volume of individual speech segments.

The feature is comprised of the Graphical Speech Editor (GSE) toolkit, which consists of software, hardware, and documentation. The documentation describes the various VIS speech formats (16/32/64Kbps) and the compatibility of non-AT&T software products with these speech files. With this knowledge, users can build their own graphical speech editing environments using a product such as BitWorks for editing speech phrases and using the edited speech in a VIS application.

The GSE toolkit can be supported on any CONVERSANT VIS V4.0 platform that operates with an Intel 486DX 50-MHz CPU. It also requires a Tip/Ring card to receive audio input for recording and to output audio speech. The GSE can be used with the following T/R circuit cards:

- AYC5, AYC6 - The older supported, 6-port and 4-port T/R circuit cards with modular telephone jacks. Recording is performed through a telephone handset, unless a Speech Production Kit, which provides a modular-to-audio connection adapter is used.
- AYC5B, AYC6B - The currently orderable, 6-port and 4-port T/R circuit cards with built-in audio I/O jack. The recording interface can be either a telephone handset, or a microphone with 3.55 mm plug. These circuit cards can accept either connection, without the need for a Speech Production Kit.

The GSE package supports the editing and manipulation of speech recorded in the following formats:

- 64K PCM (Mu law)
- 32K ADPCM (Mu law)
- 16K ADPCM (Mu law)

It provides the ability to convert speech files between Mu law PCM formats and user selected ADPCM formats. In order to minimize degradations due to multiple conversions of speech, all toolkit speech storage and intermediate manipulations are performed using 64K PCM. The GSEs buffer is capable of handling up to four minutes of speech in its buffer, whether that consists of one phrase or a series of phrases. The GSE is able to play and record speech, and can accept audio speech from either a microphone, a cassette tape from audio line input, or a telephone unit, supported through one of the standard Tip/Ring circuit cards previously listed.

The GSE uses the X-Windows version X11 Release 5 platform and OSF/Motif Graphical User Environment, providing a Graphical User Interface (GUI). The GSE feature allows a specific slice of speech to be displayed as a graphical waveform on the system monitor. Marking the region requires the user to move a mouse over the desired area in order to highlight the region of waveform that is needed. This highlighted region can then be clipped to a buffer, and can be subsequently copied to some other location in the waveform. The waveform displayed on the monitor is the most current result of all editing operations performed on the particular speech file.

This feature package is supplied with the following resources. These items allow the GSE to be used on any 486DX 50-MHz platform with CONVERSANT VIS V4.0 running on it.

- Networking software as needed by X/Motif base software
- Graphical Speech Editor Package
- Serial Mouse drivers
- Serial Mouse
- Documentation

If the GSE is run on the same VIS machine where the speech phrases will be used, the files can be copied from one file system to another without the need for tape drives or Ethernet connections. Thus, for transfer of files between target VIS and GSE in the same machine, no additional software is necessary.

Graphical Speech Editor Capacities

Table 4-11 lists the capacities associated with the Graphical Speech Editor feature. Refer to the document *CONVERSANT VIS Graphical Speech Editor*, 585-350-705, for additional information.

Table 4-11. Graphical Speech Editor Capacities

Item	Max. Number	Notes
Maximum length of speech phrase stored in buffer, in minutes	4	

Hardware Upgrade Kits

This feature provides hardware kits which allow existing customers to upgrade their systems to newer hardware technology, which includes Small Computer System Interface (SCSI) magnetic peripherals and 486 central processing units (CPUs). A number of kits have been created to support a large number of different upgrade scenarios. The choice of one kit versus another depends upon which software version and hardware platform a customer currently maintains, and the level of functionality that is ultimately desired.

Driven by technology trends in the personal computer marketplace, CONVERSANT VIS V3.1 introduced SCSI magnetic peripherals as standard equipment. For similar reasons, V4.0 introduced support for 486 CPU circuit cards. The MAP family, with its inherent upgradeability, provides investment protection and allows smooth transitions as technology and markets evolve. The Hardware Upgrade Kits feature maintains the marketing strategy of allowing resource and feature improvements on a customer's embedded base hardware platform(s)

There are three different Hardware Upgrades to choose from, depending on the platform that is being updated:

- MAP/100 CPU Upgrade Kit
- MAP/100 SCSI Peripherals Upgrade Kit
- MAP/40 Upgrade Kits

MAP/100 CPU Upgrade Kit

This is an upgrade kit that allows any CONVERSANT VIS V4.0 MAP/100 platform with a 386 CPU and SCSI peripherals to be upgraded to a 50 Mhz 486DX CPU, with 16-Mbytes of memory. Included in this kit are:

- 486DX CPU Circuit Card with 16-Mbytes RAM
- Cabling and Documentation

Included with the kit are all necessary cables and adapters which support the physical connectivity of the CPU circuit card with the external keyboard interface, and serial communication interfaces. This kit also supports all V4.0 CPU-related features provided by the Remote Maintenance Circuit Card, including remote reset capability, fan monitoring, and business platform battery backup monitoring.

MAP/100 SCSI Peripheral Upgrade Kit

This is an upgrade kit that allows any CONVERSANT VIS V3.1 or V4.0 MAP/100 platform without SCSI peripherals to be upgraded to SCSI peripherals. Included in this kit are:

- 1.2-Gbyte SCSI Hard Disk Drive
- 525-Mbyte SCSI Cartridge Tape Drive
- SCSI Controller Circuit Card
- Cabling and Documentation

The hard disk drive can be shipped empty, or pre-loaded with CONVERSANT VIS V4.0 software. If pre-loaded, the hard disk drive will contain the following software:

- UNIX Base Software, as listed in Table 3-1
- CONVERSANT VIS V4.0 Software, as listed in Table 3-2 and Table 3-3

Consistent with previous CONVERSANT VIS ordering options, the pre-loaded SCSI disk drives can be delivered with GENERAL, MAX ORACLE, MAX SPEECH, or BIG ORACLE disk partitioning options.

MAP/40 Upgrade Kits

There are two hardware upgrade kits available for the MAP/40. The first is an upgrade kit that allows any CONVERSANT VIS V3.1 or V4.0 MAP/40 platform with a 386 CPU and IDE peripherals to be upgraded to a 486SX, 50-Mhz CPU and SCSI peripherals. The second allows a platform using a 486SX 25-MHz CPU to be upgraded to a 486DX 50-MHz processor.

50-Mhz CPU and SCSI Magnetic Peripherals Kit

Included in this kit are:

- 486DX 50-MHz CPU Circuit Card with 16-Mbytes RAM
- 1.2-Gbyte SCSI Hard Disk Drive
- 525-Mbyte SCSI Cartridge Tape Drive
- SCSI Controller Circuit Card
- Cabling and Documentation

Included with the kit are all necessary cables and adapters which support the physical connectivity of the CPU circuit card with the external keyboard interface, and serial communication interfaces. This kit also supports all V4.0 CPU-related features provided by the Remote Maintenance Circuit Card, including remote reset capability.

The hard disk drive can be shipped empty, or pre-loaded with CONVERSANT VIS V4.0 software. If pre-loaded, the hard disk drive will contain the following software:

- UNIX Base Software, as listed in Table 3-1
- CONVERSANT VIS V4.0 Base Software, as listed in Table 3-2

Consistent with previous CONVERSANT VIS ordering options, the pre-loaded SCSI disk drives can be delivered with GENERAL, MAX ORACLE, MAX SPEECH, or BIG ORACLE disk partitioning options.

50-MHz CPU Kit

The second kit allows a 486SX 25-MHz MAP/40 to be upgraded to a 486DX 50-MHz CPU card. This permits the operation of the Graphical Speech Editor, as well as any other advanced features available in future releases. This kit includes the following:

- 486DX 50-MHz CPU Circuit Card with 16-Mbytes RAM
- Cabling and Documentation

Included with the kit are all necessary cables and adapters which support the physical connectivity of the CPU circuit card with the external keyboard interface, serial communication interfaces. This kit also supports all V4.0 CPU-related features provided by the Remote Maintenance Circuit Card, including remote reset capability, fan monitoring, and business platform battery backup monitoring.

Hardware Upgrade Kits Capacities

Refer to the appropriate upgrade document listed below for additional information concerning the capacities and limitations of the various hardware upgrade kits:

- *CONVERSANT VIS Version 4.0 486 CPU Upgrade Kit for MAP/100 and MAP/100C, 585-350-211*
- *CONVERSANT VIS Version 4.0 SCSI Disk Drive Upgrade Kit for MAP/100 and MAP/100C, 585-350-212*
- *CONVERSANT VIS Version 4.0 Upgrade Kit for MAP/40, 585-350-213*

Line Side T1

This feature provides a 24-channel, 1.544-Mhz digital interface between a customer-based PBX and the CONVERSANT VIS V4.0 platform. Line Side T1 (LST1) will use existing T1 circuit card technology with new protocol-level software and VIS user interface modifications to significantly improve system connectivity and reduce the amount of hardware required to support 24 channels of digital service. This feature is compatible with DEFINITY G3 PBX and Galaxy 8 Automatic Call Distributing (ACD) systems. Its highlights include:

- Call Transfer capability
- Script Builder compatibility
- Full Call Classification Analysis (CCA) compatibility
- ASAI compatibility with DEFINITY PBXs
- Voice Response Integration compatibility with DEFINITY PBXs

As stated above, the amount of hardware required to support 24 channels of T1 service between the CONVERSANT VIS platform and the PBX will be drastically reduced by this feature. Existing configurations require 24 analog connections between the VIS and the PBX, whereas LST1 requires only one cable to provide 24 channels of service.

This feature also significantly reduces the number of VIS cards required to support a VIS-PBX interface. Existing configurations require 4-IVP6 cards or 6-IVP4 cards to support 24 incoming T1 channels when LST1 will reduce this hardware arrangement to only one T1 circuit card and one SP card required per 24 channels of digital service. When being used to provide an ASAI between the VIS and a PBX, an IPCI circuit card and connection must also be used to provide the BRI D-channel link.

LST1 hardware and software support both existing T1 circuit cards (AYC3B and AYC11). When being used as an ASAI link, a separate IPCI circuit card and BRI link must be used. A single LST1 channel is not held back for D-channel use as is done with ordinary PRI connections.

LST1 supports blind call origination (outcalling) and blind call transfers for DEFINITY PBXs only as normally performed on T/R lines. Blind transfers refer to the fact that the VIS will not detect call progress tones or provide any form of answer supervision. LST1 can provide Call Progress Tone (CPT) detection only when used with the Full CCA feature. It cannot support it singularly.

Because of this, LST1 does not support Script Builder requests for intelligent call originations and transfers. Existing scripts which use intelligent call origination/transfer requests (DEFINITY PBXs only) require conversion to blind or Full CCA requests in order to achieve LST1 compatibility.

The following limitations are encountered when utilizing an LST1 interface:

- LST1 cannot provide dial tone detection prior to dialing.
- LST1 cannot detect call progress tones (CPTs) after dialing.
- AUDIX Voice Power and FAX Attendant Co-Residency scripts use dial tone and call progress tone detection, and therefore are not compatible with systems using an LST1 VIS-to-PBX interface.
- When a switch is excessively loaded and a timed delay is used prior to dialing, a call can be lost if the PBX is not properly engineered and administered.
- Glare conditions caused by an incoming and outgoing call attempting to use the same channel cannot be detected due to the lack of dial tone detection.
- Dial pulse is not supported on LST1 channels.
- With DEFINITY G2, no forward disconnect is provided by the switch.

This feature requires that one or more of the following software packages be installed and operational:

- CONVERSANT VIS V4.0 Line Side T1 Interface Package — DEFINITY
- CONVERSANT VIS V4.0 Line Side T1 Interface Package — Galaxy
- CONVERSANT VIS V4.0 T1 Board Driver
- CONVERSANT VIS V4.0 SP Board Driver

Line Side T1 Capacities

Table 4-12 lists the capacities associated with the Line Side T1 feature.

Table 4-12. Line Side T1 Capacities

Item	Max. Number	Notes
Channels	24	Per T1 circuit card (AYC3B or AYC11)
T1 circuit cards	2 - 4	4 per MAP/100C or MAP/100, 2 per MAP/40

Local Area Network (LAN) Connectivity

The Local Area Network (LAN) Connectivity feature allows the VIS to be connected to other systems by way of a Local Area Network (LAN). The LAN allows the various computer systems and components connected to it to communicate with each other. The LAN implementation for the VIS Version 4.0 network uses the Ethernet (IEEE 802.3 carrier sense multiple access with collision detection [CSMA/CD]) protocol. Layered on top of that implementation is the transmission control protocol/internet protocol (TCP/IP) software package. TCP/IP allows each machine on the network to be "addressed" so that it can be distinguished from other machines. The remote database access feature on the VIS can be used with the LAN on the VIS.

The following hardware is required for connection to the LAN:

- InterLan (NP600A LAN) card
OR
- StarLAN-10 (PC NAU) card
OR
- StarLAN-10 Attachment Unit Interface Adapter (AUI) (if connecting a VIS with an NP600 card installed to a StarLAN-10 hub)

The VIS can be connected to a LAN using any of the following mediums:

- 10BASET Twisted-pair wiring (StarLAN),
- 10BASE2 ThinNet coaxial cable (InterLan)
- 10BASE5 ThickNet coaxial cable (InterLan)
- Fiber optic cables.

The naming convention for LAN cabling follows the following scheme:

<data rate x 1Mb/s><media type (base/broad band)><segment length x 100m>

By using values from Table 4-13, it can be seen how the mediums are named.

Depending on the LAN arrangement used, one or more of the following software packages must be installed and operational:

- AT&T Enhanced TCP/IP WIN/386 Interface, Release 3.0
- Network Interface Driver R2.0 (for StarLAN)
- NP600A Network Processor V3.2 (for Interlan)
- SQL*NET TCP/IP V1.2 for ORACLE RDBMS 6.0.30 (optional)

Table 4-13. Characteristics of Local Area Network Media

Parameter	10BASE5	10BASE2	10BASET
Transmission. medium	50 Ohm Co-Axial Cable	50 Ohm Co-Axial Cable	Unshielded Twisted Pair
Signaling Technique	Baseband (Manchester)	Baseband (Manchester)	Baseband (Manchester)
Data Rate (Mb/s)	10	10	10
Max. Segment Length (m)	500	185	100
Network Span (m)	2500	925	500
Nodes/Segment (m)	100	30	-
Node Spacing (m)	2.5	0.5	-
Cable Diameter (mm)	10	5	0.4-0.6

Figure 4-6 shows an example of how a LAN may be configured when interconnected with one or more voice information systems.

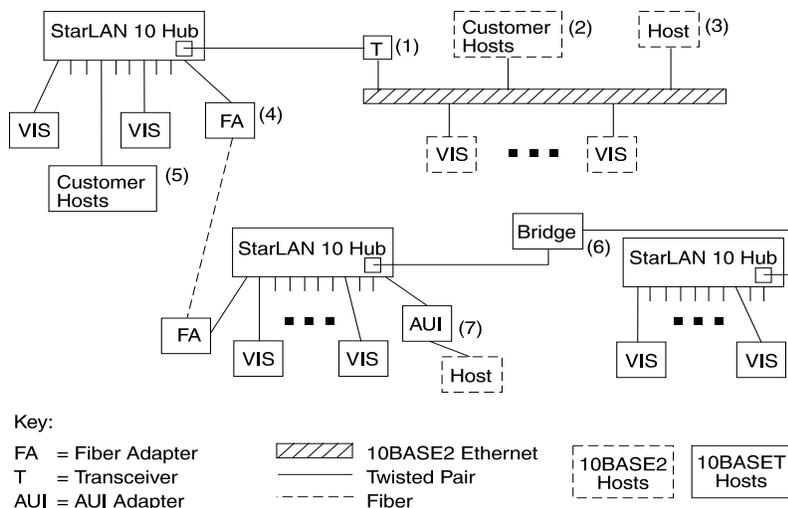


Figure 4-6. Sample LAN Architecture

LAN Connectivity Capacities

Table 4-14 lists the capacities associated with the Local Area Network (LAN) feature. Refer to the *CONVERSANT VIS Local Area Network*, 585-350-809, feature package book for additional information.

Table 4-14. Local Area Network (LAN) Connectivity Capacities

Item	Max. Number	Notes
Number of remote database systems	4	
Number of sessions per remote database connection	3	
Maximum transmission speed	10-Mbps	StarLAN or InterLan

Multi-Port Asynchronous Communications Interface

This feature provides software and interface for eight asynchronous serial data connections to the VIS platform. These connections can be used to support up to two asynchronous host computers, serial printers, onsite and remote monitoring systems (CompuLert/SCCS/ARU, for example) or an extra modem in addition to the modem connected to the Remote Maintenance Circuit Card.

The CONVERSANT VIS provides two asynchronous communication ports as standard equipment. These ports, labeled COM1 and COM2, are separate and fully functional in addition to the eight additional ports provided by this feature.

This feature requires the Intelligent Ports Card software package, in conjunction with the CTC Gemini-1000 circuit card and 8-port T-bar adapter hardware, to be installed and operational. In older, existing platforms, the IPC-900 circuit card is still supported, as it provides the same functionality. Other equipment may interface with the VIS over data links that terminate with 8-conductor modular lines to the VIS.

Multi-Port Asynchronous Communications Interface Capacities

Table 4-15 lists the capacities associated with the Multi-Port Asynchronous Communications feature. Refer to the book *CONVERSANT VIS Version 4.0 Operations*, 585-350-703, for additional information.

Table 4-15. Multi-Port Asynchronous Communications Capacities

Item	Max. Number	Notes
Number of additional physical asynchronous lines	8	These channels are in addition to the standard system COM1/COM2 serial ports
Data Speed	9.6 Kbps	
Number of lines used for host communication interfaces	2	

NetView Alarm Interface

The NetView Alarm Interface allows a 3270 synchronous host computer to receive, display, and alarm critical messages from the VIS. The VIS must meet all of the hardware and software requirements for Host Interface for this alarming arrangement to work.

UNIX system processes in the VIS use an error tracker (ET) mechanism to log or report problems. When these system processes detect certain pre-defined error conditions, they send error messages to the ET, which consults a rule file and a record of recent messages to determine what action to take.

The NetView Alarm Interface feature package transmits high-priority (critical or major) ET messages to the host as operator-generated alerts (OGAs) over the 3270 host link. This alarm interface requires the 3270 NetView Alarm Interface software package be installed and operational. The NetView Alarm feature package does not require a dedicated logical unit (LU).

A complete ET error message consists of these three basic components:

- Message ID — A unique number used to identify the error
- Rule — The urgency of the message, a list of actions to take when the error occurs, and a text description of the error
- Explain text — Additional text description of the error

There are four different levels of urgency for each ET error message:

- 3 (Critical) — The error is interrupting service, immediate action is essential
- 2 (Major) — This is a potentially serious problem and should be fixed soon, although it is not interrupting service at this moment
- 1 (Informational) — No immediate action is necessary, but the administration should be aware of the system's condition

- 0 (Status) — This is not an error and no action is necessary. This is to inform the administration of a state change within the system.

As stated earlier, only critical and major error messages are forwarded to the host by the NetView Alarm software. ET error messages are created on a per-application basis, and each message must be defined within the CONVERSANT VIS file system. The contents of all three components of an ET message, including the message ID, rule, and explain text, are controlled by the system administrator.

After the NetView Alarm software is installed on the VIS, it must be configured to properly match the particular host computer arrangement the system is in. An ASCII configuration file may be edited to modify the configuration.

In addition, users can affect the generation of OGAs by modifying the thresholds of each ET message, which is stated in the rule portion of the ET message.

NetView Alarms Capacities

Table 4-16 lists the capacities associated with the NetView Alarms feature. Refer to the book *CONVERSANT VIS NetView Alarms*, 585-350-810, for additional information.

Table 4-16. NetView Alarms Capacities

Item	Max. Number	Notes
Maximum number of OGAs accepted by the CLEO 3270 PC/XL circuit card, per second	1	The maintenance transmitter sends OGAs as soon as possible in a first-in/first-out order
Amount of time between status checks when host connection is lost	5	In minutes. Status checks are initiated by the maintenance transmitter
Amount of time required to resume sending OGAs once a connection is established	5	In minutes. Transmission is controlled by the maintenance transmitter
Number of OGAs the maintenance transmitter can spool during period of host disconnection	100	The oldest OGA in the spool will be discarded for every OGA over the first 100 received

Primary Rate Interface

This feature allows the CONVERSANT VIS to communicate directly with an AT&T switch using ISDN Primary Rate Interface (PRI). The ISDN PRI is a digital interface capable both of receiving and originating telephone calls directly to/from an AT&T 4ESS switch, 5ESS switch, System 75/System 85 PBX, DEFINITY G3i, or Phase1 or Phase2 Service Node Controller and ISDN Network Controller. Two different PRI capacities are supported by CONVERSANT VIS V4.0:

- 23 bearer channels plus 1 data channel (23B+D)
- 47 bearer channels plus 1 data channel (47B+D)

For the CONVERSANT VIS, PRI communication is generally limited to an interface with a central office 4ESS switch.

The D-channel cannot be used for call traffic or application service. It provides supervisory and acknowledgment messages between the switch and the VIS that control the state of the calls on all B-channels that are in service.

⇒ NOTE:

These feature does not allow a backup for the D-channel, thus, PRI efficiency may degrade as traffic congestion or other anomalies occur.

There are three different versions of the Primary Rate Interface feature that can be used with CONVERSANT VIS V4.0. The versions include:

- **Commercial PRI**

This version of PRI is generally available for any application that needs an ISDN/VIS interface. It gives the customer a controlled and limited ISDN PRI interface at the script level using the VIS script programming language.
- **Network PRI**

This version is similar to Commercial PRI in that it provides an ISDN/VIS interface at the script level by requiring that Commercial PRI be installed and operational. However, the Network PRI package itself provides additional flexible alerting capabilities which if misused, could lead to serious signaling errors or fraud. Because of this, it is only available to AT&T affiliates.
- **General PRI**

This version of PRI is a custom development platform for applications requiring more signaling information than is available with Commercial or Network PRI. General PRI includes expanded and full access to all relevant ISDN PRI signaling information, and provides a C language programming interface. General PRI is the most flexible version of PRI, but requires considerable development expertise. Due to the development expertise required, and the potential for signaling errors or fraud, General PRI is only available for AT&T affiliates.

Commercial PRI

Commercial PRI contains the following capabilities:

- Answer and disconnect supervision

Like the VIS T1 robbed-bit E&M digital interface, the PRI provides both answer and disconnect supervision. This allows the application to know precisely when a called party has answered an outbound call and when the party has disconnected.

- Calling party number identification

Applications that receive calls over the PRI are able to retrieve the calling party's telephone number (CPN). On a call-by-call basis, applications may request ANI or SID as the type of CPN to be delivered. This feature is compatible with PRI facilities that provide the billing number with all calls (subscribed ANI) and with those that require the VIS to request the billing number on a call-by-call basis (call-by-call ANI). For systems that are connected to call-by-call facilities, the specific application receiving the call can choose whether it wants to request the number as well as the type (ANI or SID) it wants.

- Dialed Number Information Service (DNIS)

Applications that receive calls over the PRI are able to receive the number the calling party dialed. Certain telephone services utilize different phone numbers that terminate at a single operations center or pool. This allows a call to be routed to the appropriate operator(s) or service based on the number dialed by the calling party.

- Call-by-call outbound service selection

When placing outbound calls, the application can specify the outbound service it wants to use. For example, a PRI facility can have more than one outbound network service available, such as software defined network (SDN) and nodal long-distance service. One VIS application may require SDN service while another requires nodal long-distance service. Each application can specify which service it wants to use to originate the call.

- Call-by-call inbound service query

When accepting incoming calls, applications can query for the service used to deliver the call. For example, a PRI facility may be able to accept calls from more than one inbound network service. This feature can be used to determine which service delivered the call.

- Redirecting number query

When accepting incoming calls, applications can retrieve the redirecting number. The redirecting number is the number that a caller originally dialed if it was intercepted by the network and redirected to the VIS.

To support Commercial PRI, one dedicated SP card (AYC2C type card) in addition to the SPs required for voice, and one or two T1 cards (the AYC3B or AYC11) must be installed. The first T1 card supports 23 voice channels. Two T1 cards support a total of 47 voice channels. In addition, the ISDN Primary Rate Interface software package must be installed and operational, regardless of platform.

For additional information on Commercial PRI, refer to the document *CONVERSANT VIS Primary Rate Interface*, 585-350-805.

Network PRI

Network PRI contains all of the functionality included with Commercial PRI, plus the additional enhancements listed below.

 **WARNING:**

When connected to the public switched telephone network, the transmission of audible signals or speech other than audible ringing, before answering a call is prohibited unless prior explanation and formal approval is given by AT&T.

- Flexible Alerting

This allows an application to select the type of audible signals a caller hears when making a call. Most applications use only audible ringing, but network applications can select a busy signal, no signal, or custom signal that allows the VIS to be used for sophisticated network applications. This last selection allows a CONVERSANT VIS to support applications that require speech or other tones, such as Special Information Tones (SITs) to be heard by the callers without the VIS answering the call.

To support Network PRI, one dedicated SP card (AYC2C type card) in addition to the SPs required for voice, and one or two T1 cards (the AYC3B or AYC11) must be installed. The first T1 card supports 23 voice channels. Two T1 cards support a total of 47 voice channels. In addition, both the ISDN Primary Rate Interface and the ISDN Network Primary Rate Interface software packages must be installed and operational.

General PRI

General PRI provides an application development environment that can support special signaling needs and information elements that are not supported by Commercial or Network PRI. Some of the unique features or differences with General PRI are listed below:

- Call establishment/disconnection is controlled by a custom C-application program that uses the General PRI application library (as opposed to scripts or Script Builder programs providing call control).
- Where applicable, scripts can be invoked (by soft seizure) after call establishment to control the dialogue with a caller.
- General PRI is only administered through command line programs and does not provide access through administrative screens.
- Allows the maintenance of second channel dependencies which are useful for applications that have incoming and corresponding outgoing channels.
- Supports up to 5 T1 circuit cards for a possible 119B+D channels.
- Slightly different administrative command defaults, different from Commercial PRI defaults, based upon the typical use of General PRI.
- Supports logging of errors detected by General PRI. Specifically, this allows reporting of the D-channel going out of service and reporting of a B-channel being blocked.

To support General PRI, one dedicated SP card (AYC2C type card) in addition to the SPs required for voice, and one to five T1 cards (the AYC3B or AYC11) must be installed. The first T1 card supports 23 voice channels. Two T1 cards support a total of 47 voice channels, and the use of more than two T1 circuit cards is dependent on the type of application. In addition, the General Purpose ISDN-PRI software package must be installed and operational, regardless of platform.

PRI Capacities

Table 4-17 lists the capacities associated with the Commercial Primary Rate Interface (PRI) feature. Refer to the *CONVERSANT VIS Primary Rate Interface*, 585-350-805, feature package book for additional information about this feature.

For capacities and limitations concerning Network PRI and General Purpose PRI, consult an AT&T CONVERSANT VIS sales representative.

Table 4-17. Primary Rate Interface (PRI) Capacities

Item	Max. Number	Notes
Number of supported data channels per system	1	Can use either 23 B+D or 47 B+D
Number of supported bearer channels per system	47	In 47 B+D configuration; more than 47 PRI channels is dependent on negotiations with AT&T
Number of SP circuit cards required to support PRI	1	Must be a dedicated AYC2C card

Remote Database Access

This feature allows a script developed with Script Builder to read and modify tables in multiple ORACLE databases that exist on remote machines connected to the VIS over a LAN via SQL*Net software. Script Builder access to these remote databases is supported for creating tables, modifying schema, and providing read/modify access during script development.

As more applications move to Structured Query Language (SQL) for database access, users need to access centralized SQL databases over a LAN. The ORACLE SQL*Net provides a tool for remote access of ORACLE SQL databases.

⇒ NOTE:

For the ORACLE and SQL databases to communicate with each other, both local and remote machines must have TCP/IP, SQL*NET, and either StarLAN or InterLan (Ethernet) connectivity. The following software packages must be used:

- AT&T Enhanced TCP/IP WIN/386 Interface, Release 3.0
 - SQL*NET TCP/IP V1.2 for ORACLE RDBMS 6.0.30
 - AT&T 386 Network Interface Release 2.0 (StarLAN)
- OR
- NP600A Network Processor Version 3.2 (InterLan)

Some of the uses of remote database access capability are described below:

- A large customer may require multiple VISs to provide the required number of channels. If this service requires data that must be updated periodically, such as train or airline schedules, it is easier to maintain the database if it is on a single computer.

The centralized system could be a VIS administered with the Script Builder package or with ORACLE tools, or it could be another type of computer. This type of use requires read-only access from the VISs.

- Other applications spread over multiple VIS units may require both read and update access to the other systems on the LAN.
- The CPU load and disk space associated with database activity and maintenance can be moved off of the VIS, thereby increasing the number of channels that can be served.
- The database can be moved to another system that supports a variety of interfaces not supported directly on a VIS for downloading the database from a host.

Remote Database Access Capacities

Table 4-18 lists the capacities associated with the Remote Database Access feature. Refer to the book *CONVERSANT VIS Version 4.0 Operations*, 585-350-703, as well as ORACLE documentation for additional information.

Table 4-18. Remote Database Access Capacities

Item	Max. Number	Notes
Number of individual databases accessible by a VIS	5	Four remote, one local

Script Builder

The CONVERSANT Script Builder feature is an optional software package designed to assist in the development of custom voice response applications on the VIS. It is a menu-driven, screen-oriented tool that can be used by a broad range of customers. It is targeted toward designers familiar with the specific application, who also have a knowledge of logical programming concepts. Specifically the designer should be familiar with high-level programming languages such as BASIC, COBOL, dBASE, and LOTUS 1-2-3. Although not required, it is helpful to have some basic knowledge of the C programming language and the UNIX operating system. A basic knowledge of telephony is also beneficial when working with the VIS and Script Builder.

The application developer uses Script Builder through its menu-oriented interface. By highlighting steps with cursor movements then pressing the **ENTER** key, the user builds the basic transaction flow. The user then further defines each action, records the appropriate speech phrases, and installs the application.

Script Builder divides each application into five components:

- Host interface

The host interface component allows the user to define the interaction with a host computer in a 3270 SNA/SDLC or bisynchronous data communications environment. The VIS can emulate a 3274 (-1C/51C) cluster controller. The application developer logs on to the host computer and captures screen images, then uniquely identifies the screens and fields on those screens that are needed during the transaction.

For those applications that require other data-communication protocols, custom software can be written. Script Builder can interface with this software through an external function. This allows a user to develop a large part of the transaction with the menu-driven tools, using custom software only for the host interaction.

- Database tables

This component allows the user to create databases, either on the VIS (local) or a remote system, using an industry standard database administration and management functionality. This means the user can define the database tables without learning another programming language. Local databases can be used as an alternative to retrieving information from external host computers. A typical application might use the local database capability for a table that contains interest rates for certificates of deposit, information on distributors or dealers for a dealer/locator service, etc.

- Parameters

This component is used to define the operating environment of the system and the application, such as hours of service, presence of a host computer, special considerations for holidays, etc.

- Speech administration

With this component, the speech prompts and phrases used in the application are recorded, digitized, and stored in the appropriate files. Speech can be input through the telephone, a microphone, or from a previously recorded audio tape.

- Transaction definition

This component allows the user to specify the flow of the transaction between the caller, the VIS, and the host computer, if one applies. The application is created by highlighting action steps, (such as "answer phone," "prompt & collect" for caller touch tone input, etc), pressing the **(ENTER)** key, then further defining each step.

An external functions option in the transaction definition step offers more experienced programmers the flexibility to insert more complex sections of script language or C language code. With this function, experienced programmers also can increase their productivity by using Script Builder for standard functions and writing custom code only when it is needed.

For applications in environments not suitable for Script Builder or for those customers who do not want to develop or modify applications themselves, application software can be developed by AT&T, voice processing co-marketers (VPCs), or other AT&T-approved sources.

With these five components, a Script Builder application can invoke the functionality of many other feature packages as the script is being executed. For example, a caller listening to a CONVERSANT script can invoke additional services or features, such as AUDIX Voice Power, while interacting with the CONVERSANT VIS script.

This feature requires that the Script Builder software package be installed and operational. The purchase of Script Builder software entitles the buyer to four hours of telephone consultation with AT&T or a VPC, as appropriate. These hours must be used in 30-minute minimum increments. Additional telephone consultation also is available for a fee through AT&T or the VPC.

For more information on this feature, please refer to the *CONVERSANT VIS Script Builder*, 585-350-704.

Script Builder Capacities

There are many subtle application capacities that provide limits or constraints while performing application development using Script Builder. These capacities are listed in Table 4-19. Capacities and constraints are also referenced in the *CONVERSANT VIS Script Builder User Guide*, 585-350-704 and the document *CONVERSANT VIS Version 4.0 Application Development*, 585-350-208.

Table 4-19. Script Builder Application-Related Capacities

Item	Max. Number	Notes
Characters in application name	11	
Characters in field names	24	
Applications on system	See note	Restricted only by disk space
Call data events per application	100	For numeric or 12-character fields
	50	For 7-character strings (phone numbers)
	33	For 8-character dates
	25	For 14-character credit card numbers
	14	For 24-character names
Transaction statements	1000	Action steps (for example, "Answer Phone", "Announce" only) recommended, not currently enforced in software
Script labels per application	2400	Label maximum per application
Length of comment line (characters)	50	
Arguments passed between external function and transaction	5	
Label name length (characters)	20	
Digits accepted for a prompt and collect action step	64	Either touch tones or spoken
Number of tries to collect in prompt and collect	9	
Initial time-out in prompt and collect	60 sec	
Interdigit time-out in prompt and collect	60 sec	
Cases of correct input within the non-standard checklist of a prompt and collect	12	

continued on next page

Table 4-19. Script Builder Application-Related Capacities — Continued

Item	Max. Number	Notes
Number of touch tones accepted for call transfer	16	Minimum is 1
Number of channels that can simultaneously use background feature	48	Refer to Chapter 9 of the <i>CONVERSANT VIS Script Builder</i> , 585-350-704, for additional information
Digits used in phone number of call bridge	24/16	Minimum is 1
Digits used in DNIS number passed from central office	16	Configured in switch administration screens; refer to the <i>CONVERSANT VIS Version 4.0 Operations</i> , 585-350-703
Arguments passed between applications using "Execute External Action"	10	
Data space available per channel using "Execute External Action"	552 bytes	Characters used in argument passing
External function names length	12	In characters
Simultaneous voice mail applications per system	12	
Message duration for Voice Mail messages	999	In seconds
Phrase length for coding messages	999	In seconds. If 0 is specified, coding continues indefinitely
Number of phrases coded per system	48,000	32,000 if using 386 CPU with 12 Mbytes of memory
Number of talkfiles coded and stored	256	
Initial time-out to detect speech during a code session	30	In seconds. Minimum is 0; default is 5
Completion time-out to detect silence during a code session	30	In seconds. Minimum is 0; default is 5

SCSI Disk Mirroring

This feature provides a method of configuring and managing a system so that one high-capacity, 1.2-Gbyte SCSI hard disk on the platform has an independent backup copy of its stored data kept on another identical hard disk drive. This improves system reliability by ensuring that operations and resources are not lost if the primary hard disk drive fails.

This feature is supported by all CONVERSANT VIS platforms that contain SCSI magnetic peripherals. All V4.0 platforms can be ordered to support SCSI peripherals, however, existing systems with ESDI or IDE drives must first be retrofitted with a Hardware Upgrade Kit that furnishes SCSI compatibility before this feature can be utilized.

This feature requires that the SCSI Mirroring Support Package V2.3 be installed and fully operational. In addition, the CONVERSANT hardware platform must contain two SCSI 1.2-Gbyte hard disk drives and all other related SCSI components.

The software provides tools and processes that support the following operations:

- Enabling or disabling of a mirrored disk assignment
- Deletion of a mirrored disk assignment
- Comparison of data on a mirrored disk pair
- Display of disk mirroring administration status

In the event of a mirrored disk failure, the VIS issues warning notices linked to the CONVERSANT VIS alarm log, but system operation continues on the hard disk which is still functional.

SCSI Disk Mirroring Capacities

Table 4-20 lists the capacities associated with the SCSI Disk Mirroring feature. Refer to the book *CONVERSANT VIS SCSI Mirroring*, 585-350-204, for additional information.

Table 4-20. SCSI Disk Mirroring Capacities

Item	Max. Number	Notes
Amount of data mirrored	1.2 Gbyte	Full disk size is available for mirroring

Speech Collection Toolkit

This feature provides a toolkit consisting of a separately installable software package, documentation, and personal support by AT&T Bell Laboratories to support the collection of speech samples by authorized AT&T affiliates. This allows someone using this tool to perform custom speech recognition (SR) model building for the particular data that was collected. This data is also forwarded and archived at AT&T for future speech model building. This data collection and development is key for producing new WholeWord SR vocabularies.

WholeWord SR vocabulary development requires a large number of speech samples for each utterance or word to be recognized. This toolkit provides the proper method of speech sample collection so that expanded vocabularies can be developed. Because of the need for extremely uniform and accurate sample taking, this feature is only provided to certain development partner affiliates who agree to collect speech samples to further enhance their WholeWord SR accuracy. As stated earlier, all speech samples collected by each affiliate is also forwarded to AT&T in order to further refine existing WholeWord SR software packages.

During the CONVERSANT VIS V4.0 timeframe, this offering will provide a greater functionality towards applications or CONVERSANT VIS platforms that support international languages. Custom vocabularies are available using FlexWord Speech Recognition techniques very quickly and at an economical price. FlexWord SR, however, does not support international languages. WholeWord SR supports U.K. English, Canadian French, and Mexican Spanish languages with a standard vocabulary set. Although this vocabulary set has been already created using thousands of speech samples in each language, recognition accuracy may still increase if this tool is used to capture regional dialects or accents that are prevalent in a particular calling population.

This tool may also be used to create custom vocabulary sets outside of the “zero” through “nine”, “yes”, “no”, and “oh” list of words that are included in the standard vocabulary set. Custom vocabulary creation using this toolkit, however, is still time consuming and more costly to develop than a FlexWord vocabulary.

This feature is a product of AT&T Development, and provides limited functionality to anyone outside of the AT&T Development community. Because of its intended use, it is not thoroughly discussed in other CONVERSANT VIS V4.0 documentation. It is listed here, however, to reflect all offerings available with CONVERSANT VIS V4.0.

Speech Production Kit

This feature package provides a hardware interface to older CONVERSANT VIS Tip/Ring circuit cards for speech recording and storage through the use of a microphone and/or recording and playback equipment, instead of through a telephone handset.

The older IVP4 and IVP6 circuit cards only support modular telephone input connectors. This means that recording speech with a system equipped with older T/R circuit cards must occur through a telephone that has been used to dial the VIS through a particular T/R port for the purpose of speech recording. New IVP4 and IVP6 circuit cards contain built-in audio jack connectors to eliminate this inefficiency.

The unit accepts audio through an audio jack from a tape recording system or microphone, and feeds it to the CONVERSANT VIS through a modular telephone connection terminating at a single port on an older IVP4 or IVP6 Tip/Ring circuit card (AYC6 or AYC5, respectively). This direct connection results in a much cleaner recording than if the sound had traveled through air and an inefficient telephone handset before being digitized and stored in memory.

This feature can be used with the Graphical Speech Editor or Script Builder Software packages. Connectivity of this feature is shown in Figure 4-7.

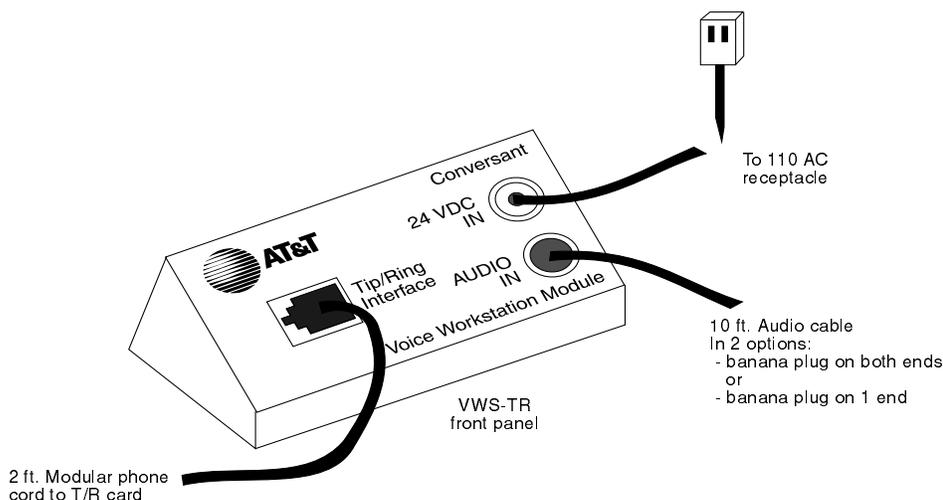


Figure 4-7. Speech Production Kit

Speech Production Kit Capacities

No strict maximum capacities are associated with the Speech Production Kit. Refer one of the three hardware installation guides, or the *CONVERSANT VIS Version 4.0 Graphical Speech Editor*, 585-350-705, or *CONVERSANT VIS Script Builder* 585-350-704, for additional information about the installation and use of this feature.

Speech Recognition

Speech Recognition (SR) is a CONVERSANT VIS capability that allows the VIS to recognize and respond to spoken voice responses from the caller. Certain applications require minimal or no touch tone input for a number of reasons, which could include the fact that the caller does not have access to DTMF facilities (they are using a rotary dialed phone) or would rather utilize a more simple method of data input.

An SR transaction begins when a caller is connected to a VIS. The VIS answers the incoming call with a greeting, questions the caller with a "prompt," then "collects" information from the caller. The VIS then directs or responds to the caller based on this "prompt and collect" action and the caller's basic request. In any SR application, the caller can have the option of entering the information with touch tones, instead of voice, based on how the application is constructed. All SR applications can be written to accommodate touch tone requests.

Speech recognition and its functionality centers upon the vocabulary of words to be recognized. Some applications require simple, spoken digits, such as "one," "two," "three," etc., or short "yes" and "no" responses. Other applications, such as a name dialer, which allows someone to speak the name of a person that they wish to telephone, instead of physically dialing the person's extension, uses different word recognition techniques.

Because of the differences in SR applications, there are two distinct methods of providing this feature, which are:

- **WholeWord Speech Recognition**

WholeWord SR provides a "whole word" method of recognition by comparing an entire spoken word with a statistical model of the same word spoken by thousands of different people. WholeWord SR is available with two vocabulary packages, Standard, and Custom.

The standard vocabulary package includes simple words that are frequently used in transactions. These words include the digits "zero" through "nine," "yes," "no," and "oh." This standard vocabulary is available in American English, as well as other international languages.

The custom vocabulary package is, as the name implies, custom. If special words such as "checking," "savings," etc. need to be recognized, AT&T can develop the software to recognize those requested words by collecting speech samples of those requested words, and creating statistical models of each word.

Although WholeWord SR vocabularies are more expensive than FlexWord vocabularies (FlexWord is described on the following page), the recognition accuracy for WholeWord can be nearly 100% for single word recognition. If recognition accuracy is extremely important, and a custom vocabulary is needed, WholeWord Custom SR may be more beneficial than a custom made FlexWord wordlist.

- FlexWord Speech Recognition.

FlexWord SR provides a different method of constructing and recognizing American English speech vocabularies. Using sub-word speech recognition technology, the FlexWord SR package relies on phonemic recognition. The English language is made of approximately 40 phonemes. These phonemes are blocks of sound which, when strung together in particular orders, form recognizable words. The word "one," for example, consists of three phonemes: "w-uh-n." The FlexWord SR package operates on this principle so that custom vocabularies can be created much more easily and cheaper than if done with WholeWord technologies. As implied above, FlexWord SR only supports American English.

WholeWord Speech Recognition Functionality

WholeWord SR, as the name implies, relies on VIS software to recognize the entire spoken word as a single logical unit. To accomplish this, the WholeWord SR software for each word is built upon extensive samples of speakers each saying the word until a statistical "average" of the speech samples can be determined. The data collection for this method is very costly and time intensive, and is usually practical for a limited, generic vocabulary such as the digit set. In other special cases, custom WholeWord vocabularies can be created for specific applications that require unique word recognition, although these custom vocabularies are quite expensive.

The WholeWord Speech Recognition feature provides the following functionality:

- Standard vocabulary

The standard speech recognition vocabulary offers the following words: "zero," "one," "two," "three," "four," "five," "six," "seven," "eight," "nine," "yes," "no," and "oh" (for zero).

- International Support

WholeWord SR provides standard vocabulary support for certain international languages as well as North American English. The international packages currently available are:

- U.K. English

- Canadian French
- Mexican Spanish

- **Speaker independence**

During speech recognition, a person's voice is compared to a set of pre-developed speech models. These models are constructed from thousands of speech samples so that callers speaking each particular language are recognized. Regional accents and dialects associated with a particular language is incorporated into each model, as well as a mix of male and female speakers.

- **Key word spotting**

The WholeWord SR standard vocabulary package can recognize or spot a key word within a spoken phrase. The system filters out extraneous speech or noises (such as a cough) during recognition. This means that the caller's input is not limited to the words in the VIS vocabulary. For example, in the phrase "Uh, yes please," the vocabulary word "yes" is recognized, if the standard vocabulary is being used by the VIS.

- **Garbage Rejection**

The WholeWord SR package can be programmed to alert and re-prompt the caller if the spoken response was not recognized by the VIS. For example, if the prompt stated "Please respond with "yes" or "no"," and the caller said the word "yellow," the VIS could inform the caller that their response was invalid and could replay the prompt "Please respond with "yes" or "no"."

- **Recognition Confirmation**

This is the ability of the VIS to repeat the caller's spoken response back to the customer for confirmation purposes. For example, a script prompts a caller to "Please say your Area Code," and the caller says "Six, One, Four." A VIS performing Recognition Confirmation would then announce to the caller "You said 'six,' 'one,' 'four.' If this is correct, say 'yes' if not say 'No'." The caller could then confirm whether the system recognized the spoken input properly.

- **Prompt interrupt**

Prompt interrupt allows callers to respond to a prompt before that prompt is completed. For example, callers may speak a menu choice number immediately after hearing the selection they want or at any time during the prompt without waiting for the prompt to be completed. This feature, also known as "barge-in," may be turned on or off by the application developer for each prompt in the application.

- **Dual tone multifrequency (DTMF) support**

Even with speech recognition installed, callers still have the option to respond to prompts with touch tones rather than speaking.

- Custom vocabulary

A custom vocabulary can be created by AT&T on a per-customer basis in order to supply an application with speech recognition software for particular words not included in the standard package. This custom vocabulary is available in North American English only.

WholeWord SR Standard Vocabulary Capabilities

The WholeWord SR package using a Standard Vocabulary provides the following capabilities.

- Bilingual Speech Recognition Capabilities

Two different WholeWord SR language packages can be loaded and operational on a single VIS simultaneously. This allows a caller to respond in one of two languages, and is intended for calling populations in international or ethnically diverse areas.

- Connected digit recognition

The WholeWord SR standard vocabulary package can recognize connected strings of digits, 1 to 24 characters in length, with a linear accuracy degradation as the number of digits increase.

It is suggested that connected digit strings of 10 or less be used for the greatest accuracy, and accuracy deficiencies be taken into consideration when planning digit string SR of more than 10 digits.

Using American English, a caller can speak, in a normal voice and rate, a continuous string of up to 24 digits per single VIS prompt. If using any of the foreign language packages, the caller is prompted for each digit of a string individually, and the system software assembles the individually spoken digits as a complete string at the end of the prompt and collect operation.

The following list shows the correlation between recognition accuracy and connected digit string length. A 3% accuracy degradation occurs for each additional digit required to be interpreted. Further extrapolation can reveal accuracies for more than 5 digits.

- 1 digit = 97%
- 2 digits = 94%
- 3 digits = 91%
- 4 digits = 88%
- 5 digits = 85%

With any language, this function is application dependent, although recognition accuracy improves significantly if a fixed length string less than 10 digits in length is used.

- Recognition type

Recognition types allow an application developer to indicate which key word or words are possible selections for each prompt. The recognition type determines to which word models the incoming speech is compared. "Keyword" recognition types are used for isolated word recognition, that is, responses of a single word or digit. The keyword recognition types provided in Version 4.0 are:

- 1-3
- 1-3 and "no"
- 1-5
- 1-5 and "no"
- 0-9
- "yes" and "no"

"Connected-word" recognition types are used for connected-word recognition, that is, responses of more than one word or a digit string. The connected word recognition type provided in Version 4.0 is 0-9 and "oh" with maximum 24-digit string.

WholeWord SR Custom Vocabulary Capabilities

WholeWord SR Custom Vocabulary capabilities provide options not available with the purchase of the WholeWord SR Standard Vocabulary package. Custom WholeWord Speech Recognition is beneficial to a few select customers who have unique application requirements. Anyone interested in this form of Speech Recognition is encouraged to perform further application analysis and consultation about application design and human factors before purchasing this package.

- Custom vocabulary

Custom vocabulary words are developed on a per-customer basis by AT&T for use in unique word recognition situations. As an example, a custom vocabulary application can be created for a bank that allows callers to respond to a prompt with keywords "checking" or "savings" to hear account balances. Speech data is collected for the words "checking" and "savings" by AT&T, and models of the new vocabulary words are created. With the custom vocabulary, the application could prompt, "Please say "checking" to hear your checking account balance, or "savings" to hear your savings account balance." Because word spotting and prompt interrupt work with custom vocabularies, the caller response, "Checking balance, please" is recognized correctly as "checking." A custom vocabulary requires application analysis by AT&T, speech data collection, model creation, and also custom grammar work.

 **NOTE:**

Based on the application, development of custom vocabulary words can be very costly. Its development requires gathering large amounts of speech data to analyze, thus causing considerable expense. FlexWord SR is a very cost effective method of creating custom vocabularies.

- **Custom Recognition Types**

Certain digit strings and custom vocabulary words require custom recognition types for acceptable recognition accuracy. Examples of digit strings requiring a custom recognition type include a credit card number, a merchant number, and a 10-digit telephone number. These digit strings have specific limitations on the position of certain digits within the string (for example, a telephone area code requires a number 2 through 9 for the first digit, 0 or 1 for the second digit, and 1 through 9 for the third digit). Custom recognition types help limit the recognition possibilities for the SP. This results in better accuracy. Up to 20 recognition types can fit on one SP card.

- **Custom DIPs**

Enhanced speech recognition can be achieved through the use of a data interface process (DIP). DIPs usually work based on knowledge that is unavailable to the SP card. Certain digit strings, such as credit card numbers, have check digits built into them. Verifying a check digit is done most efficiently through a DIP, which is written in the C programming language. DIPs may also be used in conjunction with a custom grammar, for example, to help select a variable-length digit string. Several different recognition types can use the same grammar but have different DIPs.

WholeWord SR Custom Vocabulary Limitations

WholeWord SR Custom Vocabulary has a few limitations that may warrant the use of another form of SR based on the needs of the application and customer.

- **Lack of International Support**

Custom vocabularies cannot be created for international languages. The only language supported is American English.

- **Expense in Creating Custom Vocabularies**

Custom WholeWord vocabularies are extremely expensive and time consuming to create. A customer should weigh the benefits of WholeWord accuracy against the cost effectiveness of FlexWord vocabularies before purchasing one or the other. FlexWord Speech Recognition is explained below.

FlexWord Speech Recognition

FlexWord SR provides a different method of constructing and recognizing speech vocabularies than WholeWord does. Using sub-word speech recognition technology, the FlexWord SR package relies on phonemic recognition. The English language is made of approximately 40 phonemes. These phonemes are blocks of sound which, when strung together in particular orders, form recognizable words. The word "one," for example, consists of three phonemes: "w-uh-n." The FlexWord SR package operates on this principle so that custom vocabularies can be created much more easily and cheaper than if done with WholeWord technologies.

FlexWord vocabularies are produced on a per-customer basis like WholeWord Custom Vocabularies. Because FlexWord vocabularies are much easier and less time consuming to construct, it provides customers with a cost-effective method of designing large, customized vocabularies.

This software package requires that the FlexWord Speech Recognition software package, as well as at least one dedicated SP circuit card and one CMP circuit card be installed and operational on the VIS.

FlexWord SR Capabilities

The FlexWord SR package contains the following capabilities:

- **Economical Custom Vocabularies**

FlexWord supports fast, low cost delivery of speech recognition vocabularies on a custom basis, to support unique or volatile applications such as name dialing, menu selection by words, command words, and entry of client and department names.

- **Extended Vocabularies**

A FlexWord vocabulary can contain up to 100 wordlists, and each can contain up to 200 words. A word may be used in more than one word list, but each use counts against an absolute vocabulary limit of 200 unique words. Each prompt in a FlexWord script requires a wordlist, which is a list of valid words that the caller could respond with. For a simplified example, if the script played a prompt that said "Would you like information on your checking account or savings account?", a wordlist containing the entries "checking" and "savings" would be needed.

FlexWord SR Limitations

The FlexWord SR package contains the following limitations. While they are not product flaws, they are simply features that this speech recognition method cannot support. Hints as to how to overcome these limitations are given under each entry.

- Keyword Spotting is not supported.

The VIS will attempt to match all sounds made by the caller during a response time to a single word on the FlexWord wordlist. For example, a prompt is written to recognize a color, and the word to be recognized is "yellow." If the caller responds with "I would like Yellow please," the VIS tries to match the entire phrase instead of isolating the word yellow.

Creative prompting can help eliminate this limitation. For example, if the prompt mentioned above explicitly states "Please select a color. Say the word 'yellow,' 'blue,' or 'green,'" the caller has much less opportunity to speak an incorrect response.

- Barge in is not supported

The ability of a caller to immediately speak their response before the menu or system prompts are finished is not allowed. A caller must wait until the system is completely finished prompting for information before each entry is spoken.

Again, creative prompting can help eliminate this limitation too. A prompt of "Please say color 'yellow,' 'blue,' or 'green' now." can help indicate to the caller when their response is valid.

- Garbage Rejection is not available

The ability of the VIS to recognize that a caller's response is not an entry in the corresponding application wordlist is not supported. This means that if the prompt stated "Please say the color 'yellow,' 'blue,' or 'green' now." and the caller said "firetruck," the VIS would match the word "firetruck" to the closest match it can find on the wordlist.

To combat this shortcoming, an application can be written to provide recognition confirmation as explained previously. Upon a caller speaking their response to the prompt, the VIS can reply with the word that it thought was spoken. For example:

- VIS Prompt: "Please say the color 'yellow,' 'blue,' or 'green' now."
- Caller Response: "Firetruck."
- VIS Prompt: "You said 'yellow.' If this is incorrect, say 'no'."
- Caller Response: "No."
- VIS Prompt: "Please say the color 'yellow,' 'blue,' or 'green' now."

Speech Recognition Accuracy

Given the variance in speech input and the statistical properties of recognition algorithms, any speech recognizer will make occasional errors. However, speech recognition accuracy depends not only on the recognizer algorithms, but also on the models, recognition types, DIPs, prompts, calling population, and the data to be recognized. Each of these underlying factors can impact recognition accuracy.

Some comments can be made about accuracy of the recognized data alone, since the data affects accuracy the most. For the Speech Recognition feature, accuracy varies based upon the recognition method and application in the following order, with the first list item giving the highest accuracy, the second item giving the next best accuracy, and so on.

1. WholeWord American English Isolated Word
2. WholeWord International Isolated Word
3. WholeWord Connected Word
4. FlexWord Isolated Word

For a WholeWord string of digits, the per-digit accuracy is comparable to isolated word recognition. However, the accuracy of the whole string is lower than the per-digit accuracy, and steadily decreases as more digits are added. It is recommended that digit strings be limited to 10 digits or less to achieve optimum accuracy.

WholeWord Speech Recognition Accuracy

The following items have a positive impact on recognition accuracy of WholeWord Speech Recognition:

- Keyword recognition type usage. Single-word recognition accuracy is nearly 100% using WholeWord SR. Key word spotting allows WholeWord SR to disregard extraneous speech and determine if the keyword to be identified was indeed spoken.
- Confirmation. Accuracy is greatly enhanced if the VIS script is written to repeat the word that it believes the speaker has said, and give the caller a yes/no choice to confirm that the correct word was recognized.
- Fixed length digit string. If a fixed number of digits is expected, the recognition accuracy improves. For example, a telephone number can be either 10 or seven digits; if a 10-digit phone number is required, the accuracy will be higher than if either seven or 10 digits can be accepted.
- Reprompt. If the keyword is not spoken, and the VIS does not misinterpret extraneous words for the keyword, the system can reprompt the caller. If the accuracy measurement is based on a WholeWord application with confirmation and reprompt step, the accuracy will increase.

- Informative prompts. Lengthy prompts that provide detailed instructions on how to respond may improve accuracy, but are generally unacceptable from an application perspective, unless the application has infrequent users. Users who only use interact with VIS prompts infrequently (for example, once or twice a year) are more willing to listen to a lengthy prompt.
- Experienced calling population. In an application where the calling population is closed and the callers become experienced or have been trained, recognition accuracy improves.
- Custom recognition types and DIPs. Custom recognition types improve the SP's ability to score the candidates by selectively limiting the recognition possibilities. Custom DIPs receive the list of scores returned from the recognizer and further process them with information unavailable to the SP.

The following items have negative impacts on recognition accuracy:

- Information type. Recognition of data that is normally not spoken in digits 0-9 will adversely affect accuracy. For example, dollar amounts and days of the month are usually not spoken in digit form 0-9. To speak the date December 15, the caller would be required to say "1-2-1-5."
- Strong regional or national accents or dialects. Although WholeWord SR is based on thousands of speech samples per word, and FlexWord SR is based on the most basic building blocks of spoken words, strong accents or dialects can be misinterpreted by the VIS in some instances.
- Connected digit-string length. Recognition works best for short digit strings (less than five digits). With each additional number in a string, the overall accuracy falls slightly. To improve accuracy for longer digit strings, the string could be broken up into logical units, such as the area code and seven-digit phone number.
- Environment. A very noisy environment, such as an airport or train station, can cause recognition accuracy problems. In certain cases, speech data can be collected to build custom word models based on the noisy environment to improve recognition accuracy.
- Extraneous words within response. Extra words spoken alongside the keyword can sometimes lead to misinterpretation by the VIS if they have the same characteristics as the keyword.

FlexWord Speech Recognition Accuracy

The following items have a positive impact on recognition accuracy of FlexWord Speech Recognition:

- Informative prompts. Lengthy prompts that provide detailed instructions on how to respond may improve accuracy, but are generally unacceptable from an application perspective unless the script receives infrequent users.
- Experienced calling population. In an application where the calling population is closed and the callers become experienced or have been trained, recognition accuracy improves.
- Wordlist Choices. Recognition of data that can be expressed in different forms will adversely affect recognition accuracy if all of the forms that callers are used to are not included on the list. For example, an accurate, easy to use namedialer wordlist should include each person's slang or nickname as well as their full name as wordlist entries. If the namedialer wordlist has a single entry for "Charles Smith," but everyone knows him as "Chuck Smith," there are good chances that incorrect wordlist selection will occur. To limit the size of a wordlist, an explicitly informative prompt can help take care of this problem.

The following items have a negative impact on recognition accuracy of FlexWord Speech Recognition:

- FlexWord SR does not support key word spotting. The VIS will match the entire content of the callers response to closest single word representation on the wordlist. Because of this, a caller that responds with extraneous speech, or a word that is not part of the prompt selection and wordlist will not receive high recognition accuracy. Again, explicitly informative prompts can help take care of this problem.

For example, if a VIS using FlexWord SR prompts the caller with "Would you like checking or savings?", and the caller responds with "I'd, um, like checking" the system will select the wordlist entry that matches the entire speech pattern of the callers input, and might not select "checking" as the customer wanted. As another example, if a VIS using FlexWord SR prompts the caller with "Would you like checking or savings?", and the caller responds with the word "Mortgage," the system will select the wordlist entry that most closely matches the word "mortgage," even if the caller did not want checking or savings information.

- Strong regional or national accents or dialects. Although WholeWord SR is based on thousands of speech samples per word, and FlexWord SR is based on the most basic building blocks of spoken words, strong accents or dialects can be misinterpreted by the VIS in some instances.
- Environment. A very noisy environment, such as an airport or train station, can cause recognition accuracy problems.

- Barge In. If a caller barges in, it will affect accuracy. Using prompts to help direct a caller when to respond will improve the SR accuracy in these cases.

Factors Affecting Speech Recognition Performance

It is important to understand that there are limitations to the performance of the Speech Recognition feature. If the VIS is under-engineered for a particular application, it will not perform to the system administrator's satisfaction. The capability of the VIS and Speech Recognition is application dependent. Several factors can affect the number of channels available for speech recognition. These factors can be related to a particular application. There are also system factors that relate to all applications.

Application-related factors that affect the number of supported SR channels include:

- The percentage of time spent recognizing speech input, for example, how much speech data must be gathered during the application script.
- The percentage of callers who use touch tone input - touch tone entries require far less hardware and software resources to process.
- The number of simultaneous speech recognition calls expected
- Using the barge in or Recognize During Prompt feature with WholeWord SR - using barge-in increases the amount of hardware and software resources to process each transaction.
- Using custom recognition types, DIPS, or vocabularies

System-related speech recognition factors include:

- Using speech coding (Voice Capture)
- Using call event tracking excessively (more than 40 events stored)
- Reading large (more than 50 records) database tables that are not indexed
- Excessive reading and writing to database tables (see the "Local Database Environment" chapter of the *CONVERSANT VIS Version 4.0 Operations*, 585-350-703)
- Sending and receiving many host screens
- Expected simultaneous call volume
- Requesting ORACLE reports during peak call periods

Speech Recognition Capacities

Table 4-21 lists the capacities for the Whole Word version of Speech Recognition, and Table 4-22 lists the capacities for the FlexWord version of Speech Recognition. Refer to the documents *CONVERSANT VIS WholeWord Speech Recognition*, 585-350-813, or *CONVERSANT VIS FlexWord Speech Recognition*, 585-350-814, for additional information.

Table 4-21. WholeWord Speech Recognition Capacities

Item	Max. Number	Notes
Standard vocabulary words	13	Numbers 0 - 9, "yes," "no," and "oh"
Supported languages	2	Two language packages can be in use simultaneously, using American English, U.K. English, Canadian French or Mexican Spanish
Channels of simultaneous speech recognition	48	Number of supported channels is application-dependent and limited by the hardware configuration; T1 or LST1 VIS interfaces can support up to 48 channels of SR, although Tip/Ring interfaces can only support 24
Channels of simultaneous speech recognition per CMP card	6	Number of supported channels is application and configuration dependent
Connected Digits recognized	24 max (See note)	Application dependent; recognition accuracy improves significantly if fixed length is used; accuracy = $.97^N$, where N = no. of connected digits
Custom recognition types per SP	20 (See note)	Application dependent
Custom vocabulary words per SP	(See note)	Application dependent on quality of the model; better models have more mixtures of speech which result in better accuracy
Number of words in a wordlist	200	
Number of wordlists	100	
Number of words across all wordlists	2000	

continued on next page

Table 4-21. WholeWord Speech Recognition Capacities — *Continued*

Item	Max. Number	Notes
Channels of simultaneous SR	48	Number of supported channels is application dependent and limited by the hardware configuration. T1 or LST1 VIS interfaces can support up to 48 channels of SR, although Tip/Ring interfaces can only support 24
Channels of simultaneous SR per CMP	4	Number of supported channels is application and configuration dependent
Supported languages	1	American English only

Table 4-22. FlexWord Speech Recognition Capacities

Item	Max. Number	Notes
Number of words in a wordlist	200	
Number of wordlists	100	
Number of words across all wordlists	2000	
Channels of simultaneous SR	48	Number of supported channels is application dependent and limited by the hardware configuration. T1 or LST1 VIS interfaces can support up to 48 channels of SR, although Tip/Ring interfaces can only support 24
Channels of simultaneous SR per CMP	4	Number of supported channels is application and configuration dependent
Supported languages	1	American English only

Text-to-Speech (TTS)

The Text-to-Speech (TTS) feature allows an application to play speech directly from ASCII text by converting that text to synthesized speech. The text can be used for prompts or for text retrieved from a database or host, and can be spoken in an application with synthesized speech. TTS application development is supported through the Script Builder software package.

TTS is an alternative to using prerecorded phrases for voice response. It can be essential in some applications that must speak dynamic text (for example, names and addresses) and that have large speakable text (for example, electronic news). Without TTS, these types of applications can require many hours of recording and much disk space. These applications can also use TTS for static text for consistency.

The TTS technology constructs speech by concatenating chunks of speech already recorded. When constructing speech, parameters such as pitch and duration are adjusted to make the outcome sound natural. In addition, the ASCII text is preprocessed to expand abbreviations. For example, "Dr." could be expanded to "doctor" or "drive," depending on the context)

This feature requires that the Text-to-Speech software package, as well as an 8-Mbyte Signal Processor (SP) card, the AYC9, be installed and operational. Each AYC9 provides a maximum of six channels of simultaneous TTS. This SP is fully compatible with the standard SP card (AYC3C). An AYC9 used for TTS must be dedicated to that function; it is not possible to share an AYC9 between TTS and any other function such as speech playback or recognition.

TTS Capacities

Table 4-23 lists the capacities for the Text-to-Speech (TTS) feature. Refer to the *CONVERSANT VIS Text-to-Speech*, 585-350-807, feature package book for additional information.

Table 4-23. Text -to-Speech Capacities

Item	Max. Number	Notes
Number of concurrent instances of TTS on one dedicated AYC9 SP card	6	An error is generated if a script attempts to use TTS and the maximum number of TTS channels are being used; An attempt is made every 2 seconds to access an SP resource

3270 Synchronous Host Communications Interface

The base CONVERSANT VIS supports single or dual 3270 synchronous communication links that can provide up to 64 logical units (LUs) of communication between the VIS and other synchronous computing entities. This synchronous interface can be used to access remote host computers and databases. An application script that needs specific information to process an incoming call will often need to access a database that contains the information. Each LU provides a standard emulated 3270 terminal interface. The CONVERSANT VIS user interface allows customers to set parameters such as link protocols, LU assignments per link, transfer identification (XID), and line mode, among others, to control the operation and presentation of the emulated 3270 interface.

The single or dual 3270 interface feature makes it possible to connect the VIS to one or two host computers. The customer can connect a VIS to two separate front-end processors (FEPs) or to a single FEP shared by one or more host computers. Each physical link supports a maximum of 32 LUs.

This feature requires the following software to be installed and operational:

- 3270 Host Communications Package Driver Installation
- 3270 Host Communications Package Protocol Program and Files
- 3270 Host Communications Package FTS Installation Program and Files

This feature supports 4.8-Kbps, 9.6-Kbps, and 56-Kbps transmission speeds, using both SDLC or BISYNC signaling protocols. Users can choose to run SDLC on one, and BISYNC on the other simultaneously, through use of the User Interface Menus.

The feature requires one or two PC/XL circuit cards, each requiring a modem or modem eliminator, and the appropriate cabling (RS-232 or 56-kbps Modular). The use of a modem or modem eliminator depends upon the vicinity of the host processor and the speed of communication desired. For 56-Kbps, an RS-232 to V.35 interface convertor must be included to provide connections. This connection cannot be achieved through cable modifications only.

This feature provides basic file transfer capabilities, that include the following:

- Procedures for modifying application-dependent features of the file-transfer capability in a way transparent to the software.
- The ability to establish and maintain an LU-to-LU session between the VIS and IBM mainframe through a dedicated LU.
- Sending files from the VIS to a specified destination on the IBM mainframe when available and/or on demand.
- Requesting files from the IBM mainframe at configurable times.

- Executing batch files and sending the output to the IBM mainframe.

These capabilities provide remote OA&M capabilities over an existing SNA link. The customer can develop methods to integrate the VIS OA&M with network management procedures provided by the host, such as NetView. Additional file transfer capabilities can be obtained with the "Enhanced File Transfer" feature package.

3270 Synchronous Host Communications Interface Capacities

Table 4-24 lists the capacities associated with defining the host interface. For more information on this feature, and other features that utilize 3270 Synchronous Host Communications, please refer to the document *CONVERSANT VIS Host Interface*, 585-350-815.

Table 4-24. Host Interface Capacities

Item	Maximum Number	Notes
Host screen initial time-out	300 sec	Amount of time to wait for any screen to arrive from host (10 is recommended; default is 60)
LU availability time-out	300 sec	Time to wait for LU to become available while phone rings before answering
Unrecognized screen time-out	300 sec	Time to wait for valid screens to become available after GET_HOST (returns invalid screen)
Number of LUs	64	Requires two 3270 cards
Logins/passwords for host interface	64	Must have same amount as LUs specified
Number of shared host applications	8	Multiple applications sharing same host application
Host screen identifier length in characters when defining host screens	128	
Field Length in characters when used in host screens	128	
Data passed per host screen in bytes	988 - X	X = No. of fields defined (application dependent); define a second screen if additional bytes required

Overview

The CONVERSANT VIS connects to the public switched (telephone) network to communicate with external callers, and in some VIS applications, private data networks in order to access host computer databases for information on certain calls. This chapter provides examples of communications, connectivity, and typical cabling arrangements for the following CONVERSANT VIS V4.0 communications:

- Public Switched Network Interface
 - Analog Communications
 - Digital Communications
- Private Data Network Interfaces
 - Asynchronous Communications
 - Synchronous Communications

Figures throughout this section detail the connectivity between the z CONVERSANT VIS and communications networks with various combinations of hardware and cabling. The illustrations are included to provide examples of how a communications between the VIS and an external network are established, and are not the only method(s) of gaining connectivity to an external network. Actual network cabling varies on a site-by-site basis, and the cabling techniques used in each installation are the responsibility of the system administrator or installation technician.

 **NOTE:**

Each connectivity figure contains coded connector and cable illustrations for commonly used items. A comprehensive list of these items is included at the end of this chapter.

Public Switched Network Interface

This section describes the CONVERSANT VIS interfaces to the public switched network, with either an analog Tip/Ring connection or a digital T1 interface to the public switched network. It also describes switch integration connections, such as ASAI connectivity with analog and digital links. This is included outside of the Analog and Digital headings, because such interfaces can utilize both types of connections.

Analog Communications

In its analog configuration, the VIS provides nearly universal connectivity to existing private branch exchange (PBX) and automatic call distribution (ACD) premise equipment. It also allows standard interfaces to Centrex service offered by the domestic Local Exchange Carriers (LECs) and Public Switched Telephone Networks (PSTNs) maintained by countries outside of the U.S.

The analog interface is an analog (loop-start) circuit card (commonly called a tip/ring, or T/R card), with multiple 2-wire interfaces to the PBX, ACD, central office (CO), or foreign PSTN services. In addition to providing a physical network interface, the T/R circuit card provides speech encoding and playback, dual tone multifrequency (DTMF) recognition, call supervision, and intraswitch call classification for intelligent transfers.

To make the CONVERSANT VIS compatible with a variety of domestic PBXs or ACDs (including the AT&T DEFINITY Communications Systems Generic 1, 2, and 3*, System 85, System 75, System 25, Dimension 2000, etc.), the system has the following base analog telephony features:

- Although the VIS uses the functions of the PBX or ACD (or Centrex service) to perform switch hook flash transfer of calls, it has the intelligence to determine if the extension to which the call was transferred is busy or there is no answer and thus determine if an alternative message or action should occur.
- In addition to switch hook flash, the system supports transfer with a bridge connection through the VIS. This bridging can be done with both digital and analog connections (see the discussion of digital connections later in this chapter).

The analog line capabilities supported by call bridge are listed in Table 5-1.

- Far-end caller disconnect detection through "wink signal" detection or an alternative time-out with dial tone detection allows the VIS to know when a caller hangs up. With this capability the VIS rarely transfers a "ghost" call.

⇒ NOTE:

These features must also be supported by the PBX or ACD. AT&T DEFINITY Communications Systems Generic 1, 2, and 3i, 3r, System 85, System 75, System 25, and Dimension 2000 provide the signaling needed to notify the VIS of far-end caller disconnect. Other PBX systems may not.

- Outdialing for call transfer can be done with either touch tone or pulse.
- With custom software, the VIS can be programmed to transfer calls using dial access codes (rather than switch hook flash) to support PBXs that use this method of call transfer.

Trainable dial tone, software-settable switch hook flash duration, and wink signal duration also add to the VIS flexibility.

In addition to domestic telephony interfaces, the CONVERSANT VIS is capable of interface with foreign PSTN switches by using an analog switch package that allows the VIS to tune particular communication parameters that are different than those in domestic switches.

Analog Connections to a 4ESS

Analog lines from the local telephone company provide the physical interface between the switch and the VIS. The lines should be configured as a standard 2500 analog set on the switch. Refer to Chapter 5, "Switch Interface Administration" of the book *CONVERSANT VIS Version 4.0 Operations*, 585-350-703, for an extended list of tunable parameters that are available with the various switch integration packages.

Analog Connections to AT&T PBXs

Analog connections between a CONVERSANT VIS and a private branch exchange can be made to accommodate the needs for basic system connectivity. They can also be made to support optional feature packages that require analog connections. AUDIX Voice Power Co-residency and ASAI are two examples of features that rely on or use T/R interfaces between the VIS and the PBX.

The following settings and configuration data need to be present on the PBX for analog T/R communication between the PBX and the VIS. The CONVERSANT VIS is designed to accommodate switch integration with AT&T System 75 switches as a default. Integration with other PBXs may require a specific switch integration package. Refer to Chapter 5, "Switch Interface Administration" of the book *CONVERSANT VIS V4.0 Operations*, 585-350-703, for an extended list of tunable parameters, and the values that are valid for various domestic PBXs.

- The domestic PBX must provide analog service using CCITT and LSSGR standards. All analog station packs on DEFINITY switches and DIMENSION meet these standards. However, the LC03 circuit card on the DIMENSION and the SN229 circuit card on the System 85/G2 are NOT recommended for connection to the VIS.
- Each analog port on the switch must be configured to communicate as a standard 2500-type touch tone analog set with the ability to transfer/conference calls. Each port requires a station number, an appropriate Class of Service/Class of Restriction, and a hardware port location.



NOTE:

On DEFINITY G1/G3 switches, the VIS ports must not have data restrictions in the COR, and "redirect notification" must be set to "y" if the VIS will be transferring calls to ACD splits staffed by Auto Answer (zip tone) agents.

- The station numbers assigned to VIS ports must be valid entries in the system dial plan.

Analog Connections to Foreign Switch Facilities

The CONVERSANT VIS can interface with DEFINITY PBXs that are connected to PSTNs in a foreign country. Through the use of country specific analog switch integration software packages, specific communication parameters that vary between the US and other countries can be identified and recognized by the VIS. Physical connectivity is similar to domestic connections, but differences in communication protocols and parameter settings warrant the use of software packages that can modify these variable settings. Three packages are currently available, allowing for VIS connectivity to DEFINITY and other PBXs in the following foreign countries:

- Mexico
- Hong Kong
- U.K.

As stated above, these switch integration packages allow the tuning of certain parameters that vary from switch to switch. The proper setting of these parameters on both the switch and the VIS is essential for establishing communications between the two devices. These packages were written to accommodate DEFINITY PBX interfaces. These packages can also be used to interface a VIS with a non-DEFINITY PBX, although non-DEFINITY interfaces in a foreign country have not been certified. Refer to Chapter 5, "Switch Interface Administration" of the book *CONVERSANT VIS Version 4.0 Operations*, 585-350-703, for an extended list of tunable parameters that are available with the various switch integration packages. For specific values to be used for each parameter, contact your local technical support organization.

Analog Connectivity Diagrams

Figure 5-1 through Figure 5-3 show typical T/R connections from the VIS.

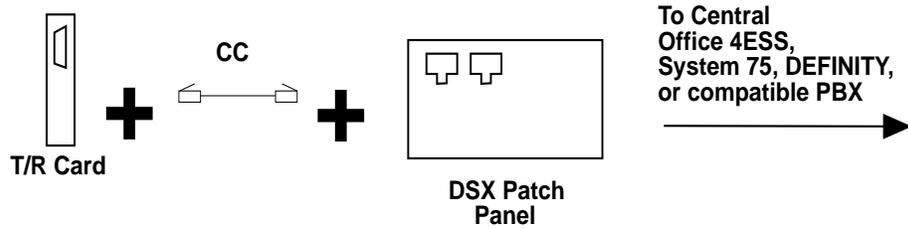


Figure 5-1. Analog T/R Interface Connection to a DSX Patch Panel

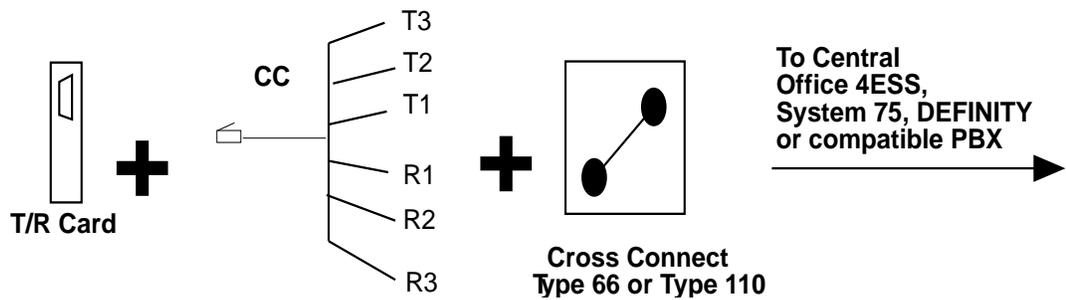


Figure 5-2. Analog TR Interface Connection to a Type 66 or 110 Cross-Connect

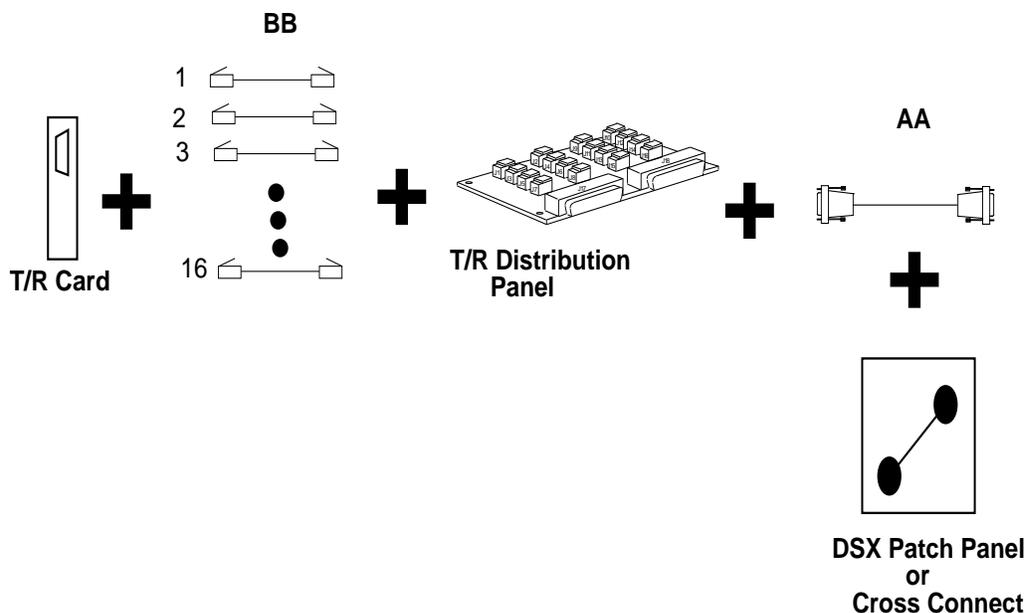


Figure 5-3. Analog T/R Interface Connection from Distribution Panel Using RJ21X Cable

Digital Communications

The digital interface is a digital T1 circuit (trunk) that allows the VIS to be connected to digital network facilities such as a central office switch. A T1 digital circuit carries information at 1.544 Mbps, and consists of 24 DS-0 channels. Each DS-0 channel operates at 64kbps, and is the equivalent of one incoming data line.

Each T1 circuit card within the VIS supports 24 DS-0 links. A maximum of four T1 circuit cards, or 48 simultaneous incoming calls, with a maximum of 96 incoming and outgoing channels are supported by the MAP/100C and MAP/100. A maximum of two T1 circuit cards are supported by the MAP/40, or 24 simultaneous incoming calls, with the maximum incoming and outgoing channels being 48. The second T1 card within the MAP/40 must be used for bridging.

⇒ NOTE:

A signal processing (SP) circuit card must be installed on the VIS to support the T1 digital interface. Each SP card supports up to 31 channels of simultaneous speech playback using adaptive differential pulse code modulation (ADPCM) 32 coded speech. Applications that require large amounts (greater than 30 channels) of simultaneous speech coding may require additional SP cards.

T1 connections also provide dialed number identification service (DNIS) information to further automate incoming calls for customers with multiple 800 or 900 numbers.

T1 and ISDN Primary Rate Interface (PRI) support trunk interfaces. PRI is the ISDN equivalent of a T1 channel, containing 23B+D channels. Each B channel operates at 64-Kbps, and is the equivalent of one incoming data line. The D channel does not provide normal telephony service, but is used for providing advanced control information, such as DNIS, on each of the other 23 incoming lines.

Digital T1 interfaces also support the line side connection of a VIS and a PBX. This Line Side T1 (LST1) also supports the Adjunct/Switch Application Interface (ASAI) feature.

Flash transfers using T1 and PRI configurations are not supported. Unlike the switch hook flash transfer in the analog tip/ring (TR) environment which releases the call from VIS once the transfer is made, the bridge ties up an incoming T1 port and an outgoing analog port until the call is concluded. Call duration may be longer for these configurations and may require more T1 ports than analog systems.

The analog and digital line capabilities supported by call transfer are listed in Table 5-1.

Table 5-1. Maximum Digital Trunks/Analog Lines Supported by Call Bridge

MAP/100, 100C		MAP/40	
Incoming	Outgoing	Incoming	Outgoing
48 digital T1 (linked)	48 digital T1	24 digital T1 (linked)	24 digital T1
24 analog TR	24 analog TR	24 analog TR	24 analog TR
48 analog TR	24 digital T1	24 analog TR	24 digital T1
48 digital T1	24 analog TR	24 digital T1	24 analog TR

The T1 interface circuit card is connected to a channel service unit (CSU) or directly to the DS-1 terminal block to obtain T1 connections to a central office.

A CSU performs certain line-conditioning and equalization functions and responds to loopback commands from the central office. A CSU regenerates digital signals, monitors them for problems, and provides a way to test the digital circuit. While not always needed, a CSU is required if one of the following situations applies to the system setup:

- The VIS is more than 650 feet from the signal source. The signal source may be a DSX or the last T1 repeater. Here, the CSU regenerates the received signal and properly attenuates the transmitted signal to prevent crosstalk.
- The T1 trunk from outside the building is being terminated by the VIS. Here, the CSU provides the primary lightning and surge protection as required by FCC Part 68.
- The T1 loop is not dry (for example, is powered by either 110VAC or -48VDC sources).
- Remote loopback and/or extended super frame maintenance features are desired. Here, the CSU recognizes the in-band bit patterns that signal it to loopback the incoming signal or to perform other maintenance functions.

Depending on the type of CSU a customer has, the 15-pin connector on the T1 cable can plug into the AYC3B or AYC11 and terminate via a 15-pin D subminiature connector to the CSU, or the cable end with the 15-pin plug and slide latch must be cut off, and the wires stripped and connected using the following information:

- Orange = our T1 = signals to CONVERSANT and should connect to a CSU or Network "T"
- White/Orange = our R1 = signals to CONVERSANT and should connect to a CSU or Network "R"
- Green = our T = signals from CONVERSANT and should connect to a CSU or Network "T1"
- White/Green = our R = signals from CONVERSANT and should connect to a CSU or Network R1

T1 Digital Connectivity Diagrams

Figure 5-4 and Figure 5-5 show examples of typical T1 connections to a T1 trunk.

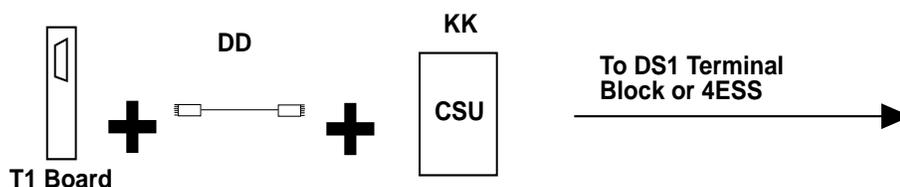


Figure 5-4. T1 Interface Connection to a CSU with 15-Pin Connector

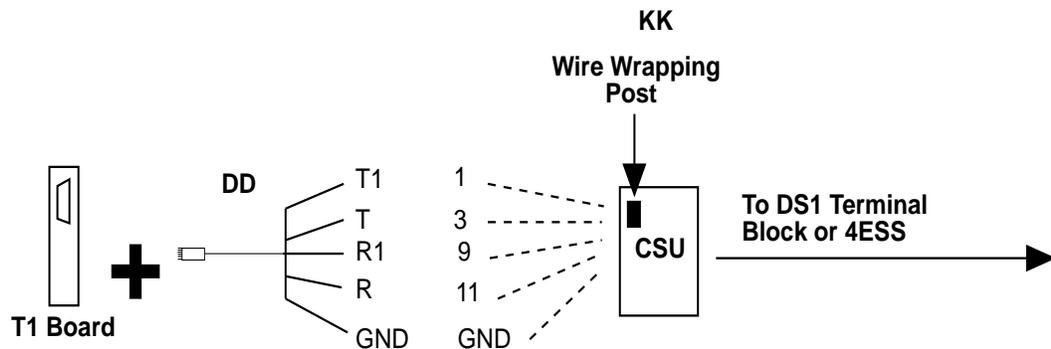


Figure 5-5. T1 Interface Connection to a CSU with Wire Wrap Posts

PRI Connections

The following section details the information needed to make an Integrated Services Digital Network (ISDN) Primary Rate Interface (PRI) connection to the VIS. The VIS supports this form of digital interface between itself and the digital phone network or entity through the use of a special digital protocol, while the physical connectivity stays the same as standard T1 digital communication. The VIS supports this digital ISDN communication with ISDN-PRI Layer 1 protocol, not the T1 A/B Robbed-Bit E&M Protocol as used with standard T1 communications. The ISDN-PRI Layer 1 protocol uses either D4 or extended super frame (ESF) framing. Standard T1 circuit card connectivity, as described in the previous pages, is used to facilitate the physical connection between the VIS and the remote network entity when using ISDN-PRI.

PRI connectivity offers the ability to administer key protocol parameters through software interfaces. This parameter administration must be performed before the physical connectivity is established. Two key parameters are dependent on the framing protocol used. If D4 framing is used, line coding must be "ZCS" and D-channel inversion must be "inverted." If ESF framing is used, line coding must be "B8ZS" and D-channel inversion must be "non-inverted." The method of framing that is used is determined by the ISDN-PRI service provider.

Special parameter provisioning of PRI is required on the 4ESS switch as well to establish communication compatibility with the VIS. The interface ID (CCID) parameter default value must be set to 1 instead of the normal value of 0.

The interface ID (CCID) must be provisioned on the 4ESS switch as follows:

- 23B+D configurations:
 - Interface ID (CCID): 1
- 47B+D Configurations:
 - Interface ID (CCID) for circuit with D channel: 1
 - Interface ID (CCID) for circuit without D channel: 2

Specification of this and other critical parameters is not part of the normal order process for AT&T PRI network services. Thus, special attention should be given to the determination and provisioning of these when ordering and implementing this VIS feature. In addition, some Layer 2 and Layer 3 parameters are used by the VIS, and care must be taken to ensure that these parameters are correct and matching in both machines. These parameters must be set on the switch as shown in Table 5-2 and Table 5-3.

Incoming calls to the VIS should be provisioned so that the channel number is exclusive and not preferred. Also, if the switch is configured to deliver ANI on a subscription basis, it is not possible for the VIS to request a different type of ANI on a call-by-call basis.

For additional specific information on PRI software administration and configuration on the VIS, consult the *CONVERSANT VIS Primary Rate Interface Guide*, 585-350-805.

Table 5-2. PRI Layer 2 Parameters

Layer 2 Parameter	Value
Retry Count N200	3
Timer T200	1 sec
Timer T203	30 sec
HDLC (D4/ZCS)	Inverted
HDLC (ESF/B8ZS)	Noninverted

Table 5-3. PRI Layer 3 Parameters

Layer 3 Parameter	Value
Timer T302	10 sec
Timer T303	4 sec
Timer T305	4 sec
Timer T308	4 sec
Timer T310	10 sec
Timer T313	4 sec
Timer T316	120 sec
Timer TL3	120 sec
Timer T309	10 sec
Interface ID (with D channel)	1
Interface ID (without D channel)	2
Bearer capability	64 Kbps voice

ASAI Connections

The following information details the information required to make Adjunct/Switch Application Interface (ASAI) connections to the VIS.

The AT&T DEFINITY Generic 3 PBX systems communicate with the local 4ESS switches or other mainframe switching equipment using 23B+D or 47B+D ISDN-PRI connections. To accommodate this, the VIS is designed to operate with the DEFINITY G3 PBX using a communication scheme known as Adjunct/Switch Application Interface (ASAI). ASAI allows analog T/R or digital LST1 lines to be used for the actual 23B or 47B line connections between the two machines, which terminate at T/R or T1 circuit cards, respectively. The D channel, however, is connected to and processed by the ISDN Personal Computer Interface (IPCI) circuit card, which must be installed on the VIS. The ISDN-PRI line circuit card (TN556) must also be installed on the DEFINITY Generic 3i. For information on the TN556 refer to the *DEFINITY Communications System Generic 1 and Generic 3i System Description*, 555-230-200, and the *DEFINITY Generic 1 and Generic 3i Wiring Manual*, Issue 2, 555-204-111.

To support the ASAI capability, the analog or digital connections between the VIS and PBX are via a point-to-point ISDN-Basic Rate Interface (BRI). One ASAI link per VIS is supported.

When using analog (T/R) lines to access ASAI capabilities, the connections must be configured as members of an ACD split of the PBX. For the DEFINITY G3i, Three analog circuit cards provide this capability in various DEFINITY G3 products. They are the TN742, the TN746, and the TN769. The IPCI card supports the BRI D-channel analog interface from the switch. A typical VIS and DEFINITY Generic 3 configuration is shown in Figure 5-6.

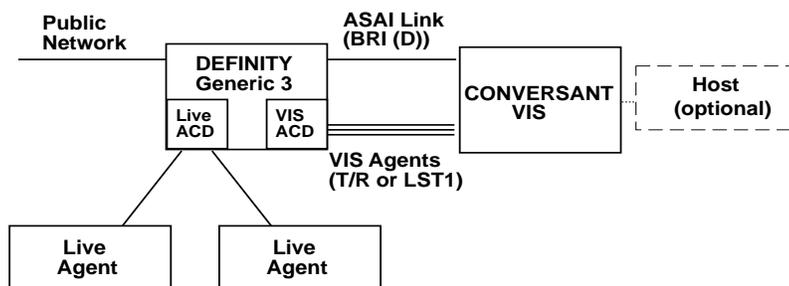


Figure 5-6. Typical VIS and DEFINITY Generic 3i Configuration

ASAI Connectivity Diagrams

Physical ASAI telephone line connections between the PBX and VIS are made using T/R or digital LST1 connections. A D-link, which delivers control and supervisory messages about each T/R or LST1 channel, must also be provisioned and connected.

ASAI Analog T/R Connections

As stated earlier, ASAI connectivity can be made using analog Tip/Ring lines between the PBX and the CONVERSANT VIS. This requires a number of analog T/R circuit cards to be present in the CONVERSANT VIS, and each line is connected separately.

An individual link is used for the D-channel between the TN556 ISDN/BRI circuit card in the PBX, and the IPCI circuit card in the CONVERSANT VIS. The D-channel connectivity is shown in Figure 5-7.

Note that an AT&T 440A4 eight-pin terminating resistor (or equivalent) must be connected to the LINE connector of the IPCI card using the DW8 cable provided. Use the another DW8 cable to connect from the connecting block to the terminating resistor.

Total cable length from the DEFINITY Generic 3 system to the VIS must not exceed 1900 feet. Refer to the book *CONVERSANT VIS Adjunct/Switch Application Interface*, 585-350-812, for additional information about administration of this communication arrangement.

ASAI Digital Line Side T1 Connections

ASAI can also be provisioned with LST1, which allows digital T1 connections between the VIS and the line side of the PBX. This allows the utilization of various PBX features, such as call transfer and call progress tone (CPT) detection (in conjunction with Full CCA), which are not compatible with an ordinary T1 trunk connected between the VIS and PBX. The LST1 connection provides a reduction of the number of physical cables required to support a PBX-VIS interface when compared to an analog connection.

Analog configurations require 24 separate connections to support an identical configuration provided by one LST1 cable. In addition, there is also a significant reduction in the number of VIS cards required to support the interface. One T1 and one SP circuit card will support the same amount of traffic as 4 IVP6, or 6 IVP4 circuit cards, although the IPCI circuit card is still required to be used.

In short, the LST1 connection is a very efficient way to replace the 24 separate analog connections, along with the associated analog circuit cards, that were required between the VIS and PBX in CONVERSANT VIS V3.1 and earlier releases. As with analog connectivity, an individual link is used for the D-channel between the TN556 ISDN/BRI circuit card in the PBX, and the IPCI circuit card in the CONVERSANT VIS. The D-channel connectivity is shown in Figure 5-7.

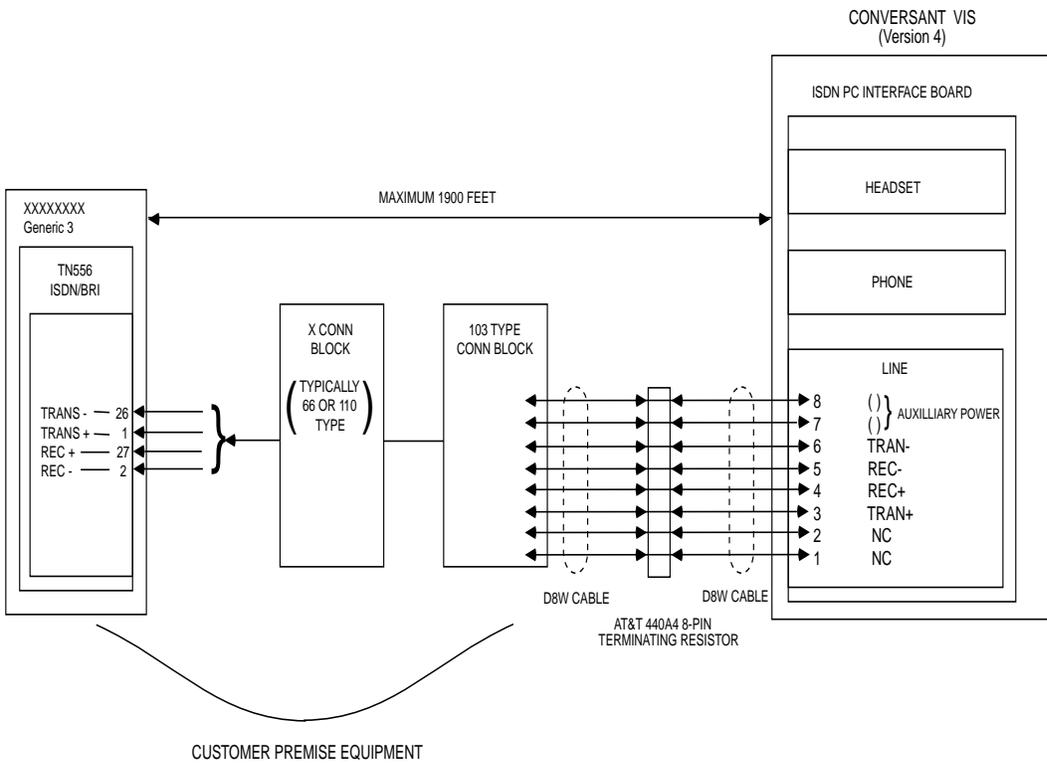


Figure 5-7. Typical D-Channel Wiring for an ASAI Link

Private Data Network Interfaces

The CONVERSANT VIS supports two different forms of private data network interfaces: asynchronous and synchronous. These interfaces provide connections from the VIS to other computing devices such as remote monitoring stations or host computer databases. No external customer interaction is involved in these communications, and the arrangement of these connections is based on the needs of the VIS application. These private data network interfaces are transparent to the caller who is actually invoking the VIS dialog over the public switched (telephone) network.

Asynchronous Communications

Asynchronous Communications is a method of data transmission which allows characters to be sent at irregular intervals by preceding each character with a start bit and following it with a stop bit. Serial ports on the VIS platforms provide communication ports for serial devices such as the Remote Maintenance Circuit Card, terminal, computer, or printer. In addition, the VIS also supports asynchronous host communications through custom written software. Finally, the VIS supports both local alarm relay unit (ARU), remote Switching Control Center System (SCCS) alarming systems, and local central office external alarms, which all communicate with the VIS through asynchronous connections.

⇒ NOTE:

Each connectivity figure in this section contains coded connector and cable illustrations for commonly used items. A comprehensive list of these items is included at the end of this chapter.

The VIS supports two standard asynchronous connections and one standard parallel printer connection on each of the MAP systems via EIA-232 serial port. One of the standard asynchronous connections is reserved for the Remote Maintenance Circuit Card. This circuit card, available with or without a modem, can either provide a standard serial port for mandatory connection to an external modem, or provide a standard modular connection for access to the built-in modem. This arrangement allows access to the VIS through a remote terminal. This access lets a user or service and maintenance organizations monitor system output and alarms, as well as manipulate system resources and perform software-related tasks without being physically near the VIS platform.

Data transmission is limited to 9600 bps (maximum) for asynchronous communication established with any device.

Asynchronous Connections

The standard asynchronous ports are located on the back of each MAP/100C, MAP/100, and MAP/40 unit. These connections and their locations are described for each multi-application platform later in this section.

Note that the distance between transmission devices (for example, the VIS and a terminal) should not exceed 50 feet according to the EIA-232 standard recommendation. Devices can be separated by longer distances, however, depending on how much electrical interference exists in the area. An asynchronous data unit (ADU) should be used for distances from 50 to 5000 feet. Refer to the appropriate ADU documentation for maximum limits.

To provide connection to one or more asynchronous host computers or additional modems, an 8-port asynchronous circuit card (Gemini-1000 or older IPC 900 on all platforms) is supported. This card can coexist with the synchronous host communications circuit card described later in this chapter, and provides eight additional serial ports to the VIS. The Gemini-1000 asynchronous interface card is supplied with eight 10-foot modular cables.

These serial connection ports are configured as data terminal equipment (DTE). DTE ports require a crossover or "null modem" cable to connect to the peripheral equipment listed above. The term "crossover" refers mainly to the transmit and receive lines. To communicate with any of the devices mentioned above, the transmit line on the serial port must ultimately be connected to the receive line of the terminal device. Conversely, the receive line on the serial port must be connected to the transmit line of the terminal device.

Connecting to a modem does not require a crossover cable. A modem is normally considered data communications equipment (DCE). DCE ports require a modem or straight-through cable. The crossover of transmit and receive are handled within the modem.

The following adapters are available to allow DCE equipment to communicate with DTE and vice versa:

- Null modem adapter or cable

This adapter "flips" the transmit and receive lines while still maintaining the functions of the other lines (that is, data terminal ready (DTR) and ground). This device is normally used to connect one DTE device to another DTE device. For example, a terminal (DTE) can communicate with a computer using an ACU modem adapter (provides a straight-through connection), a straight-through cable, and a straight-through ACU modem adapter connected to a null modem connector at the other end.

- Terminal/printer adapter

This adapter provides a crossover function much the same as a null modem adapter. Using the example above of connecting a computer to a terminal, a terminal/printer adapter, a straight-through cable, and an ACU modem adapter can be used to provide communication.

- ACU modem adapter

This is an adapter or cable that provides a straight-through connection. A modem (DCE) can communicate with MAP using ACU Modem adapters on both ends and a straight-through cable. A terminal/printer adapter and a null modem adapter (which cancel each other out and provide a straight through connection) can also be used.

- Gender changers

Gender changers convert a male connector to female, and vice versa. There are two types of gender changers, male/male and female/female. The functionality of the incoming lines is maintained on the outgoing side.

- Modular extenders

Extenders allow two modular cables to be connected to each other without losing functionality. An extender consists of two female RJ-45 type ports linked to each other. The number of conductors in the extender must match the number of conductors in the cables used. There are two types of modular cables used with asynchronous communications within the VIS. An 8-conductor cable is used for serial port peripheral connections (the standard serial ports provided on each VIS platform), while a 10-conductor cable is used to connect devices with the modular ports provided on the Gemini-1000 or older IPC-900 circuit card.

In most cases, if transmit goes to receive (and vice versa) in connecting DTE devices, any combination of equipment can be used. For modems, a straight-through connection will most likely be required since they are DCE. However, pin positions of other functions (that is, DSR, DTR, carrier, etc.) should be confirmed on all connected devices to ensure proper functionality.

MAP/100C Asynchronous Communication Ports

The MAP/100C platform can be connected to a terminal, modem, or host computer through an asynchronous link connected to one or more ports on the platform. The system is connected to a printer through a single parallel port. The standard connections include:

- A 25-pin D-subminiature male port, COM1, located on the rear of the chassis, lower center, below the fan panel door, AND on the front control panel of the chassis, lower center, below front door.

Both connectors provide access to the COM1 port on the CPU, for convenience in accessing the system within the central office mounted racks.

- A 9-pin D-subminiature male port, COM2, is located on the faceplate of the CPU circuit card, which is accessed by opening the card cage access door.
- The Multi-Port Asynchronous Communications Interface feature package can be added to the MAP/100C. This package uses an optional circuit card, software, and T-adaptor which provides eight additional RJ-45 type modular connector asynchronous ports to the system.
- A parallel port connection is located on the faceplate of the CPU card. This port is a 25-pin male connector and is used as a printer interface.

⇒ NOTE:

The COM1/COM2 orientation is different between MAP/100C and the commercially available MAP/100 and MAP/40 machines. On the MAP/100C, the CPU-mounted connector is labeled "COM2," while the externally wired connector(s) are labeled "COM1." This is reversed for the MAP/100 and MAP/40 machines.

⇒ NOTE:

When the Remote Maintenance Circuit Card is installed in the system, it will displace the COM1 serial port.

MAP/100 Asynchronous Communication Ports

The MAP/100 platform can be connected to a terminal, modem, or host computer through an asynchronous link connected to one or more ports on the platform, including:

- A 9-pin D-subminiature male port, COM1, located on the faceplate of the CPU circuit card
- A 9-pin D-subminiature male port, COM2, located at the rear, upper left corner of the MAP/100 chassis
- The Multi-Port Asynchronous Communications Interface feature package can be added to the MAP/100. This package uses an optional circuit card, software, and T-adaptor which provides eight additional RJ-45 type modular connector asynchronous ports to the system.
- A parallel port connection is located on the faceplate of the CPU card. This port is a 25-pin male connector and is used as a printer interface.

**NOTE:**

When the Remote Maintenance Circuit Card is installed in the system, it will displace the COM1 serial port.

MAP/40 Asynchronous Communication Ports

The MAP/40 platform can be connected to a terminal, modem, or host computer through an asynchronous link connected to one or more ports on the platform, including:

- A 9-pin D-subminiature male port, COM1, located on the faceplate of the CPU circuit card
- A 9-pin D-subminiature male port, COM2, located at the rear, middle right side of the MAP/40 chassis
- The Multi-Port Asynchronous Communications Interface feature package can be added to the MAP/40. This package uses an optional circuit card, software, and T-adaptor which provides eight additional RJ-45 type modular connector asynchronous ports to the system.
- A parallel port connection is located on the faceplate of the CPU card. This port is a 25-pin male connector and is used as a printer interface.

**NOTE:**

When the Remote Maintenance Circuit Card is installed in the system, it will displace the COM1 serial port.

VIS Asynchronous Connectivity Diagrams

The following pages detail various equipment and scenarios for external asynchronous connections (Gemini-1000 or older IPC-900) to terminals, computers, modems, printers, and external alarms. Also shown are the basic asynchronous connections used with a modem.

Eight-Port Asynchronous Connections to Terminals

Figure 5-8 through Figure 5-10 show examples of external connectivity and cabling for an 8-port asynchronous connection to a terminal. Note that these are only examples and not an exhaustive list of possible connections.

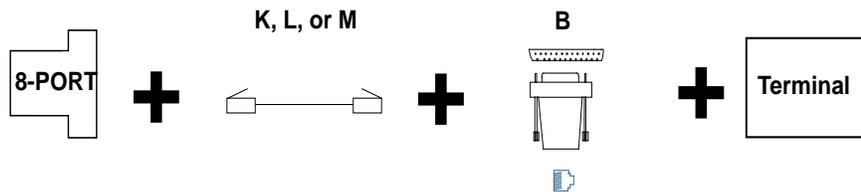


Figure 5-8. Eight-Port Asynchronous Terminal Connection Using 10-Conductor Modular Cable

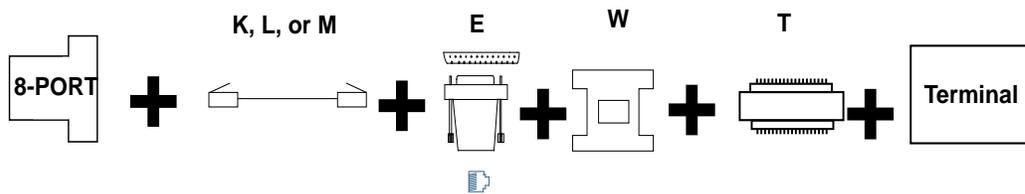


Figure 5-9. Eight-Port Asynchronous Terminal Connection Using 10-Conductor Cable and Null Modem

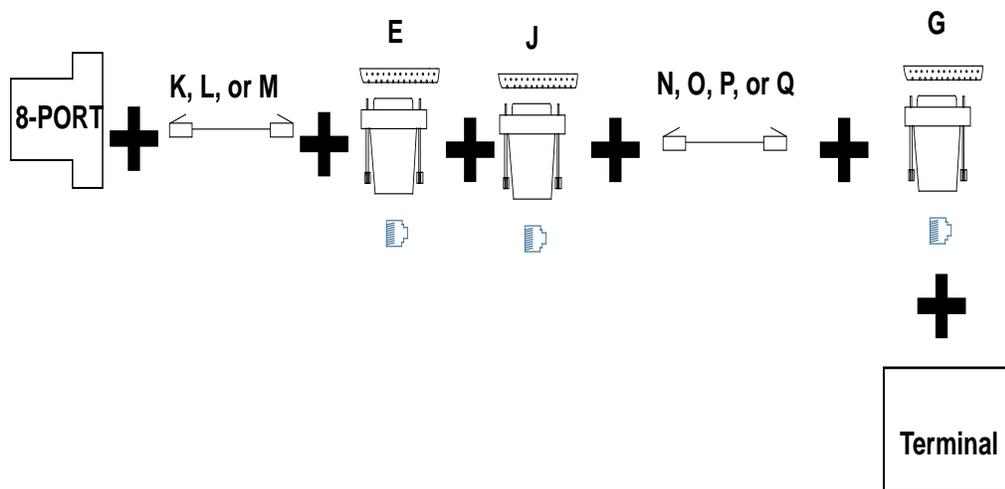


Figure 5-10. Eight-Port Asynchronous Terminal Connection Using 8 and 10-Conductor Cable

Eight-Port Asynchronous Connections to Computers

Figure 5-11 through Figure 5-14 show examples of external connectivity and cabling for an 8-port asynchronous connection to a computer. Please note that these are only examples and not an exhaustive list of possible connections.

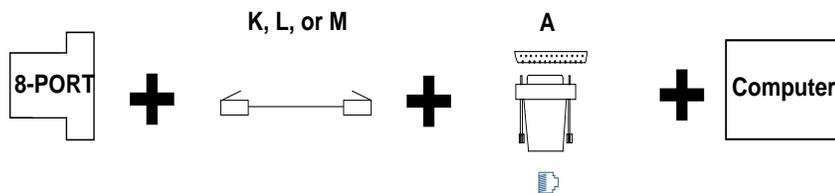


Figure 5-11. Eight-Port Asynchronous Computer Connection Using 10-Conductor Cable

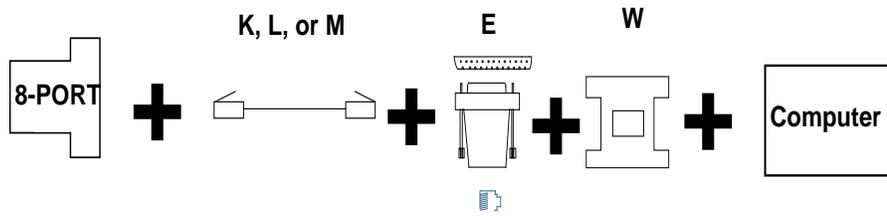


Figure 5-12. Eight-Port Asynchronous Computer Connection Using 10-Conductor Cable and Null Modem

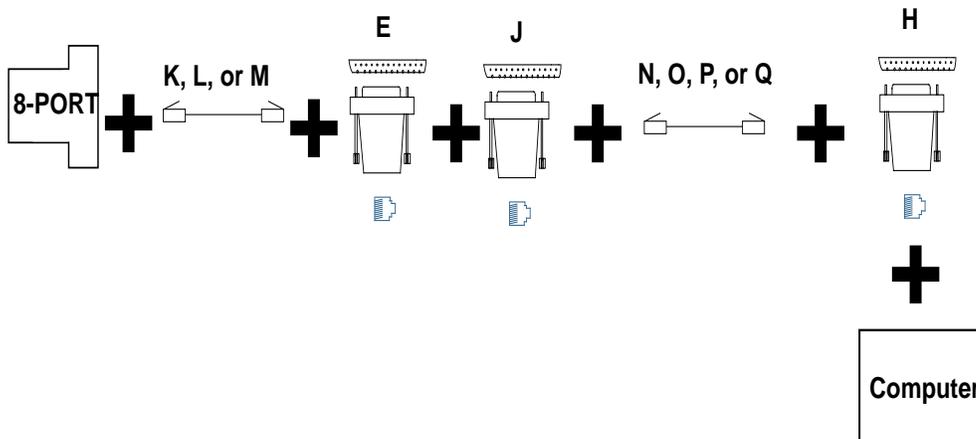


Figure 5-13. Eight-Port Asynchronous Computer Connection Using 10- and 8-Conductor Cable

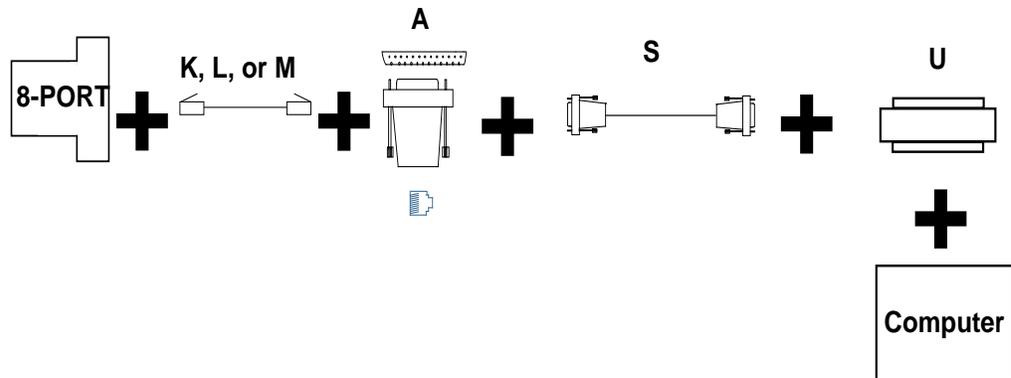


Figure 5-14. Eight-Port Asynchronous Computer Connection Using 10-Conductor Cable and EIA-232 Cable

Eight-Port Asynchronous Connections to an External Modem

Figure 5-15 through Figure 5-18 show examples of external connectivity and cabling for standard asynchronous connection between an eight-port asynchronous communications card and an external modem. Note that these are only examples and not an exhaustive list of possible connections.

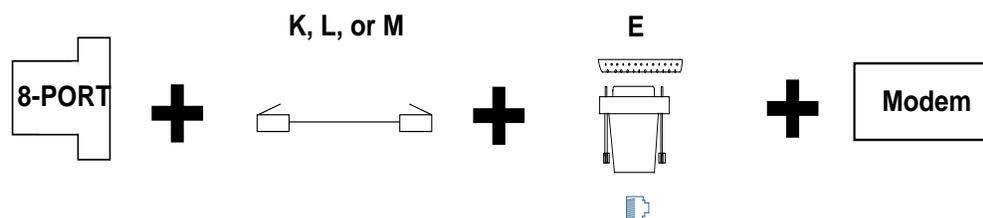


Figure 5-15. Asynchronous Modem Connection Using 10-Conductor Cable

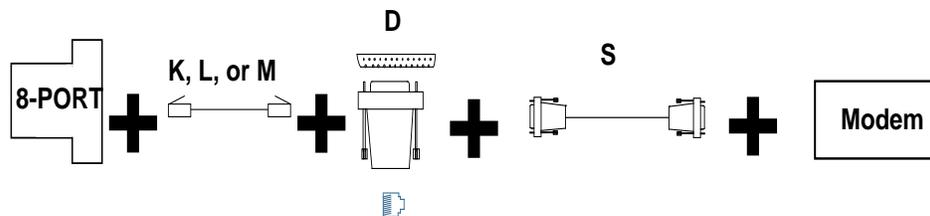


Figure 5-16. Asynchronous Modem Connection Using 10-Conductor Cable and EIA-232 Cable

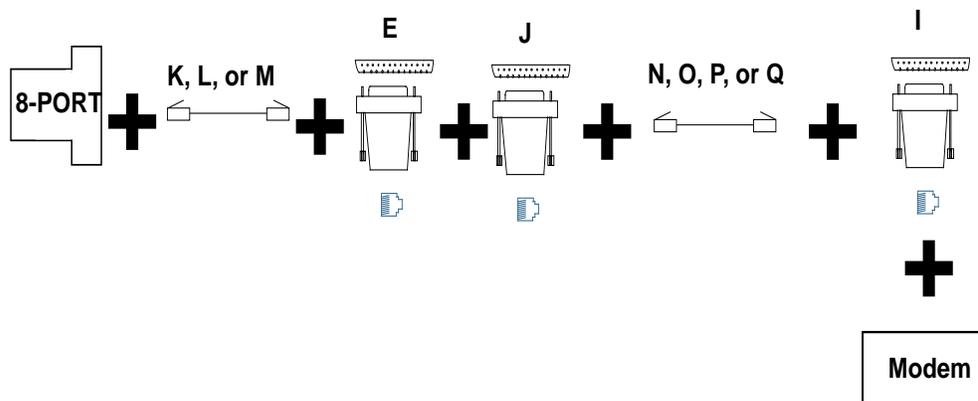


Figure 5-17. Asynchronous Modem Connection Using 10- and 8-Conductor Cable

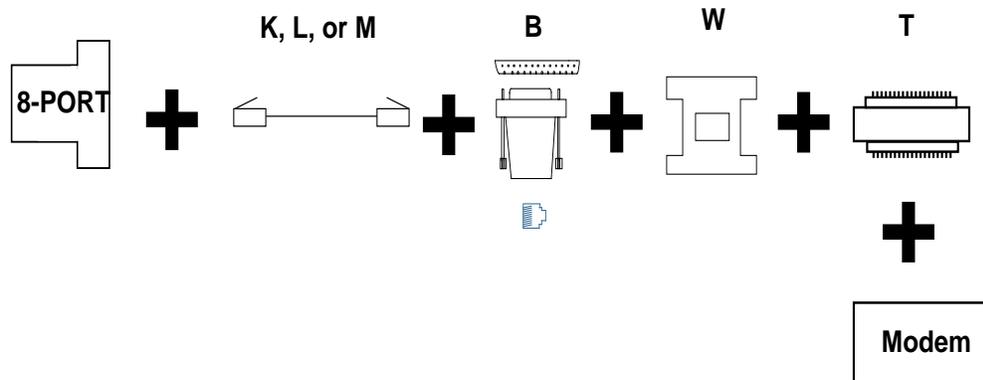


Figure 5-18. Asynchronous Modem Connection Using 10-Conductor Cable and Null Modem

Eight-Port Asynchronous Connections to ADUs

Figure 5-19 shows an example of external connectivity and cabling for an 8-port asynchronous connection to an ADU.

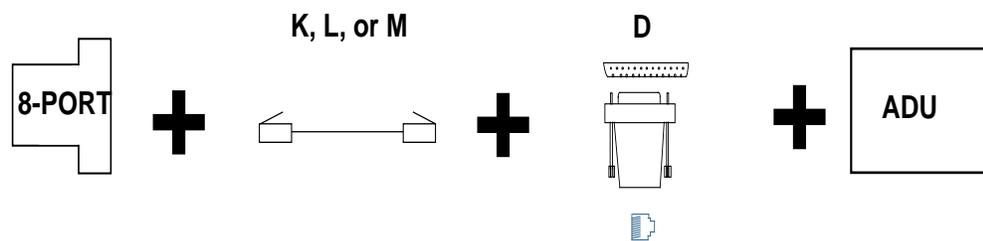


Figure 5-19. Eight-Port Asynchronous ADU Connection

Eight-Port Asynchronous Connections to Printers

There are two ways to connect the eight-port asynchronous unit to a printer. If you are connecting to the serial port on the printer, connect the Gemini-1000 to the printer in the same way that you would connect to a terminal as shown in Figure 5-9. You can use part C (printer DTR adapter) in place of part B if the FACE software uses the hardware flow control for the specified port. See "Eight-Port Asynchronous Connections to Terminals" earlier in this chapter for additional information.

If connecting to the parallel port on the printer, use part R between the printer and the 8-port asynchronous unit shown in Figure 5-20.

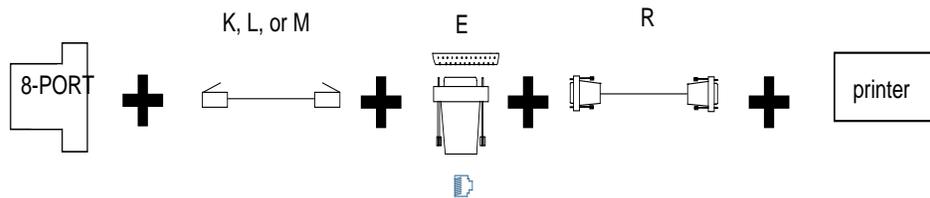


Figure 5-20. Eight-Port Asynchronous Printer Connection Using Parallel Interface

Eight-Port Asynchronous Connections to SCCS/ARU

Figure 5-21 shows the connection from the 8-port asynchronous unit on the VIS platform to the ARU/SCCS. Both alarm monitors interface with the VIS through the serial port. When connecting to a MAP, any serial port (COM1, COM2, or 1-8 of a Gemini-1000, or IPC-900) may be used.

NOTE:

The 8 and 10-conductor cables shown in the figure must be gray straight-through cables in order for this configuration to work properly. The black null modem cables will not work in this configuration.

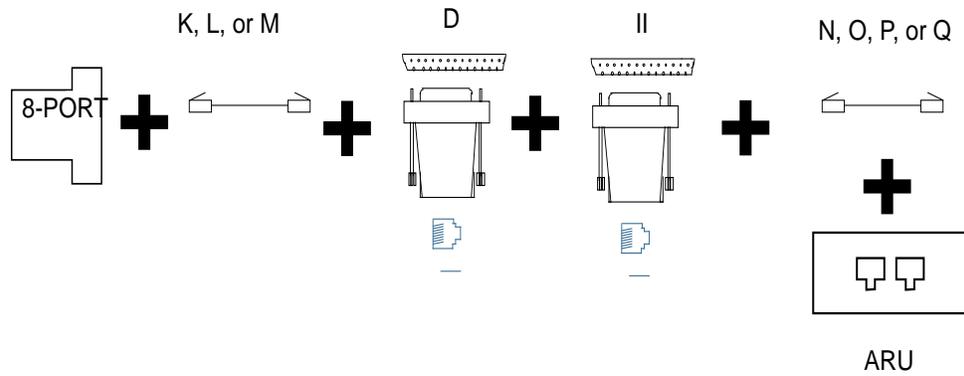


Figure 5-21. ARU/SCCS Connection from the Eight-Port Asynchronous Unit

Figure 5-22 shows the connection from the main serial port (COM1) on the VIS to the ARU/SCCS.

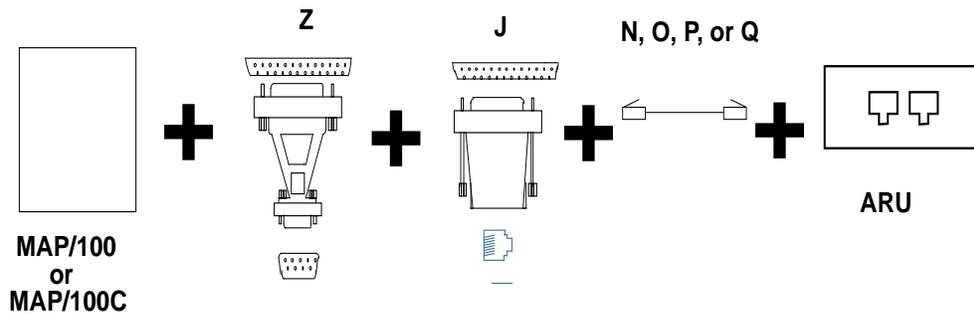


Figure 5-22. ARU/SCCS Connection from the Main Serial Port on the VIS

Figure 5-23 shows the connection from the second serial port (COM2) on the VIS to the ARU/SCCS.

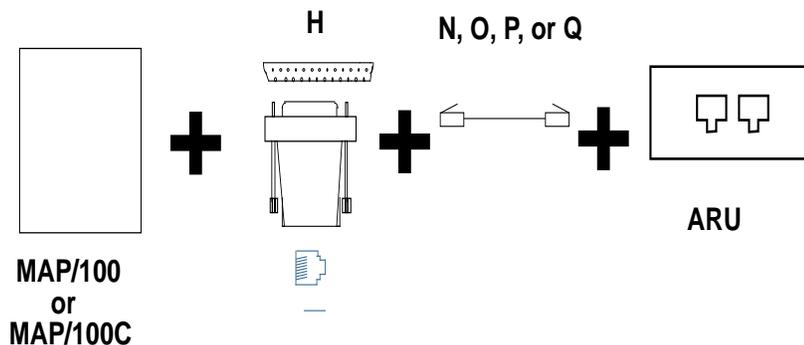


Figure 5-23. ARU/SCCS Connection from the Second Serial Port on the VIS

Synchronous Communications

Synchronous communication is a method of data communication in which the transfer of data is controlled and sequenced by use of timing signals, instead of start and stop bits.

Many of the transactions that voice response systems automate exist in a synchronous communications environment, especially SNA/SDLC or binary synchronous communications (BSC) protocol.

Synchronous communications are most commonly used between the VIS and a host computer. Using this connection, a VIS script can direct the machine to obtain caller specific information from a remote database on the host to use while processing the call. The access of this information is usually dependent on information input by the caller during the life of the call.

The VIS can support one or two optional 32-session synchronous input/output circuit cards, known as PC/XL circuit cards, that provides for 3270(-1C/51C) cluster controller emulation.

With these optional cards, the VIS appears to the host computer as a cluster controller with up to 32 terminals per card. Each synchronous interface card supports 32 logical units (LUs) or sessions, with a maximum 64 LUs when using both circuit cards. The maximum number of LUs the system can efficiently use ultimately depends on the response time of the host computer.

A smaller number of the available LUs (perhaps 20 to 24 LUs) can be used to speed host response time depending upon the capacity and resources of the VIS and host machine. Some types of applications, such as those requiring interaction with numerous screens, may also impact the capacity and performance of the VIS.

Synchronous capabilities also provide for a sharing of LUs over incoming telephone lines. In some types of applications, this will allow more than 32 users per PC/XL card to access applications that require host connectivity.

The PC/XL cards are supplied with a single 25-foot cable. An additional 25-foot cable can be ordered. For synchronous host connections, a modem eliminator device is used if the distance is less than 100 feet. If the distance is greater than 100 feet, a synchronous modem(s) should be used. Data transmission is available at all standard speeds up to 56Kbps (maximum) for synchronous communication.

Synchronous Connections

AT&T recommends that any required host computer channels be operational before the VIS equipment is installed. This includes any data facilities and cabling that may be required. The VIS requires additional hardware to support a synchronous host interface.

Host cable access from the synchronous host interface card (within the VIS) to host equipment is done via a shielded EIA-232 cable and a modem or modem eliminator. A modem eliminator cable with leads for timing must be used if the distance is less than 100 feet. The total cable length must not exceed 100 feet without a modem between the system controller and host equipment.

⇒ NOTE:

Connections for high-speed operations (56 Kbps) may use modems or modem eliminators with V.35 connectors instead of RS-232 connectors. If so, an RS-232 -to- V.35 interface convertor is required, since the PC/XL circuit card that supports the high-speed communication (speeds above 9.6 Kbps) has only an RS-232 connector. This interface convertor is not supplied with the VIS and must be supplied by the customer.

The 3270 Host Communications Package

The 3270 Host Communications Package is an option to the VIS product. It consists of a PC-XL circuit card, card-level software (written by CLEO Communications Inc.), and the UNIX driver software (written by AT&T).

This package emulates a 3274-41C or a 3174-01R cluster controller, with the ability to support up to 32 logical units (that is, 3278 Model 2 terminals) per circuit card. It does *not* emulate the extended attributes of a 3279 terminal or any other terminal. The 3270 card typically links to a 3725 or 3745 front end processor (FEP), and uses 3270 data streams through either binary synchronous communication (BSC) or synchronous data link control (SDLC) and synchronous network architecture (SNA) protocols.

Standard links from the card to the FEP can be made through synchronous modems (for distances over 100 feet), leased lines (for out of building connections), or modem eliminators (for distances under 100 feet) with speeds up to 56 Kbps. Note that channel attachment is *not* possible with the PC/XL card.

For additional information about 3270 configuration issues, refer to Appendix D, "Information for Advanced Users," of *CONVERSANT VIS Version 4.0 Operations*, 585-350-703, and the document *CONVERSANT VIS Host Interface*, 585-350-815.

Synchronous Connectivity Diagrams

Figure 5-24 through Figure 5-27 show examples of external connectivity and cabling for an 3270 connection to the FEP. Note that these are only examples and not an exhaustive list of possible connections.

⇒ NOTE:

The 3270 card requires straight-through connections on pins 18, 25, 17, and 20.

⇒ NOTE:

The RS-232 to V.35 Interface Cable must be provided by the customer. It is not orderable from AT&T. This connectivity is shown in Figure 5-25 for 56K Communications.

As shown in the following figure, the synchronous modem must provide clocking on pins 15 and 17.

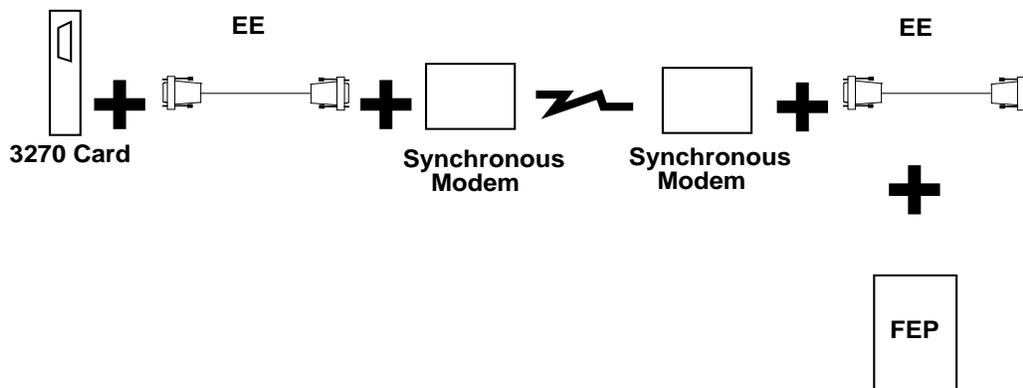


Figure 5-24. 3270 Interface Connection Using Synchronous Modems

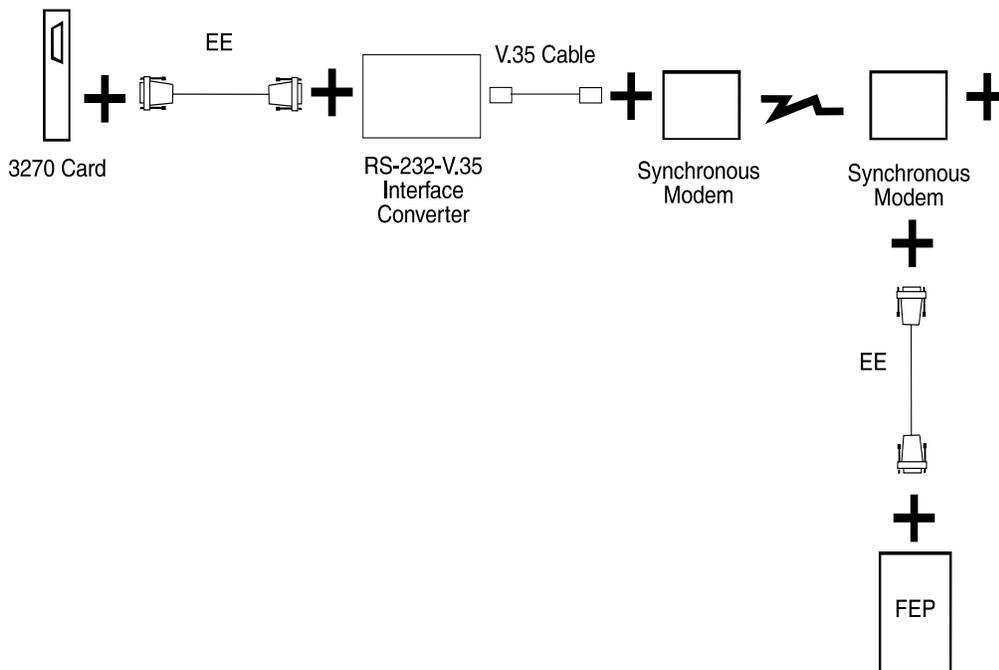


Figure 5-25. 3270 56K Interface Connection Using Synchronous Modems

A shown in Figure 5-26, the modem eliminator is used for distances of up to 100 feet and must provide a DB-25 female connector.

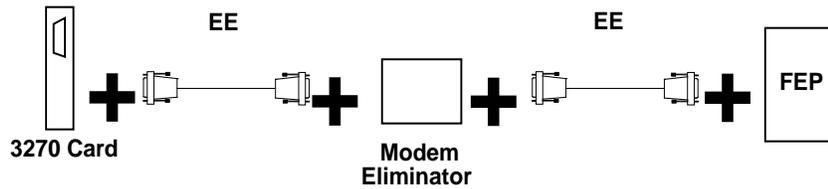


Figure 5-26. 3270 Interface Connection Using a Modem Eliminator

The example in Figure 5-27 (although rarely used) assumes that the FEP provides the closing on pins 15 and 17 to transmit and receive.

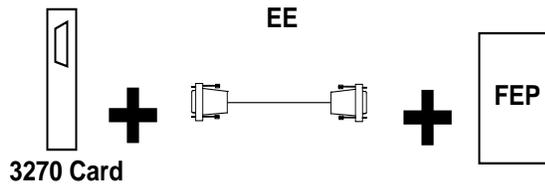


Figure 5-27. 3270 Interface Connection Using a Direct Connection to the FEP

Cable and Connector Identification

The illustrations shown here provide an alphabetic reference, and a graphic representation of the common cabling and connectors used in previous network connectivity diagrams. Commonly used connectors and cables are identified in the figures with a one or two letter code, in bold print, along with identification numbers and explanatory text.

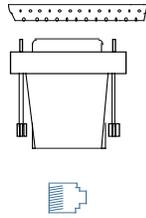
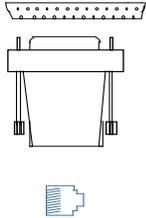
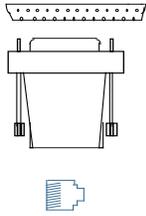
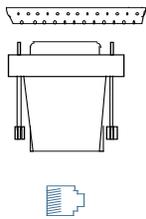
Diagram Reference	Part Description	Graphic Representation
A	Terminal/printer (DTE) adapter --RJ45 (10-conductor) to female DB-25 --BCSystems PEC - 69609 --CS PEC - 37784 ED3P001-70 G1305	
B	Terminal/printer (DTE) adapter --RJ45 (10-conductor) to male DB-25 --BCSystems PEC - 69608 --CS PEC - 37782 ED3P001-70 G1304	
C	Printer (DTR) adapter --RJ45 (10-conductor) to male DB-25 (provides DTR hardware flow control) --BCSystems PEC - 69622 --CS PEC - 37800 ED3P001-70 G1319	
D	ACU/modem (DCE) adapter --RJ45 (10-conductor) to female DB-25 --BCSystems PEC - 69611 --CS PEC - 37788 ED3P001-70 G1307	

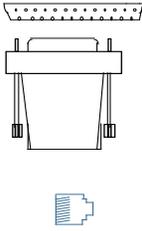
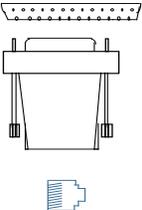
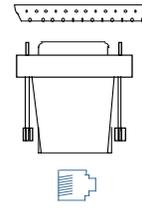
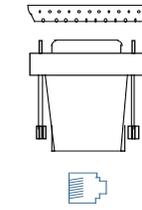
Diagram Reference	Part Description	Graphic Representation
E	<p>ACU/modem adapter</p> <p>--RJ45 (10-conductor) to male DB-25</p> <p>--BCSystems PEC - 69610</p> <p>--CS PEC - 37786</p> <p>ED3P001-70 G1306</p>	
F	<p>Remote console adapter</p> <p>--RJ45 (10-conductor) to male DB-25</p> <p>--Used to remain in communication with host system when host resets or reboots</p> <p>--BCSystems PEC - 69612</p> <p>--CS PEC - 37790</p> <p>ED3P001-70 G1308</p>	
G	<p>Terminal/printer adapter</p> <p>--RJ45 (8-conductor) to male DB-25</p> <p>--CS PEC - 2750-C09</p> <p>TRW-232125010</p>	
H	<p>Terminal/printer adapter</p> <p>--RJ45 (8-conductor) to female DB-25</p> <p>--CS PEC</p> <p>TRW-2322225010</p>	

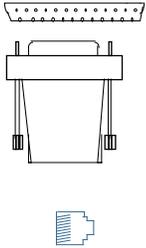
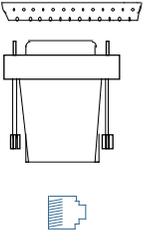
Diagram Reference	Part Description	Graphic Representation
I	ACU/modem adapter --RJ45 (8-conductor) to male DB-25 --CS PEC 2750-C10 TRW-2322125005	
J	ACU/modem adapter --RJ45 (8-conductor) to female DB-25 --CS PEC TRW-232225005	
K	Cable, 10 ft 10-conductor modular --BCSystems PEC - 69605 --CS PEC - 37776	
L	Cable, 25 ft 10-conductor modular --BCSystems PEC - 69606 --CS PEC - 37778	
M	Cable, 50 ft, 10-conductor modular --BCSystems PEC - 69607 --CS PEC - 37780	
N	Cable, 7 ft, 8-conductor modular --CS PEC 2725-16G	

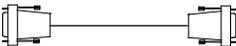
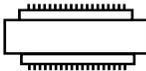
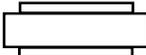
Diagram Reference	Part Description	Graphic Representation
O	Cable, 14 ft 8-conductor modular CS PEC - 2725-16N	
P	Cable, 25 ft 8-conductor modular CS PEC - 2725-16S	
Q	Cable, 50 ft, 8-conductor modular CS PEC - 2725-16V	
R	Cable, 7 ft, parallel printer --DB25 male to Centronics 37 --BCS PEC - 6950EB1 --CS PEC - ED3P001-70 G1109 tp440500	
S	Cable, 7 foot, modem --DB-25 male to DB-25 male --BCS PEC - 6950-EA1 --CS PEC - 2721-28E ED3P001-70 G1100 tp-416174	
T	Gender changer M/M	
U	Gender changer F/F	

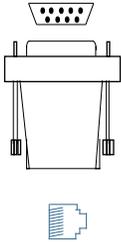
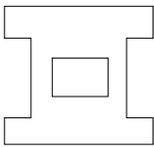
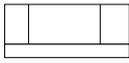
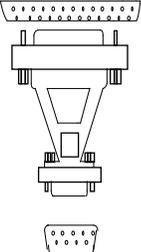
Diagram Reference	Part Description	Graphic Representation
V	Null modem adapter --RJ45 (10-conductor) DTE to female DB-9 --BCS PEC - 69619 --CS PEC - 37792 ED3P001-70 61318	
W	Null modem adapter --DB-25 female to DB-25 female	
X	Extender, 10-conductor RJ45 (10) to RJ45 (10) CS PEC - 37796	
Y	Extender, 8-conductor RJ45 (8) to RJ45 (8)	
Z	DB-25 male to DB-9 female adapter	

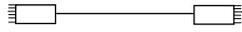
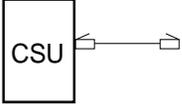
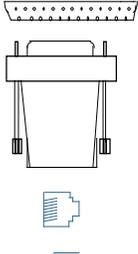
Diagram Reference	Part Description	Graphic Representation
AA	Cable, 25 ft RJ-21X male/fFemale 50-pin (25 pair) distribution pPanel CS PEC - 70335	
BB	Cable, 2 ft 6-conductor mounting analog Tip/Ring modular	
CC	Cable, 25 ft, 6-conductor analog Tip/Ring modular	
DD	Cable, 7 ft, 15-pin D-subminiature T1 extension (up to 7 cables supported) male/male CS PEC - 70325MDL02	

Diagram Reference	Part Description	Graphic Representation
EE	Cable, asynch shielded male/female (3270) CS PEC – 6950EA5, 7ft. 6950EA6, 12 ft. 6950EA7, 25 ft. 6950EA8, 50 ft.	
FF	Cable, A/SAI interface 8-conductor D8W-87 CS PEC – 272507G, 7 ft. 272507N, 14 ft. 272507S, 25 ft.	
GG	Cable, StarLAN 8-conductor modular CS PEC – 2725-16N	
HH	CSU and cable RJ48C 15-pin to 8-pin – BCSystems PEC – 63157 Wall mount – BCSystems PEC – 63158	
II	Null modem adapter 8-conductor to DB-25 male – CS PEC – 2750-C1 TRW – 2322125021	

CONVERSANT VIS Requirements and Specifications

6

Overview

This chapter provides information on the requirements and specifications that each CONVERSANT VIS multi-application platform requires for proper operation. These requirements include:

- Power Requirements
- Space Requirements
- Environmental Considerations
 - Temperature Level Requirements
 - Humidity Level Requirements
- Network communication specifications
 - Public switched network
 - Private data networks

Power Requirements

This section describes the power requirements for each multi-application platform. Certain power cabling and requirements are standard across all platforms, as described below:

- Each unit, modem, and printer should be located within nine feet of its power receptacle.
- The AC power output receptacle on the back of each unit is to be used *only* for a video monitor. Never plug any other device into this receptacle.
- Communication cables must be kept separate from power cables. Installation of communication and power cables should be in accordance with National Electrical Codes (NEC).

MAP/100C Power Requirements

Table 6-1 lists the power that must be available for each MAP/100C, and its optional printer, monitor, and modem, respectively:

Table 6-1. Power Requirements for the MAP/100C

Attribute	MAP/100C
Volts AC	110-130 VAC +/-5%
Volts DC	-48 VDC
Hertz (Hz) (Power)	60 Hz
Phase	Single
Breaker Amps	20(AC), 25(DC)
Nominal Current Draw	7(AC), 15(DC)
Input	NEMA 5-15P

The maximum power output of a MAP/100C is 600 watts. The maximum heat dissipation output is 2500 BTU.

MAP/100 Power Requirements

Table 6-2 lists the power that must be available for each MAP/100, and its optional printer, monitor, and modem, respectively:

Table 6-2. Power Requirements for the MAP/100

Attribute	MAP/100
Volts AC	110-130VAC +/-5%
Volts DC	-48VDC, 10Ga wire feed
Hertz (Hz)	60 Hz
Phase	Single
Breaker Amps	15(AC), 20(DC)
Nominal Current Draw	7(AC), 15(DC)
Input	NEMA 5-15P (AC Only)
Battery Backup	15 Min

The maximum power output of a MAP/100 is 600 W. The maximum heat dissipation output is 2500 BTU.

MAP/40 Power Requirements

Table 6-3 lists the power that must be available for each MAP/40 unit, and its optional printer, monitor, and modem, respectively:

Table 6-3. Power Requirements for the MAP/40

Attribute	MAP/40
Volts AC	90-130 VAC +/-5%
Hertz (Hz) (Power)	47-63 Hz
Phase	Single
Breaker Amps	8
Nominal Current Draw	4
Input	NEMA 5-15P
Unit Input	IEC-320

The maximum power output of a MAP/40 is 325 watts. The maximum heat output of a MAP/40 is approximately 1100 BTUs.

Space Requirements

MAP/100C Space Requirements

Table 6-4 details the space requirements for the MAP/100C platform. The MAP/100C is only capable of rack-mounting in a standard, 24-inch commercial frame.

Table 6-4. Space Requirements for the MAP/100C Platform

	Width	Height	Depth	Weight
Rack	22.6 in.	24 in.	14.5 in	140 lbs.

MAP/100 Space Requirements

Table 6-5 details the space requirements for the MAP/100 platform. The MAP/100 is capable of rack-mounting in a standard 24 inch commercial frame, or in a free-standing, floor-located position.

Table 6-5. Space Requirements for the MAP/100 Platform

	Width	Height	Depth	Weight
Rack	19.5 in.	24 in.	22 in	140 lbs.
Deskside	17.5 in.	21.5 in	22 in.	140 lbs.

MAP/40 Space Requirements

Table 6-6 details the space requirements for the MAP/40 platform. The MAP/40 is utilized in a deskside, tower fashion.

Table 6-6. Space Requirements for the MAP/40 Platform

	Width	Height	Depth	Weight
Deskside	12.6 in.	17.7 in.	20 in	37 lbs.

Environmental Considerations

Each of the Version 4.0 platforms should be located in an area able to maintain the temperature and humidity requirements shown in Table 6-7 and Table 6-8, respectively.

Temperature Level Requirements

Table 6-7. Temperature Requirements for the Version 4.0 Platforms

Operating State	Temperature
Operating	+10 to +32C (+50 to +90F)
Nonoperating	-40 to +60C

Humidity Level Requirements

Table 6-8. Humidity Level Requirements for the Version 4.0 Platforms

Operating State	Humidity
Nonoperating	5% to 92%, noncondensing
Continuous operating	20% to 55%, noncondensing
Short-term operating	20% to 80%, noncondensing

Equipment Specifications

The following section details the general equipment specifications, telephone network characteristics, and data communications characteristics for the CONVERSANT VIS V4.0.

General Specifications

Table 6-9 details the general equipment specifications for the Version 4.0 platforms.

Table 6-9. General Specifications for the Version 4.0 Platforms

Attribute	Specification
Operating system:	UNIX System V, release 3.2.3
System memory:	16-Mbyte standard w/486 CPU 12-Mbyte standard w/386 CPU
Clock speed:	50-MHz standard w/486 CPU 25-MHz standard w/486 CPU (MAP/40 only) 25-MHz standard w/386 CPU
Expansion slots	
MAP/100s:	25 (all are 16-bit ISA with 6 being 32-bit EISA)
MAP/40:	12 (all are 16-bit ISA)
Tape drive:	525-Mbyte internal, removable cartridge SCSI format 150-Mbyte internal, removable cartridge ESDI format
Floppy disk drive:	1.44-Mbyte, 3.5 inch
Hard disk drive	
MAP/100s:	1.2-Gbyte SCSI (Standard)
MAP/100s:	600-Mbyte ESDI (Supported)
MAP/40:	1.2-Gbyte SCSI (Standard, Option 1)
MAP/40:	200-Mbyte IDE (Standard, Option 2)
Speech coding:	32 and 16 Kbps ADPCM 24 and 16 Kbps SBC 64 Kbps PCM

Telephone Network Characteristics

Table 6-10 details the general telephone network characteristics for the Version 4.0 platforms.

Table 6-10. Telephone Network Characteristics for Version 4.0 Platforms

Attribute	Characteristic
Number of channels MAP/100s	4 - 96 (maximum - 48 incoming, 48 bridged outgoing for T1 configuration)
MAP/40	4 - 48 (maximum - 24 incoming, 24 bridged outgoing for T1 configuration)
System input	Dual Tone Multi Frequency North American English U.K. English Canadian French Mexican Spanish
Network approval	Part68, AS593M-17926-VW-E
Safety	All components UL approved #1459
Connectors	Analog — RJ21X or RJ25C Digital — 15-pin D subminiature
Lines	Analog — (loop start) signaling Digital T1 — (E&M) signaling Digital ISDN - ISDN PRI Layer 1 signaling

T/R Telephony Interface Specifications

Table 6-11 through Table 6-14 detail the various tip/ring (T/R) telephony interface specifications.

Table 6-11. T/R Circuit Card General Specifications

Attribute	Value
Type of Service	Four or six channels of loop-start POTS
Loop current detection	15 mA minimum
Ringing voltage detection	88 VRMS at 20 Hz (nominal) ¹
Ringer Equivalence for T/R	0.5 B
Wink Detection ²	80 - 800 msec
Flash Duration	40 - 1550 msec
Register Recall	Timed Break/Earth Recall ³
Answer Delay	0 - 10 rings

1. The AYC27 (Germany) card will detect ringing at 23-54 Hz, 45-75 VAC.
2. Adjustable through Application Switch Interface (ASI) packages.
3. Earth Recall only applies to the IVP6-IU (AYC16) only.

Table 6-12. T/R Circuit Card DTMF Tone Detection Specifications

Attribute	Value
Digits	0 - 9, *, #, A - D
Amplitude	+3 to -22 dBm total power (nominal tones) ¹
On/Off timing	80 msec minimum on, 23 msec off
Gaps bridged	10 msec
Signal/noise ratio	23 dB (nominal tones at -19 dBm total power)
Twist	+4 to -8dB (high to low tone)
Frequency deviation	+/-1.5%

1. Adjustable through Application Switch Interface (ASI) packages

Table 6-13. T/R Circuit Card Transmission Level Plan

Attribute	Value
Input gain	0 dB fixed
Output gain	0 dB fixed
IVOL (card voice coding only) ¹	Input gain selectable from -9 to +12 dB
OVOL (card voice playback only)	Output gain selectable from -9 to +12 dB
TDM output gain	Selectable from -30 to +6 dB

1. Automatic Gain Control (AGC) is enabled by default

Table 6-14. T/R Circuit Card DTMF Addressing Specifications

Attribute	Default Value
Digits	0 - 9, *, #, A - D
On/off timing ¹	100 msec on, 60msec off
Frequency	Precise tones
Twist*	0 dB
Amplitude*	-3 dBm per frequency

1. Adjustable through Application Switch Interface (ASI) packages

For additional information on T/R circuit card transmission level plan, refer to Appendix D, "Information For Advanced Users," in the *CONVERSANT VIS Version 4.0 Operations*, 585-350-703.

Country-Specific Switch Packages

Refer to Table 6-15 for country switch package supported call progress tones. Refer to Table 6-16 through Table for country-specific switch package parameters. For all countries, the following information applies:

- S/N Ratio is 55 dB
- Twist is +3 (dB)
- Frequency Deviation is +/- 3 Hz

Table 6-15. Country Switch Package Supported Call Progress Tones

Country	Switch	Tone	Frequency (Hz)	Level (dBm)	Cadence on/off (msec)
Australia	PSTN	Dial Tone	425 or 400 or 400+450	-30 - +1	Steady (2.3 sec min)
		Ring Back	425 or 400 or 400+450	-30 - +1	400/200/400/2000
		Busy	425 400	-30 - +1	375/375
		Re-order	425 or	-30 - +1	2500/500
		# Unobtainable	400		
	Definity	Dial Tone	404 + 450	-20 - +1	Steady (1.2 sec min)
		Stutter Dial Tone	404 + 450	-20 - +1	150/150 150/150 150/150
		Ring Back	404 + 450	-20 - +1	400/200/400/2000/3000
		Busy/Reorder	425	-20 - +1	400/400
		Intercept	425	-20 - +1	2500/500
Belgium	Definity	Dial Tone	425	-20 - +1	Steady (1.2 Sec min)
		Stutter Dial Tone	NA	NA	Not used in default configuration
		Ring Back	425	-20 - +1	1000/3000-4000 repeat
		Busy	425	-20 - +1	500/500 repeat
		Re-order	425	-20 - +1	200-250/200-250 repeat
Canada	See United States				

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Table 6-15. Country Switch Package Supported Call Progress Tones — Continued

Country	Switch	Tone	Frequency (Hz)	Level (dBm)	Cadence on/off (msec)
Germany	PSTN	Dial Tone	425 or 450 or 400+425 or 425 or 450	-30 - +1	Steady (1.2 sec min) 750/750/250/250 700/800/200/300
		Ring Back	425 or 450 or 425 or 450 or 425	-30 - +1	1000/4000 1000/5000 1000/9000 960/3840
		Busy	425 or 425 or 425 or 450 or 425	-30 - +1	500/500 310/310 250/250 150/475 150/475
		Re-order	425 or 425 or 450	-30 - +1	310/310 250/250 150/475
	Definity	Dial Tone	425	-20 - +1	Steady (1.2 sec min)
		Stutter Dial Tone	425	-20 - +1	150/150 150/150 150/150 steady
		Ring Back	425	-20 - +1	1000/4000
		Busy	425	-20 - +1	150/475
		Re-order	425	-20 - +1	250/250
	Hong Kong	PSTN	Dial Tone	350 + 440	-30 - +1
Ring Back			440 + 480	-30 - +1	400/200/400/3200
Busy			480 + 620	-30 - +1	500/500
Re-order			480 + 620	-30 - +1	250/250
Definity		Dial Tone	350 + 440	-20 - +1	Steady (1.2 sec min)
		Stutter Dial Tone	350 + 440	-20 - +1	150/150 150/150 150/150 steady
		Ring Back	440 + 480	-20 - +1	400/200/400/3200
		Busy	480 + 620	-20 - +1	500/500
		Re-order	480 + 620	-20 - +1	250/250

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Table 6-15. Country Switch Package Supported Call Progress Tones — Continued

Country	Switch	Tone	Frequency (Hz)	Level (dBm)	Cadence on/off (msec)
Ireland	Definity	Dial Tone	350+440	-20 - +1	Steady (1.2 sec min)
		Stutter Dial Tone	350+440	-20 + 1	100/100 100/100 100/100 steady
		Ring Back	404+450	-20 - +1	400/200 400/2000 repeat
		Busy	404	-20 - +1	350/400 repeat
		Re-order	404	-20 - +1	400/350 200/500 repeat
Japan	PSTN	Dial Tone	400	-30 - +1	Steady (1.8 sec min)
		Ring Back	400	-30 - +1	800-1500/1600-3000
		Busy	400	-30 - +1	500/500
	Definity	Dial Tone	404	-30 - +1	Steady (1.8 sec min)
			404	-30 - +1	250/250
		Stutter Dial Tone	404	-30 - +1	100/100 100/100 100/100 250/250
		Ring/Special Ring Back	375+425	-30 - +1	800-1500/1600-3000
Busy	404	-30 - +1	500/500		
Mexico	PSTN	Dial Tone	425	-30 - +1	Steady (1.2 sec min)
		Ring Back	425	-30 - +1	1000/4000
		Busy	425	-30 - +1	250/250
	Definity	Dial Tone	425	-20 - +1	Steady (1.2 sec min)
		Stutter Dial Tone	425	-20 - +1	100/100 100/100 100/100 steady
		Ring Back	425	-20 - +1	1000/4000
		Busy	425	-20 - +1	250/250
Netherlands	Definity	Dial Tone	425	-20 - +1	Steady (1.2 Sec min)
		Stutter Dial Tone	NA	NA	Not used in default configuration
		Ring Back	425	-20 - +1	1000/3000-4000 repeat
		Busy	425	-20 - +1	400-600/400-600 repeat
		Re-order	425	-20 - +1	200-250/200-250 repeat

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Table 6-15. Country Switch Package Supported Call Progress Tones — Continued

Country	Switch	Tone	Frequency (Hz)	Level (dBm)	Cadence on/off (msec)
Spain	PSTN	Dial Tone	425	-30 - +1	Steady (1.2 sec min)
		Intl Dial Tone	600	-30 - +1	Steady (1.2 sec min)
		Ring Back	425	-30 - +1	1500/3000
		Busy	425	-30 - +1	200/200
		Re-order	425	-30 - +1	200/200/200/200/200/600
	Definity	Dial Tone	425	-20 - +1	Steady (1.2 Sec min)
		Stutter Dial Tone	425	-20 - +1	150/150 150/150 150/150 steady
		Ring Back	425	-20 - +1	1500/3000 repeat
		Busy	425	-20 - +1	200/200 repeat
		Re-order	425	-20 - +1	200/200/200/200/200/600
United Kingdom	PSTN	Dial Tone	350 + 440	-30 - +1	Steady (1.2 sec min)
		Ring Back	400 + 450	-30 - +1	400/200/400/2000
		Busy	400	-30 - +1	375/375
		Re-order	400	-30 - +1	400/350/225/525
	Definity	Dial Tone	350 + 440	-20 - +1	Steady (1.2 sec min)
		Stutter Dial Tone	350 + 440	-20 - +1	100/100 100/100 100/100 steady
		Ring Back	404 + 450	-20 - +1	400/200/400/2000
		Busy	404	-30 - +1	375/375
		Re-order	404	-30 - +1	400/350/225/525
United States/ Canada	Definity/ PSTN	Dial Tone	350 + 440	+1 to -24	Present for 1 sec
		Stutter Dial Tone	350 + 440	-30 - +1	150/150 150/15 150/150 steady
		Ring Back	440 + 480	-30 - +1	2000/4000
		Busy	480 + 620	-30 - +1	500/500
		Reorder	480 + 620	-30 - +1	250/250

Table 6-16. Country Switch Package Parameters (Australia - Definity)

Parameter	Value	Units	Specification, Notes
TR_DTMF_ONTIME	60	msec	50 < digit duration
TR_DTMF-OFFTIME	100	msec	70 < interdigit pause < 3000
TR_DTMF_H_LEVEL	-8	dBm	-22dbm < hlevel < -5
TR_DTMF_L_LEVEL	-10	dBm	-22dbm < hlevel < -5
TR_PULSE_ON	60	msec	
TR_PULSE_OFF	40	msec	
TR_PULSE_INTERDIGIT	800	msec	
TR_CLIPPING_LIMIT	-12	dBm	
TR_CLIPPING_DUR	500	msec	
TR_CLIPPING_THRESH	-12	dBm	
TR_TRANSHYBRID_LOSS	25000	ohms	TN468B Definity Circuit Pack
TR_RECALL_TYPE	0		no earth recall
TR_ANSWER_DELAY	1	rings	number of rings before answering
TR_MAX_RING_INTERVAL	6200	msec	time between start of ring voltage signals
TR_MIN_RING_DUR	default	msec	
TR_MAX_RING_DUR	default	msec	ignore constant ring
TR_EDetect_MIN	default	dBm	
TR_CPT_DETECT_MIN	default	dBm	
TR_DTMF_DETECT_MIN	default	dBm	
TR_POST_OFFHK_DELAY	default	msec	
TR_POSTONHK_DELAY	default	msec	
TR_DTMF_MUTE	default		
TR_D_RINGTONE_DISCONNECT	0		Do NOT disconnect on ring tone
TR_D_BUSYTONE_DISCONNECT	0		Do NOT disconnect on busy tone
TR_D_REORDERTONE_DISCONNECT	0		Do NOT disconnect on reorder tone
TR_D_DIALTONE_DISCONNECT	2		Disconnect on dial tone
TR_D_STUTTERDT_DISCONNECT	2		Disconnect on stutter dial tone
ANALOG_LOSS_COMP	-9	dB	
Switch Hook Flash Duration	300	msec	Register recall

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Table 6-16. Country Switch Package Parameters (Australia - Definity) — Continued

Parameter	Value	Units	Specification, Notes
Wink Disconnect Interval	350	msec	Minimum time to declare disconnect
Type of Signaling	TT		Network address signaling
Incoming Speech Volume	4000		+ 12 dB gain
Outgoing Speech Volume	1000		Unity gain
Outgoing Text Volume	4000		+ 12 dB gain (TTS)
Dial tone training enabled	Yes		
Blind Transfer, Initiate	FW		
Blind Transfer, Complete	H		
Intelligent Transfer, Initiate	FW		
Intelligent Transfer, Complete	H		
Intelligent Transfer, Reconnect (No Ans)	FPF		
Intelligent Transfer, Reconnect (Busy)	FPF		

Table 6-17. Country Switch Package Parameters (Australia - PSTN)

Parameter	Value	Units	Specification, Notes
TR_DTMF_ONTIME	60	msec	50 < digit duration
TR_DTMF-OFFTIME	100	msec	70 < interdigit pause < 3000
TR_DTMF_H_LEVEL	-8	dBm	-22dbm < hlevel < -5
TR_DTMF_L_LEVEL	-10	dBm	-22dbm < hlevel < -5
TR_PULSE_ON	60	msec	
TR_PULSE_OFF	40	msec	
TR_PULSE_INTERDIGIT	800	msec	
TR_CLIPPING_LIMIT	-12	dBm	
TR_CLIPPING_DUR	500	msec	
TR_CLIPPING_THRESH	-12	dBm	
TR_TRANSHYBRID_LOSS	25000	ohms	
TR_RECALL_TYPE	0		no earth recall
TR_ANSWER_DELAY	2	rings	number of rings before answering
TR_MAX_RING_INTERVAL	6400	msec	time between start of ring voltage signals

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Table 6-17. Country Switch Package Parameters (Australia - PSTN) — Continued

Parameter	Value	Units	Specification, Notes
TR_MIN_RING_DUR	default	msec	
TR_MAX_RING_DUR	default	msec	ignore constant ring
TR_EDETECT_MIN	default	dBm	
TR_CPT_DETECT_MIN	default	dBm	
TR_DTMF_DETECT_MIN	default	dBm	
TR_POST_OFFHK_DELAY	default	msec	
TR_POSTONHK_DELAY	default	msec	
TR_DTMF_MUTE	default		
TR_D_RINGTONE_DISCONNECT	0		Do NOT disconnect on ring tone
TR_D_BUSYTONE_DISCONNECT	0		Do NOT disconnect on busy tone
TR_D_REORDERTONE_DISCONNECT	0		Do NOT disconnect on reorder tone
TR_D_DIALTONE_DISCONNECT	2		Disconnect on dial tone
TR_D_STUTTERDT_DISCONNECT	2		Disconnect on stutter dial tone
ANALOG_LOSS_COMP	-9	dB	
Switch Hook Flash Duration	300	msec	Register recall
Wink Disconnect Interval	350	msec	Minimum time to declare disconnect
Type of Signaling	TT		Network address signaling
Incoming Speech Volume	4000		+ 12 dB gain
Outgoing Speech Volume	1000		Unity gain
Outgoing Text Volume	4000		+ 12 dB gain (TTS)
Dial tone training enabled	No		
Blind Transfer, Initiate	FW		
Blind Transfer, Complete	H		
Intelligent Transfer, Initiate	FW		
Intelligent Transfer, Complete	H		
Intelligent Transfer, Reconnect (No Ans)	FPF		
Intelligent Transfer, Reconnect (Busy)	FPF		

Table 6-18. Country Switch Package Parameters (Belgium - Definity)

Parameter	Value	Units	Specification, Notes
TR_DTMF_ONTIME	100	msec	65 < digit duration < 250
TR_DTMF-OFFTIME	100	msec	65 < interdigit pause < 250
TR_DTMF_H_LEVEL	-6	dBm	hlevel = - 6dBm + - 2 dB
TR_DTMF_L_LEVEL	-8	dBm	llevel = -8dBm + - 2 dB
TR_PULSE_ON	60	msec	9 - 11 PPS, 63 - 70 MBR
TR_PULSE_OFF	40	msec	
TR_PULSE_INTERDIGIT	800	msec	interdigit pause > 400 msec
TR_CLIPPING LIMIT	-10	dBm	speech limit < -10 dBm
TR_CLIPPING DUR	500	msec	
TR_CLIPPING_THRESH	-10	dBm	
TR_TRANSHYBRID_LOSS	40000	ohms	TN2144 Definity Circuit Pack
TR_RECALL_TYPE	0		no earth recall
TR_ANSWER_DELAY	0	rings	number of rings before answering
TR_MAX_RING_INTERVAL	6400	msec	time between start of ring voltage signals
TR_MIN_RING_DUR	default	msec	
TR_MAX_RING_DUR	default	msec	
TR_EDetect_MIN	-38	dBm	
TR_CPT_DETECT_MIN	-25	dBm	
TR_DTMF_DETECT_MIN	-25	dBm	
TR_POST_OFFHK_DELAY	default	msec	
TR_POSTONHK_DELAY	default	msec	
TR_DTMF_MUTE	default		
TR_D_RINGTONE_DISCONNECT	0		Do NOT disconnect on ring tone
TR_D_BUSYTONE_DISCONNECT	0		Do NOT disconnect on busy tone
TR_D_REORDERTONE_DISCONNECT	0		Do NOT disconnect on reorder tone
TR_D_DIALTONE_DISCONNECT	2		Disconnect on dial tone
TR_D_STUTTERDT_DISCONNECT	2		Disconnect on stutter dial tone
ANALOG_LOSS_COMP	default	dB	
Switch Hook Flash Duration	500	msec	Register recall

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Table 6-18. Country Switch Package Parameters (Belgium - Definity) — *Continued*

Parameter	Value	Units	Specification, Notes
Wink Disconnect Interval	300	msec	Minimum time to declare disconnect
Type of Signaling	TT		Network address signaling
Incoming Speech Volume	4000		+ 12 dB gain
Outgoing Speech Volume	1000		Unity gain
Outgoing Text Volume	4000		+ 12 dB gain (TTS)
Dial tone training enabled	Yes		
Blind Transfer, Initiate	FW		
Blind Transfer, Complete	H		
Intelligent Transfer, Initiate	FW		
Intelligent Transfer, Complete	H		
Intelligent Transfer, Reconnect (No Ans)	FPF		
Intelligent Transfer, Reconnect (Busy)	FPF		

Table 6-19. Country Switch Package Parameters (Germany - Definity)

Parameter	Value	Units	Specification, Notes
TR_DTMF_ONTIME	100	msec	80 < digit duration < 100
TR_DTMF-OFFTIME	100	msec	80 < interdigit pause < 100
TR_DTMF_H_LEVEL	-6	dBm	hlevel = - 6dBm + - 2 dB
TR_DTMF_L_LEVEL	-8	dBm	llevel = -8dBm + - 2 dB
TR_PULSE_ON	60	msec	52 <= pulse <= 71 msec
TR_PULSE_OFF	40	msec	32 <= pause <= 46 msec
TR_PULSE_INTERDIGIT	800	msec	650 <= interdigit <= 1300 msec
TR_CLIPPING LIMIT	-11	dBm	speech limit < -10.5 dBm avg
TR_CLIPPING DUR	500	msec	
TR_CLIPPING_THRESH	-11	dBm	
TR_TRANSHYBRID_LOSS	42000	ohms	TN2180 Definity Circuit Pack
TR_RECALL_TYPE	0		no earth recall
TR_ANSWER_DELAY	0	rings	number of rings before answering
TR_MAX_RING_INTERVAL	5000	msec	time between start of ring voltage signals
TR_MIN_RING_DUR	200	msec	ignore rings < 280 msec
TR_MAX_RING_DUR	5000	msec	ignore constant ring
TR_EDetect_MIN	-38	dBm	
TR_CPT_DETECT_MIN	-25	dBm	
TR_DTMF_DETECT_MIN	-25	dBm	
TR_POST_OFFHK_DELAY	default	msec	
TR_POSTONHK_DELAY	default	msec	
TR_DTMF_MUTE	default		
TR_D_RINGTONE_DISCONNECT	0		Do NOT disconnect on ring tone
TR_D_BUSYTONE_DISCONNECT	0		Do NOT disconnect on busy tone
TR_D_REORDERTONE_DISCONNECT	0		Do NOT disconnect on reorder tone
TR_D_DIALTONE_DISCONNECT	2		Disconnect on dial tone
TR_D_STUTTERDT_DISCONNECT	2		Disconnect on stutter dial tone
ANALOG_LOSS_COMP	-6	dB	Add 6 dB of loss on TR bridged calls
Switch Hook Flash Duration	500	msec	Register recall

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Table 6-19. Country Switch Package Parameters (Germany - Definity) — *Continued*

Parameter	Value	Units	Specification, Notes
Wink Disconnect Interval	300	msec	Minimum time to declare disconnect
Type of Signaling	TT		Network address signaling
Incoming Speech Volume	4000		+ 12 dB gain
Outgoing Speech Volume	1000		Unity gain
Outgoing Text Volume	4000		+ 12 dB gain (TTS)
Dial tone training enabled	Yes		
Blind Transfer, Initiate	FW		
Blind Transfer, Complete	H		
Intelligent Transfer, Initiate	FW		
Intelligent Transfer, Complete	H		
Intelligent Transfer, Reconnect (No Ans)	FPF		
Intelligent Transfer, Reconnect (Busy)	FPF		

Table 6-20. Country Switch Package Parameters (Germany - PSTN)

Parameter	Value	Units	Specification, Notes
TR_DTMF_ONTIME	100	msec	80 < digit duration < 100
TR_DTMF-OFFTIME	100	msec	80 < interdigit pause < 100
TR_DTMF_H_LEVEL	-6	dBm	hlevel = - 6dBm + - 1.5 dB
TR_DTMF_L_LEVEL	-8	dBm	llevel = -8dBm + - 1.5 dB
TR_PULSE_ON	60	msec	
TR_PULSE_OFF	40	msec	Feature disabled
TR_PULSE_INTERDIGIT	800	msec	
TR_CLIPPING LIMIT	-11	dBm	speech limit < -10.5 avg dBm
TR_CLIPPING DUR	500	msec	
TR_CLIPPING_THRESH	-11	dBm	
TR_TRANSHYBRID_LOSS	42000	ohms	
TR_RECALL_TYPE	0		no earth recall
TR_ANSWER_DELAY	0	rings	number of rings before answering
TR_MAX_RING_INTERVAL	10000	msec	time between start of ring voltage signals
TR_MIN_RING_DUR	600	msec	ignore rings < 680 msec
TR_MAX_RING_DUR	5000	msec	ignore constant ring
TR_EDetect_MIN	-38	dBm	
TR_CPT_DETECT_MIN	-30	dBm	
TR_DTMF_DETECT_MIN	-30	dBm	
TR_POST_OFFHK_DELAY	default	msec	
TR_POSTONHK_DELAY	default	msec	
TR_DTMF_MUTE	default		
TR_D_RINGTONE_DISCONNECT	0		Do NOT disconnect on ring tone
TR_D_BUSYTONE_DISCONNECT	2		Do NOT disconnect on busy tone
TR_D_REORDERTONE_DISCONNECT	0		Do NOT disconnect on reorder tone
TR_D_DIALTONE_DISCONNECT	2		Disconnect on dial tone
TR_D_STUTTERDT_DISCONNECT	2		Disconnect on stutter dial tone
ANALOG_LOSS_COMP	-6	dB	Add 6 dB of loss on TR bridged calls
Switch Hook Flash Duration	500	msec	Register recall

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Table 6-20. Country Switch Package Parameters (Germany - PSTN) — Continued

Parameter	Value	Units	Specification, Notes
Wink Disconnect Interval	300	msec	Minimum time to declare disconnect
Type of Signaling	TT		Network address signaling
Incoming Speech Volume	4000		+ 12 dB gain
Outgoing Speech Volume	1000		Unity gain
Outgoing Text Volume	4000		+ 12 dB gain (TTS)
Dial tone training enabled	Yes		
Blind Transfer, Initiate	FW		
Blind Transfer, Complete	H		
Intelligent Transfer, Initiate	FW		
Intelligent Transfer, Complete	H		
Intelligent Transfer, Reconnect (No Ans)	FPF		
Intelligent Transfer, Reconnect (Busy)	FPF		

Table 6-21. Country Switch Package Parameters (Hong Kong - Definity)

Parameter	Value	Units	Specification, Notes
TR_DTMF_ONTIME	100	msec	50 < digit duration < 200
TR_DTMF-OFFTIME	60	msec	50 < digit duration < 200
TR_DTMF_H_LEVEL	-7	dBm	
TR_DTMF_L_LEVEL	-9	dBm	
TR_PULSE_ON	60	msec	
TR_PULSE_OFF	40	msec	Feature disabled
TR_PULSE_INTERDIGIT	720	msec	
TR_CLIPPING LIMIT	-9.0	dBm	Speech limit < -10 dBm
TR_CLIPPING DUR	500	msec	
TR_CLIPPING_THRESH	-9.0	dBm	
TR_TRANSHYBRID_LOSS	25000	ohms	TN746B Definity Circuit Pack
TR_RECALL_TYPE	0		no earth recall
TR_ANSWER_DELAY	0	rings	number of rings before answering
TR_MAX_RING_INTERVAL	4000	msec	
TR_MIN_RING_DUR	default	msec	
TR_MAX_RING_DUR	default	msec	
TR_EDetect_MIN	default	dBm	
TR_CPT_DETECT_MIN	default	dBm	
TR_DTMF_DETECT_MIN	default	dBm	
TR_POST_OFFHK_DELAY	default		
TR_POSTONHK_DELAY	default		
TR_DTMF_MUTE	default		
TR_D_RINGTONE_DISCONNECT	0		Do NOT disconnect on ring tone
TR_D_BUSYTONE_DISCONNECT	2		Disconnect on busy tone
TR_D_REORDERTONE_DISCONNECT	0		Do NOT disconnect on reorder tone
TR_D_DIALTONE_DISCONNECT	2		Disconnect on dial tone
TR_D_STUTTERDT_DISCONNECT	2		Disconnect on stutter dial tone
ANALOG_LOSS_COMP	default(0)	dB	
Switch Hook Flash Duration	500	msec	Register recall

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Table 6-21. Country Switch Package Parameters (Hong Kong - Definity) — Continued

Parameter	Value	Units	Specification, Notes
Wink Disconnect Interval	300	msec	Minimum time to declare disconnect
Type of Signaling	TT		Network address signaling
Incoming Speech Volume	4000		+ 12 dB gain
Outgoing Speech Volume	1000		Unity gain
Outgoing Text Volume	4000		+ 12 dB gain (TTS)
Dial tone training enabled	Yes		
Blind Transfer, Initiate	FW		
Blind Transfer, Complete	H		
Intelligent Transfer, Initiate	FW		
Intelligent Transfer, Complete	H		
Intelligent Transfer, Reconnect (No Ans)	FPF		
Intelligent Transfer, Reconnect (Busy)	FPF		

Table 6-22. Country Switch Package Parameters (Hong Kong - PSTN)

Parameter	Value	Units	Specification, Notes
TR_DTMF_ONTIME	100	msec	50 < digit duration < 200
TR_DTMF-OFFTIME	60	msec	50 < digit duration < 200
TR_DTMF_H_LEVEL	-7	dBm	
TR_DTMF_L_LEVEL	-9	dBm	
TR_PULSE_ON	60	msec	
TR_PULSE_OFF	40	msec	Feature disabled
TR_PULSE_INTERDIGIT	720	msec	
TR_CLIPPING LIMIT	-9.0	dBm	Speech limit < -10 dBm
TR_CLIPPING DUR	500	msec	
TR_CLIPPING_THRESH	-9.0	dBm	
TR_TRANSHYBRID_LOSS	25000	ohms	
TR_RECALL_TYPE	0		no earth recall
TR_ANSWER_DELAY	0	rings	number of rings before answering

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Table 6-22. Country Switch Package Parameters (Hong Kong - PSTN) — Continued

Parameter	Value	Units	Specification, Notes
TR_MAX_RING_INTERVAL	4000	msec	time between start of ring voltage signals
TR_MIN_RING_DUR	default	msec	
TR_MAX_RING_DUR	default	msec	
TR_EDETECT_MIN	default	dBm	
TR_CPT_DETECT_MIN	default	dBm	
TR_DTMF_DETECT_MIN	default	dBm	
TR_POST_OFFHK_DELAY	default		
TR_POSTONHK_DELAY	default		
TR_DTMF_MUTE	default		
TR_D_RINGTONE_DISCONNECT	0		Do NOT disconnect on ring tone
TR_D_BUSYTONE_DISCONNECT	2		Disconnect on busy tone
TR_D_REORDERTONE_DISCONNECT	0		Do NOT disconnect on reorder tone
TR_D_DIALTONE_DISCONNECT	2		Disconnect on dial tone
TR_D_STUTTERDT_DISCONNECT	2		Disconnect on stutter dial tone
ANALOG_LOSS_COMP	default(0)	dB	
Switch Hook Flash Duration	500	msec	Register recall
Wink Disconnect Interval	300	msec	Minimum time to declare disconnect
Type of Signaling	TT		Network address signaling
Incoming Speech Volume	4000		+ 12 dB gain
Outgoing Speech Volume	1000		Unity gain
Outgoing Text Volume	4000		+ 12 dB gain (TTS)
Dial tone training enabled	Yes		
Blind Transfer, Initiate	FW		
Blind Transfer, Complete	H		
Intelligent Transfer, Initiate	FW		
Intelligent Transfer, Complete	H		
Intelligent Transfer, Reconnect (No Ans)	FPF		
Intelligent Transfer, Reconnect (Busy)	FPF		

Table 6-23. Country Switch Package Parameters (Ireland - Definity)

Parameter	Value	Units	Specification, Notes
TR_DTMF_ONTIME	80	msec	
TR_DTMF-OFFTIME	80	msec	
TR_DTMF_H_LEVEL	-11	dBm	
TR_DTMF_L_LEVEL	-13	dBm	
TR_PULSE_ON	60	msec	
TR_PULSE_OFF	40	msec	
TR_PULSE_INTERDIGIT	820	msec	
TR_CLIPPING LIMIT	-9	dBm	
TR_CLIPPING DUR	500	msec	
TR_CLIPPING_THRESH	-8.8	dBm	
TR_TRANSHYBRID_LOSS	18000	ohms	TN468B Definity Circuit Pack
TR_RECALL_TYPE	0		no earth recall
TR_ANSWER_DELAY	0	rings	number of rings before answering
TR_MAX_RING_INTERVAL	5000	msec	time between start of ring voltage signals
TR_MIN_RING_DUR	300	msec	
TR_MAX_RING_DUR	5000	msec	
TR_EDetect_MIN	-38	dBm	
TR_CPT_DETECT_MIN	-25	dBm	
TR_DTMF_DETECT_MIN	-25	dBm	
TR_POST_OFFHK_DELAY	default	msec	
TR_POSTONHK_DELAY	default	msec	
TR_DTMF_MUTE	default		
TR_D_RINGTONE_DISCONNECT	0		Do NOT disconnect on ring tone
TR_D_BUSYTONE_DISCONNECT	0		Do NOT disconnect on busy tone
TR_D_REORDERTONE_DISCONNECT	0		Do NOT disconnect on reorder tone
TR_D_DIALTONE_DISCONNECT	2		Disconnect on dial tone
TR_D_STUTTERDT_DISCONNECT	2		Disconnect on stutter dial tone
ANALOG_LOSS_COMP	-3	dB	Loss added during bridging
Switch Hook Flash Duration	200	msec	Register recall

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Table 6-23. Country Switch Package Parameters (Ireland - Definity) — *Continued*

Parameter	Value	Units	Specification, Notes
Wink Disconnect Interval	80	msec	Minimum time to declare disconnect
Type of Signaling	TT		Network address signaling
Incoming Speech Volume	4000		+ 12 dB gain
Outgoing Speech Volume	1000		Unity gain
Outgoing Text Volume	4000		+ 12 dB gain (TTS)
Dial tone training enabled	Yes		
Blind Transfer, Initiate	FW		
Blind Transfer, Complete	H		
Intelligent Transfer, Initiate	FW		
Intelligent Transfer, Complete	H		
Intelligent Transfer, Reconnect (No Ans)	FPF		
Intelligent Transfer, Reconnect (Busy)	FPF		

Table 6-24. Country Switch Package Parameters (Japan - Definity)

Parameter	Value	Units	Specification, Notes
TR_DTMF_ONTIME	80	msec	
TR_DTMF-OFFTIME	80	msec	
TR_DTMF_H_LEVEL	-10.2	dBm	
TR_DTMF_L_LEVEL	-11.2	dBm	
TR_PULSE_ON	70	msec	
TR_PULSE_OFF	30	msec	
TR_PULSE_INTERDIGIT	700	msec	
TR_CLIPPING_LIMIT	-16.0	dBm	
TR_CLIPPING_DUR	1000	msec	
TR_CLIPPING_THRESH	-16.0	dBm	
TR_TRANSHYBRID_LOSS	30000	ohms	TN746B Definity Circuit Pack
TR_RECALL_TYPE	0		no earth recall
TR_ANSWER_DELAY	0	rings	number of rings before answering
TR_MAX_RING_INTERVAL	6400	msec	time between start of ring voltage signals
TR_MIN_RING_DUR	140	msec	
TR_MAX_RING_DUR	5000	msec	ignore constant ring
TR_EDetect_MIN	-38	dBm	
TR_CPT_DETECT_MIN	-30	dBm	
TR_DTMF_DETECT_MIN	-25	dBm	
TR_POST_OFFHK_DELAY	default		
TR_POSTONHK_DELAY	default		
TR_DTMF_MUTE	default		
TR_D_RINGTONE_DISCONNECT	0		Do NOT disconnect on ring tone
TR_D_BUSYTONE_DISCONNECT	2		Disconnect on dial tone
TR_D_REORDERTONE_DISCONNECT	2		Disconnect on dial tone
TR_D_DIALTONE_DISCONNECT	2		Disconnect on dial tone
TR_D_STUTTERDT_DISCONNECT	2		Disconnect on stutter dial tone
ANALOG_LOSS_COMP	0	dB	
Switch Hook Flash Duration	500	msec	Register recall

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Table 6-24. Country Switch Package Parameters (Japan - Definity) — Continued

Parameter	Value	Units	Specification, Notes
Wink Disconnect Interval	300	msec	Minimum time to declare disconnect
Type of Signaling	TT		Network address signaling
Incoming Speech Volume	4000		+ 12 dB gain
Outgoing Speech Volume	1000		Unity gain
Outgoing Text Volume	4000		+ 12 dB gain (TTS)
Dial tone training enabled	Yes		
Blind Transfer, Initiate	FW		
Blind Transfer, Complete	H		
Intelligent Transfer, Initiate	FW		
Intelligent Transfer, Complete	H		
Intelligent Transfer, Reconnect (No Ans)	FPF		
Intelligent Transfer, Reconnect (Busy)	FPF		

Table 6-25. Country Switch Package Parameters (Japan - PSTN)

Parameter	Value	Units	Specification, Notes
TR_DTMF_ONTIME	80	msec	
TR_DTMF-OFFTIME	80	msec	
TR_DTMF_H_LEVEL	-10.2	dBm	
TR_DTMF_L_LEVEL	-11.2	dBm	
TR_PULSE_ON	70	msec	
TR_PULSE_OFF	30	msec	
TR_PULSE_INTERDIGIT	700	msec	
TR_CLIPPING_LIMIT	-16.0	dBm	
TR_CLIPPING_DUR	1000	msec	
TR_CLIPPING_THRESH	-16.0	dBm	
TR_TRANSHYBRID_LOSS	30000	ohms	
TR_RECALL_TYPE	0		no earth recall
TR_ANSWER_DELAY	0	rings	number of rings before answering

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Table 6-25. Country Switch Package Parameters (Japan - PSTN) — Continued

Parameter	Value	Units	Specification, Notes
TR_MAX_RING_INTERVAL	6400	msec	time between start of ring voltage signals
TR_MIN_RING_DUR	140	msec	
TR_MAX_RING_DUR	5000	msec	ignore constant ring
TR_EDetect_MIN	-38	dBm	
TR_CPT_DETECT_MIN	-30	dBm	
TR_DTMF_DETECT_MIN	-25	dBm	
TR_POST_OFFHK_DELAY	default		
TR_POSTONHK_DELAY	default		
TR_DTMF_MUTE	default		
TR_D_RINGTONE_DISCONNECT	0		Do NOT disconnect on ring tone
TR_D_BUSYTONE_DISCONNECT	2		Disconnect on dial tone
TR_D_REORDERTONE_DISCONNECT	2		Disconnect on dial tone
TR_D_DIALTONE_DISCONNECT	2		Disconnect on dial tone
TR_D_STUTTERDT_DISCONNECT	2		Disconnect on stutter dial tone
ANALOG_LOSS_COMP	0	dB	
Switch Hook Flash Duration	500	msec	Register recall
Wink Disconnect Interval	300	msec	Minimum time to declare disconnect
Type of Signaling	TT		Network address signaling
Incoming Speech Volume	4000		+ 12 dB gain
Outgoing Speech Volume	1000		Unity gain
Outgoing Text Volume	4000		+ 12 dB gain (TTS)
Dial tone training enabled	Yes		
Blind Transfer, Initiate	FW		
Blind Transfer, Complete	H		
Intelligent Transfer, Initiate	FW		
Intelligent Transfer, Complete	H		
Intelligent Transfer, Reconnect (No Ans)	FPF		
Intelligent Transfer, Reconnect (Busy)	FPF		

Table 6-26. Country Switch Package Parameters (Mexico - Definity)

Parameter	Value	Units	Specification, Notes
TR_DTMF_ONTIME	80	msec	> 40 ms duration of digit
TR_DTMF-OFFTIME	80	msec	> 40 ms interdigit pause
TR_DTMF_H_LEVEL	-6	dBm	~ -6dbm, high band 2 + 1 above low band
TR_DTMF_L_LEVEL	-8	dBm	~ -8dbm, high band 2 + 1 above low band
TR_PULSE_ON	60	msec	10 +- 1 pulses/sec, 67ms +3%
TR_PULSE_OFF	40	msec	
TR_PULSE_INTERDIGIT	320	msec	300 < interdigit pause < ?
TR_CLIPPING LIMIT	-8.8	dBm	
TR_CLIPPING DUR	500	msec	
TR_CLIPPING_THRESH	-11	dBm	
TR_TRANSHYBRID_LOSS	25000	ohms	TN746B Definity Circuit Pack
TR_RECALL_TYPE	0		no earth recall
TR_ANSWER_DELAY	0	rings	number of rings before answering
TR_MAX_RING_INTERVAL	5400	msec	time between start of ring voltage signals
TR_MIN_RING_DUR	default	msec	
TR_MAX_RING_DUR	default	msec	ignore constant ring
TR_EDetect_MIN	default	dBm	
TR_CPT_DETECT_MIN	default	dBm	
TR_DTMF_DETECT_MIN	default	dBm	
TR_POST_OFFHK_DELAY	default	msec	
TR_POSTONHK_DELAY	default	msec	
TR_DTMF_MUTE	default		
TR_D_RINGTONE_DISCONNECT	0		Do NOT disconnect on ring tone
TR_D_BUSYtone_DISCONNECT	2		Do NOT disconnect on busy tone
TR_D_REORDERtone_DISCONNECT	0		Do NOT disconnect on reorder tone
TR_D_DIALtone_DISCONNECT	2		Disconnect on dial tone
TR_D_STUTTERDT_DISCONNECT	2		Disconnect on stutter dial tone
ANALOG_LOSS_COMP	default	dB	
Switch Hook Flash Duration	500	msec	Register recall

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Table 6-26. Country Switch Package Parameters (Mexico - Definity) — Continued

Parameter	Value	Units	Specification, Notes
Wink Disconnect Interval	300	msec	Minimum time to declare disconnect
Type of Signaling	TT		Network address signaling
Incoming Speech Volume	4000		+ 12 dB gain
Outgoing Speech Volume	1000		Unity gain
Outgoing Text Volume	4000		+ 12 dB gain (TTS)
Dial tone training enabled	Yes		
Blind Transfer, Initiate	FW		
Blind Transfer, Complete	H		
Intelligent Transfer, Initiate	FW		
Intelligent Transfer, Complete	H		
Intelligent Transfer, Reconnect (No Ans)	FPF		
Intelligent Transfer, Reconnect (Busy)	FPF		

Table 6-27. Country Switch Package Parameters (Mexico - PSTN)

Parameter	Value	Units	Specification, Notes
TR_DTMF_ONTIME	80	msec	> 40 ms duration of digit
TR_DTMF-OFFTIME	80	msec	> 40 ms interdigit pause
TR_DTMF_H_LEVEL	-6	dBm	~ -6dbm, high band 2 + 1 above low band
TR_DTMF_L_LEVEL	-8	dBm	~ -8dbm, high band 2 + 1 above low band
TR_PULSE_ON	60	msec	10 +- 1 pulses/sec, 67ms +3%
TR_PULSE_OFF	40	msec	
TR_PULSE_INTERDIGIT	320	msec	300 < interdigit pause < ?
TR_CLIPPING LIMIT	-8.8	dBm	
TR_CLIPPING DUR	500	msec	
TR_CLIPPING_THRESH	-11	dBm	
TR_TRANSHYBRID_LOSS	25000	ohms	TN746B Definity Circuit Pack
TR_RECALL_TYPE	0		no earth recall

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Table 6-27. Country Switch Package Parameters (Mexico - PSTN) — Continued

Parameter	Value	Units	Specification, Notes
TR_ANSWER_DELAY	0	rings	number of rings before answering
TR_MAX_RING_INTERVAL	5400	msec	time between start of ring voltage signals
TR_MIN_RING_DUR	default	msec	
TR_MAX_RING_DUR	default	msec	ignore constant ring
TR_EDETECT_MIN	default	dBm	
TR_CPT_DETECT_MIN	default	dBm	
TR_DTMF_DETECT_MIN	default	dBm	
TR_POST_OFFHK_DELAY	default	msec	
TR_POSTONHK_DELAY	default	msec	
TR_DTMF_MUTE	default		
TR_D_RINGTONE_DISCONNECT	0		Do NOT disconnect on ring tone
TR_D_BUSYTONE_DISCONNECT	2		Do NOT disconnect on busy tone
TR_D_REORDERTONE_DISCONNECT	0		Do NOT disconnect on reorder tone
TR_D_DIALTONE_DISCONNECT	2		Disconnect on dial tone
TR_D_STUTTERDT_DISCONNECT	2		Disconnect on stutter dial tone
ANALOG_LOSS_COMP	default	dB	
Switch Hook Flash Duration	100	msec	Register recall
Wink Disconnect Interval	300	msec	Minimum time to declare disconnect
Type of Signaling	TT		Network address signaling
Incoming Speech Volume	4000		+ 12 dB gain
Outgoing Speech Volume	1000		Unity gain
Outgoing Text Volume	4000		+ 12 dB gain (TTS)
Dial tone training enabled	Yes		
Blind Transfer, Initiate	FW		
Blind Transfer, Complete	H		
Intelligent Transfer, Initiate	FW		
Intelligent Transfer, Complete	H		
Intelligent Transfer, Reconnect (No Ans)	FPF		
Intelligent Transfer, Reconnect (Busy)	FPF		

Table 6-28. Country Switch Package Parameters (Netherlands - Definity)

Parameter	Value	Units	Specification, Notes
TR_DTMF_ONTIME	100	msec	65 < digit duration < 250
TR_DTMF-OFFTIME	100	msec	65 < interdigit pause < 250
TR_DTMF_H_LEVEL	-8.7	dBm	hlevel = - 9dBm + - 2 dB
TR_DTMF_L_LEVEL	-10.7	dBm	llevel = -11dBm + - 2 dB
TR_PULSE_ON	60	msec	61.5 +/- 10 msec
TR_PULSE_OFF	40	msec	38.5 +/- 7.5 msec
TR_PULSE_INTERDIGIT	800	msec	interdigit pause > 700 msec
TR_CLIPPING LIMIT	-11.5	dBm	speech limit < -10 dBm
TR_CLIPPING DUR	500	msec	
TR_CLIPPING_THRESH	-11.5	dBm	
TR_TRANSHYBRID_LOSS	27000	ohms	TN2144 Definity Circuit Pack
TR_RECALL_TYPE	0		no earth recall
TR_ANSWER_DELAY	0	rings	number of rings before answering
TR_MAX_RING_INTERVAL	6400	msec	time between start of ring voltage signals
TR_MIN_RING_DUR	600	msec	
TR_MAX_RING_DUR	5000	msec	
TR_EDetect_MIN	-38	dBm	
TR_CPT_DETECT_MIN	-25	dBm	
TR_DTMF_DETECT_MIN	-25	dBm	
TR_POST_OFFHK_DELAY	default	msec	
TR_POSTONHK_DELAY	default	msec	
TR_DTMF_MUTE	default		
TR_D_RINGTONE_DISCONNECT	0		Do NOT disconnect on ring tone
TR_D_BUSYTONE_DISCONNECT	0		Do NOT disconnect on busy tone
TR_D_REORDERTONE_DISCONNECT	0		Do NOT disconnect on reorder tone
TR_D_DIALTONE_DISCONNECT	2		Disconnect on dial tone
TR_D_STUTTERDT_DISCONNECT	2		Disconnect on stutter dial tone
ANALOG_LOSS_COMP	default	dB	
Switch Hook Flash Duration	500	msec	Register recall

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Table 6-28. Country Switch Package Parameters (Netherlands - Definity) — *Continued*

Parameter	Value	Units	Specification, Notes
Wink Disconnect Interval	300	msec	Minimum time to declare disconnect
Type of Signaling	TT		Network address signaling
Incoming Speech Volume	4000		+ 12 dB gain
Outgoing Speech Volume	1000		Unity gain
Outgoing Text Volume	4000		+ 12 dB gain (TTS)
Dial tone training enabled	Yes		
Blind Transfer, Initiate	FW		
Blind Transfer, Complete	H		
Intelligent Transfer, Initiate	FW		
Intelligent Transfer, Complete	H		
Intelligent Transfer, Reconnect (No Ans)	FPF		
Intelligent Transfer, Reconnect (Busy)	FPF		

Table 6-29. Country Switch Package Parameters (Spain - Definity)

Parameter	Value	Units	Specification, Notes
TR_DTMF_ONTIME	80	msec	65 < digit duration < 250
TR_DTMF-OFFTIME	160	msec	65 < interdigit pause
TR_DTMF_H_LEVEL	-6	dBm	hlevel = - 6dBm + - 2 dB
TR_DTMF_L_LEVEL	-8	dBm	llevel = -8dBm + - 2 dB
TR_PULSE_ON	0	msec	
TR_PULSE_OFF	0	msec	Feature Disabled
TR_PULSE_INTERDIGIT	0	msec	
TR_CLIPPING LIMIT	-10	dBm	speech limit < -10 dBm
TR_CLIPPING DUR	500	msec	
TR_CLIPPING_THRESH	-10	dBm	
TR_TRANSHYBRID_LOSS	45000	ohms	Based on in-country testing
TR_RECALL_TYPE	0		no earth recall
TR_ANSWER_DELAY	0	rings	number of rings before answering
TR_MAX_RING_INTERVAL	6400	msec	time between start of ring voltage signals
TR_MIN_RING_DUR	740	msec	ignore rings < 600 msec
TR_MAX_RING_DUR	5000	msec	ignore constant ring
TR_EDetect_MIN	-38	dBm	
TR_CPT_DETECT_MIN	-25	dBm	
TR_DTMF_DETECT_MIN	-25	dBm	
TR_POST_OFFHK_DELAY	default	msec	
TR_POSTONHK_DELAY	default	msec	
TR_DTMF_MUTE	default		
TR_D_RINGTONE_DISCONNECT	0		Do NOT disconnect on ring tone
TR_D_BUSYTONE_DISCONNECT	0		Do NOT disconnect on busy tone
TR_D_REORDERTONE_DISCONNECT	0		Do NOT disconnect on reorder tone
TR_D_DIALTONE_DISCONNECT	2		Disconnect on dial tone
TR_D_STUTTERDT_DISCONNECT	2		Disconnect on stutter dial tone
ANALOG_LOSS_COMP	default	dB	
Switch Hook Flash Duration	500	msec	Register recall

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Table 6-29. Country Switch Package Parameters (Spain - Definity) — Continued

Parameter	Value	Units	Specification, Notes
Wink Disconnect Interval	300	msec	Minimum time to declare disconnect
Type of Signaling	TT		Network address signaling
Incoming Speech Volume	4000		+ 12 dB gain
Outgoing Speech Volume	1000		Unity gain
Outgoing Text Volume	4000		+ 12 dB gain (TTS)
Dial tone training enabled	Yes		
Blind Transfer, Initiate	FW		
Blind Transfer, Complete	H		
Intelligent Transfer, Initiate	FW		
Intelligent Transfer, Complete	H		
Intelligent Transfer, Reconnect (No Ans)	FPF		
Intelligent Transfer, Reconnect (Busy)	FPF		

Table 6-30. Country Switch Package Parameters (Spain - PSTN)

Parameter	Value	Units	Specification, Notes
TR_DTMF_ONTIME	80	msec	65 < digit duration < 250
TR_DTMF-OFFTIME	160	msec	65 < interdigit pause
TR_DTMF_H_LEVEL	-6	dBm	hlevel = - 6dBm + - 2 dB
TR_DTMF_L_LEVEL	-8	dBm	llevel = -8dBm + - 2 dB
TR_PULSE_ON	0	msec	
TR_PULSE_OFF	0	msec	Feature Disabled
TR_PULSE_INTERDIGIT	0	msec	
TR_CLIPPING LIMIT	-10	dBm	speech limit < -10 dBm
TR_CLIPPING DUR	500	msec	
TR_CLIPPING_THRESH	-10	dBm	
TR_TRANSHYBRID_LOSS	35000	ohms	TN2180 Definity Circuit Pack
TR_RECALL_TYPE	0		no earth recall
TR_ANSWER_DELAY	0	rings	number of rings before answering

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Table 6-30. Country Switch Package Parameters (Spain - PSTN) — Continued

Parameter	Value	Units	Specification, Notes
TR_MAX_RING_INTERVAL	6400	msec	time between start of ring voltage signals
TR_MIN_RING_DUR	740	msec	ignore rings < 600 msec
TR_MAX_RING_DUR	5000	msec	ignore constant ring
TR_EDetect_MIN	-38	dBm	
TR_CPT_DETECT_MIN	-35	dBm	ignore signals < - 45 dBm
TR_DTMF_DETECT_MIN	-30	dBm	
TR_POST_OFFHK_DELAY	default	msec	
TR_POSTONHK_DELAY	default	msec	
TR_DTMF_MUTE	default		
TR_D_RINGTONE_DISCONNECT	0		Do NOT disconnect on ring tone
TR_D_BUSYTONE_DISCONNECT	2		Do NOT disconnect on busy tone
TR_D_REORDERTONE_DISCONNECT	2		Do NOT disconnect on reorder tone
TR_D_DIALTONE_DISCONNECT	2		Disconnect on dial tone
TR_D_STUTTERDT_DISCONNECT	2		Disconnect on stutter dial tone
ANALOG_LOSS_COMP	default	dB	
Switch Hook Flash Duration	100	msec	Register recall
Wink Disconnect Interval	100	msec	Minimum time to declare disconnect
Type of Signaling	TT		Network address signaling
Incoming Speech Volume	4000		+ 12 dB gain
Outgoing Speech Volume	1000		Unity gain
Outgoing Text Volume	4000		+ 12 dB gain (TTS)
Dial tone training enabled	Yes		
Blind Transfer, Initiate	FW		
Blind Transfer, Complete	H		
Intelligent Transfer, Initiate	FW		
Intelligent Transfer, Complete	H		
Intelligent Transfer, Reconnect (No Ans)	FPF		
Intelligent Transfer, Reconnect (Busy)	FPF		

**Table 6-31. Country Switch Package Parameters
(United Kingdom - Definity)**

Parameter	Value	Units	Specification, Notes
TR_DTMF_ONTIME	80	msec	not less than 68ms, duty cycle < 52%
TR_DTMF-OFFTIME	80	msec	not less than 68ms, duty cycle < 52%
TR_DTMF_H_LEVEL	-11	dBm	~ -13dbm, high band 2 + 1 above low band
TR_DTMF_L_LEVEL	-13	dBm	~ -13dbm, high band 2 + 1 above low band
TR_PULSE_ON	40	msec	10 + 1 pulses/sec, 67 +5,-4% break ratio
TR_PULSE_OFF	60	msec	
TR_PULSE_INTERDIGIT	720	msec	720 < interdigit pause < 920
TR_CLIPPING LIMIT	-9	dBm	
TR_CLIPPING DUR	500	msec	
TR_CLIPPING_THRESH	-13	dBm	
TR_TRANSHYBRID_LOSS	18000	ohms	TN468B Definity Circuit Pack
TR_RECALL_TYPE	0		no earth recall
TR_ANSWER_DELAY	0	rings	number of rings before answering
TR_MAX_RING_INTERVAL	5400	msec	time between start of ring voltage signals
TR_MIN_RING_DUR	default	msec	
TR_MAX_RING_DUR	default	msec	ignore constant ring
TR_EDetect_MIN	default	dBm	
TR_CPT_DETECT_MIN	default	dBm	
TR_DTMF_DETECT_MIN	default	dBm	
TR_POST_OFFHK_DELAY	default	msec	
TR_POSTONHK_DELAY	default	msec	
TR_DTMF_MUTE	default		
TR_D_RINGTONE_DISCONNECT	0		Do NOT disconnect on ring tone
TR_D_BUSYTONE_DISCONNECT	0		Do NOT disconnect on busy tone
TR_D_REORDERTONE_DISCONNECT	0		Do NOT disconnect on reorder tone
TR_D_DIALTONE_DISCONNECT	2		Disconnect on dial tone
TR_D_STUTTERDT_DISCONNECT	2		Disconnect on stutter dial tone

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**Table 6-31. Country Switch Package Parameters
(United Kingdom - Definity) — *Continued***

Parameter	Value	Units	Specification, Notes
ANALOG_LOSS_COMP	-12	dB	
Switch Hook Flash Duration	500	msec	Register recall
Wink Disconnect Interval	80	msec	Minimum time to declare disconnect
Type of Signaling	TT		Network address signaling
Incoming Speech Volume	4000		+ 12 dB gain
Outgoing Speech Volume	1000		Unity gain
Outgoing Text Volume	4000		+ 12 dB gain (TTS)
Dial tone training enabled	Yes		
Blind Transfer, Initiate	FW		
Blind Transfer, Complete	H		
Intelligent Transfer, Initiate	FW		
Intelligent Transfer, Complete	H		
Intelligent Transfer, Reconnect (No Ans)	FPF		
Intelligent Transfer, Reconnect (Busy)	FPF		

Table 6-32. Country Switch Package Parameters (United Kingdom - PSTN)

Parameter	Value	Units	Specification, Notes
TR_DTMF_ONTIME	80	msec	not less than 68ms, duty cycle < 52%
TR_DTMF_OFFTIME	80	msec	not less than 68ms, duty cycle < 52%
TR_DTMF_H_LEVEL	-11	dBm	~ -13dbm, high band 2 +- 1 above low band
TR_DTMF_L_LEVEL	-13	dBm	~ -13dbm, high band 2 +- 1 above low band
TR_PULSE_ON	40	msec	10 +- 1 pulses/sec, 67 +-5,-4% break ratio
TR_PULSE_OFF	60	msec	
TR_PULSE_INTERDIGIT	720	msec	720 < interdigit pause < 920
TR_CLIPPING_LIMIT	-9	dBm	
TR_CLIPPING_DUR	500	msec	
TR_CLIPPING_THRESH	-13	dBm	
TR_TRANSYBRID_LOSS	18000	ohms	TN468B Definity Circuit Pack
TR_RECALL_TYPE	0		no earth recall
TR_ANSWER_DELAY	0	rings	number of rings before answering
TR_MAX_RING_INTERVAL	5400	msec	time between start of ring voltage signals
TR_MIN_RING_DUR	default	msec	
TR_MAX_RING_DUR	default	msec	ignore constant ring
TR_EDetect_MIN	default	dBm	
TR_CPT_DETECT_MIN	default	dBm	
TR_DTMF_DETECT_MIN	default	dBm	
TR_POST_OFFHK_DELAY	default	msec	
TR_POSTONHK_DELAY	default	msec	
TR_DTMF_MUTE	default		
TR_D_RINGTONE_DISCONNECT	0		Do NOT disconnect on ring tone
TR_D_BUSYTONE_DISCONNECT	0		Do NOT disconnect on ring tone
TR_D_REORDERTONE_DISCONNECT	0		Do NOT disconnect on ring tone
TR_D_DIALTONE_DISCONNECT	2		Disconnect on dial tone
TR_D_STUTTERDT_DISCONNECT	2		Disconnect on stutter dial tone

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Table 6-32. Country Switch Package Parameters (United Kingdom - PSTN) — *Continued*

Parameter	Value	Units	Specification, Notes
ANALOG_LOSS_COMP	-12	dB	
Switch Hook Flash Duration	500	msec	Register recall
Wink Disconnect Interval	80	msec	Minimum time to declare disconnect
Type of Signaling	TT		Network address signaling
Incoming Speech Volume	4000		+ 12 dB gain
Outgoing Speech Volume	1000		Unity gain
Outgoing Text Volume	4000		+ 12 dB gain (TTS)
Dial tone training enabled	Yes		
Blind Transfer, Initiate	FW		
Blind Transfer, Complete	H		
Intelligent Transfer, Initiate	FW		
Intelligent Transfer, Complete	H		
Intelligent Transfer, Reconnect (No Ans)	FPF		
Intelligent Transfer, Reconnect (Busy)	FPF		

Table 6-33. Ranges/Default Values (United States/Canada)

Parameter	Value	Units	Specification, Notes
TR_DTMF_ONTIME	20 - 30000	msec	DTMF tone duration in milliseconds. (Default = 100ms)
TR_DTMF-OFFTIME	20 - 30000	msec	DTMF interdigit pause time, in milliseconds. (Default = 60ms)
TR_DTMF_H_LEVEL	20 - 30000	dBm	Level for the high frequency tone, in decibels, used to set level and create twist. (Default = -1.7dBm)
TR_DTMF_L_LEVEL	20 - 30000	dBm	Level for the low frequency tone, in decibels, used to set level and create twist. (Default = -1.7dBm)
TR_PULSE_ON	20 - 30000	msec	Dial pulse on duration, in milliseconds (Default = 60ms)
TR_PULSE_OFF	20 - 30000	msec	Dial pulse off duration, in milliseconds (Default = 40ms)
TR_PULSE_INTERDIGIT	20 - 30000	msec	Pulse interdigit time, in milliseconds (Default = 600ms)
TR_CLIPPING LIMIT	-25 - +3	dBm	Level the signal is clipped when clipping is active, in decibels (dBs) (Default = -11 dBm)
TR_CLIPPING DUR	0-30000	msec	Length of time the output level can exceed the TR_CLIPPING_THRESH before clipping is activated, in milliseconds. (Default = 500ms)
TR_CLIPPING_THRESH	-25 - +3	dBm	The level at which signal clipping occurs, in decibels. (Default = -8.8dBm)
TR_TRANSHYBRID_LOSS	0 - 100000	ohms	Trans-hybrid loss, in Ohms. (25000 ohms)
TR_RECALL_TYPE	0 or 1		Method to use for recall. 0 = Timed Break, 1 = Earth Recall. (Default = 0)
TR_ANSWER_DELAY	0-50	rings	Time to delay before answering, in rings (Default = 0 rings)
TR_MAX_RING_INTERVAL	1000-10000	msec	Maximum time between any two ring voltage signals on a new incoming call (Default = 6400)
TR_MIN_RING_DUR	80-2000	msec	Minimum duration an AC ring signal must be present to be recognized (Default = 80)

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Table 6-33. Ranges/Default Values (United States/Canada) — Continued

Parameter	Value	Units	Specification, Notes
TR_MAX_RING_DUR	3000-10000	msec	Maximum duration an AC ring signal can be present and still be recognized (Default = 5000)
TR_EDetect_MIN	-48 - +3	dBm	Minimum energy level needed to classify speech energy detection, used on answer detect (Default = -38)
TR_CPT_DETECT_MIN	-48 - +3	dBm	Minimum detection level (per freq) for call progress tone detection (Default = -47)
TR_DTMF_DETECT_MIN		dBm	
TR_POST_OFFHK_DELAY	200-6000		Delay in the acknowledgment response to a request to go off hook (Default = 1500)
TR_POSTONHK_DELAY	200-6000		Delay in the acknowledgment response to a request to go on hook (Default = 2000)
TR_DTMF_MUTE	0 - 1		Flag that determines if DTMF muting is enabled (Default = 1; 1 enable, 0 disable)
TR_D_RINGTONE_DISCONNECT	0		
TR_D_BUSYTONE_DISCONNECT	0		
TR_D_REORDERTONE_DISCONNECT	0		
TR_D_DIALTONE_DISCONNECT	2		
TR_D_STUTTERDT_DISCONNECT	2		
ANALOG_LOSS_COMP	0	dB	
Switch Hook Flash Duration	500	msec	
Wink Disconnect Interval	300	msec	
Type of Signaling	TT		
Incoming Speech Volume	4000		
Outgoing Speech Volume	1000		
Outgoing Text Volume	4000		
Dial tone training enabled	Yes		
Blind Transfer, Initiate	FW		
Blind Transfer, Complete	H		
Intelligent Transfer, Initiate	FW		

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Table 6-33. Ranges/Default Values (United States/Canada) — Continued

Parameter	Value	Units	Specification, Notes
Intelligent Transfer, Complete	H		
Intelligent Transfer, Reconnect (No Ans)	FPF		
Intelligent Transfer, Reconnect (Busy)	FPF		

T1/PRI Telephony Interface Specifications

Table 6-34 through Table 6-37 detail the various interface specifications for T1 and PRI. These values also apply to Line Side T1 communication arrangements.

Table 6-34. T1/PRI Telephony Interface General Specifications

Attribute	Specification
Physical connector	Subminiature DB-15 male receptacle
FCC registration	AS593M-17926-VM-E
Safety approval	UL Type Approved
Signal regeneration	CSU required over 666 feet
Loopback capability	CSU required for remote capability
TLP at DS-1 interface	0 ELP, 0 DLP
TLP at TDM interface	0 ELP, 0 DLP
Call progress tone frequency	Precise tone frequencies
Call progress tone levels	-6 dBm total (nominal)
Call progress tone timing	Ring - on/off: 2/4 sec Busy - on/off: .5/.5 sec
Call progress tone detection	Not supported by T1 card Must use optional CCA feature if this capability is required
DS-1 timing source	Slave to DS-1 source (loop timed)
DS-1 timing (free running)	Stratum 4
Suggested CSU types	AT&T Paradyne PEC 2152-ESF, Verilink 551VST List 2, or equivalent
Supported configurations	Tie trunk (robbed-bit E&M) ISDN-PRI

Table 6-35. T1/PRI Telephony Interface Specifications for Tie Trunk Type Configurations Only

Attribute	Specification
DS-1 framing	D4 type only
DS-1 line coding	Zero code suppression (ZCS)
Protocol	Robbed-bit (4-wire) E&M
Alerting in/out	Wink/wink
Wink generation	230 msec default (Selectable: 20 - 2500 msec)
Wink detection range	100-350 msec
Addressing (outgoing)	DTMF (touch tone)
DTMF output timing	70 msec on, 70 msec off
DTMF output levels	-8 dBm per frequency (nominal)
Number of digits	16-digit maximum
Addressing (incoming)	DTMF (touch tone)
DTMF receivers	LSSGR compatible
Number of receivers	24 (one per DS-0 channel)
Number of digits (DNIS)	Can wait for up to 16 digits (selectable) (can be provisioned not to wait for digits)
Initial digit timer	Will wait up to 4 seconds for first digit (can be provisioned not to wait for digits)
Interdigital timer	Will wait up to 2 sec between digits
Audible ring starts	As soon as selected number of digits is received, or when one of the above timers expire (whichever occurs first)
DNIS capacity	0 - 16 digits
ANI capacity	Not supported
Transfer capability	Not supported in tie trunk configurations

Table 6-36. T1/PRI Telephony Interface Specifications for ISDN-PRI Type Configurations Only

Attribute	Specification
DS-1 framing	D4 or ESF (selectable)
DS-1 line coding	ZCS (with D4 framing only) B8ZS (with ESF framing only)
B-channel capacities	23 B+D or 47 B+D (requires two AYC3B cards)
D-channel capacities	Maximum of 1 D channel per system (for example, two 23 B+D interfaces are not supported)
Interface ID	1 (for card with D-channel, not selectable) 2 (for card without D-channel)
DNIS capacity	0 - 16 digits
ANI capacity	0 - 16 digits
D-channel backup	Not supported
Transfer capability	Not supported by ISDN-PRI protocol

Data Communications Characteristics

Table 6-37 details the data communications characteristics for the Version 4.0 platforms.

Table 6-37. Data Communications Characteristics for Version 4.0 Platforms

Attribute	Asynchronous	Synchronous
Ports	1 - 9	1 - 2
Ports available for Host Communication	1-2	1-2
Simultaneous Host Sessions (LUs)	24-48	32 - 64
Parallel ports	NA	NA
Mode	Full duplex	Half/full duplex
Protocols	Xon/Xoff	3270 SNA/SDLC 3270 Bisynchronous
Data rates	To 9600 bps	To 56000 bps
Interface	EIA-232C	EIA-232C

CONVERSANT VIS Capacity and Performance Considerations

7

Overview

This chapter provides information that can be used to help ensure proper sizing of the CONVERSANT Voice Information System (VIS). It includes:

- Capacity criteria
- Performance considerations

Capacity

The following information describes the capacities associated with different areas of the Version 4.0 system. The tables contained here describe general system-related capacities.

The numbers represent the maximum capacity of a particular platform, component, or general application. The maximum capacity may be the physical maximum for that item or it may depend on factors such as application design and interaction with other features. Where applicable, the maximum capacity is explained further if it is affected by external factors.

General System Capacities

The capacities listed in this section apply to each VIS platform, and are not feature or application specific. Refer to Chapter 4, "CONVERSANT VIS Features and Feature Packages", for maximum capacities related to specific features.

Circuit Card Restrictions

The MAP/100 and MAP/100C platform card restrictions are listed in Table 7-1. The MAP/40 platform card restrictions are listed in Table 7-2. The number of slots available are included in both tables.

Not all of the maximums listed in the tables can be obtained at the same time. For example, 8 Tip/Ring (T/R) cards and 8 Signal Processing (SP) cards cannot be placed in the same system at the same time. Conflicts such as this are resolved at the time a system is being planned and assembled by the Configuration Program, which automatically limits the number of circuit cards allowed in the system when conflicts like this arise.

Table 7-1. MAP/100 and MAP/100C Circuit Card Restrictions

Item	Max. Number	Notes
Slots available	25	15 for VIS AYCXX or optional feature cards, 10 additional slots reserved for CONVERSANT controller cards
T/R cards	8	Independent of the type of T/R card
T1 cards	4	Must be AYC3B or AYC11
SP cards	8	Must be either AYC9, or AYC2C
CMP cards	8	Must be AYC7
Maximum number of CMP cards associated with one SP	2	Must be AYC7
Remote Maintenance Circuit Card	1	Is provided with or without built-in modem in all new V4.0 systems
Magnetic peripheral controller cards	1	Must be either ESDI or SCSI.
FAX Attendant circuit cards	3	Must be Brooktrout TR114, 12 channels of FAX Attendant service maximum
IPCI, DCP, eight-port asynchronous cards	1 each	All can be used simultaneously
LAN cards	1	Must be either StarLAN or InterLan
Synchronous host communications interface cards	2	A maximum of two CLEO PC/XL 3270 cards are supported

Table 7-2. MAP/40 Circuit Card Restrictions

Item	Max. Number	Notes
Slots available	12	8 for VIS AYCXX or optional feature cards, 4 additional slots reserved for CONVERSANT controller cards
T/R cards	8	Must be IVP4, IVP6, or IVP6-IU Four cards must be used for bridging.
T1 cards	2	Must be AYC3B or AYC11 One card must be used for bridging.
SP cards	4	Must be either AYC9, or AYC2C
CMP cards	2	Must be AYC7
Maximum Number of CMP cards associated with one SP	2	Must be AYC7
Magnetic peripheral controller cards	1 - 2	Must be either ESDI and IDE, or SCSI.
FAX Attendant circuit cards	3	Must be Brooktrout TR114. 12 channels of FAX Attendant service maximum.
IPCI, DCP, eight-port asynchronous cards	1 each	All can be used simultaneously
LAN cards	1	Either StarLAN or InterLan
Synchronous host communications interface cards	2	A maximum of two CLEO PC/XL 3270 cards are supported

Channel Capacities

The following tables show the maximum number of incoming or outgoing channels supported by the VIS. Channels refer to either analog or digital telephony channels. Data channels such as those used in the 3270 synchronous host interface or the ASAI interface are not included in the tables. Table 7-3 shows the channel capacities per card, while Table 7-4 and Table 7-5 show the channel capacities per system.

Table 7-3. Channel Capacities Per Card

Type of Card	Max. Number
Channels per IVP6, IVP6-IU, or VRS6 used as analog T/R card	6
Channels per IVP4 used as analog T/R card	4
Channels per AYC3B, AYC11 used as digital T1 card	24
Channels per AYC3B, AYC11 used as digital LST1 card	24
Channels per AYC3B, AYC11 used as digital PRI card	23- first card, 24 - second
Channels per Brooktrout TR114 used for FAX Attendant	4

Table 7-4. Channel Capacities For MAP/40

Item	Max. Number	Notes
Maximum Incoming digital channels per system	24	24 incoming T1, or LST1 channels allowed.
Maximum Incoming analog Tip/Ring channels per system	24	Any combination of T/R circuit cards is allowed, up to 24 incoming channels, max.
Maximum AUDIX Voice Power channels per system	12	If 12 AUDIX Voice Power channels are used, only 12 T/R channels remain for VIS use
Maximum FAX Attendant channels per system	12	If 12 FAX Attendant channels are used, only 12 T/R channels remain for VIS use.
PRI channels per system	23	One channel reserved for D-channel control signaling
Incoming and outgoing channels per system	48	Maximum of 24 standard and 24 bridged, T1, LST1 or Tip/Ring

Table 7-5. Channel Capacities For MAP/100C, MAP/100

Item	Max. Number	Notes
Maximum Incoming digital channels per system	48	48 Incoming T1 or LST1 channels allowed
Maximum Incoming analog Tip/Ring channels per system	24	Any combination of T/R circuit cards is allowed, up to 24 incoming channels, max.
Maximum AUDIX Voice Power channels per system	12	If 12 AUDIX Voice Power channels are used, only 12 T/R channels remain for VIS use
Maximum FAX Attendant channels per system	12	If 12 FAX Attendant channels are used, only 12 T/R channels remain for VIS use.
PRI channels per system	47	Only 23 channels available on first card, 24 available on second. (One channel reserved for D-channel control)
Maximum Digital In - Digital Out bridge connections	48 - 48	
Maximum Digital In - Analog Out bridge connections	48 - 24	
Maximum Analog In - Digital Out bridge connections	24 - 24	
Maximum Analog In - Analog Out bridge connections	24 - 24	

Playback and Coding Capacities

The number of channels that support simultaneous use of either speech playback or voice coding are listed in Table 7-6. The capacities are listed by speech encoding methods per card. The default encoding method used for recording speech on the VIS is adaptive differential pulse code modulation (ADPCM) using a sampling rate of 32 Kbps.

The maximum capacities are the same for all platforms (MAP/100C, MAP/100, MAP/40). The constraints occur at the card level, not at the system level.

Each number shown represents the maximum number of channels that can support the simultaneous use of either speech playback or speech coding per card. For example, one AYC2C SP card can support a maximum of 29 channels of speech playback simultaneously (assuming the speech was recorded at ADPCM32). This means more channels could be supported if applications are doing "other" things while some channels are strictly in a playback mode. This also says that if 2 AYC2C SP cards are present, there is enough capacity on the system to easily support 48 channels of simultaneous speech playback or coding for ADPCM coded speech. Both SP and T/R cards are shown in Table 7-6.

The IVP4 card capacity represents the maximum number of possible channels that can be present for that type of card given that there are four channels per card.

The IVP6 card capacity represents the maximum number of possible channels that can be present for that type of card given that there are six channels per card.

NOTE:

The IVP circuit card values shown in Table 7-6 represent the cards being set to "talk" rather than "tdm". If an IVP circuit card is set to "tdm", the values shown for SP circuit cards (AYC2C, AYC9) apply.

Table 7-6. Channel Capacities for Playback and Coding

Card	PCM 64 Kbps Play/Code	ADPCM 16 or 32 Kbps Play/Code	SBC 16 or 24 Kbps Play/Code
IVP6	6/6	6/6	6/6
IVP4	4/4	4/4	4/4
AYC2C	48/48	48/30	12/12
AYC9	48/48	48/48	20/20

Speech Storage Capacities

Table 7-7 shows the speech storage capacities. The descriptions of the columns shown in the table are as follows:

- Disk setup — Lists each possible hard disk configuration available for Version 4.0
- Speech capacity — Total amount of space available for the given MAX SPEECH disk configuration.
- 16-Kbyte ADPCM/SBC — Hours of speech available for the given disk configuration using speech encoded at a rate of 16 Kbps. The speech-encoding method used can be either the ADPCM or sub band coding (SBC).
- 24-Kbyte SBC — Hours of speech available for the given disk configuration using speech encoded at a rate of 24 Kbps. The speech-encoding method is SBC.
- 32-Kbyte ADPCM — Hours of speech available for the given disk configuration using speech encoded at a rate of 32 Kbps. The speech-encoding method is ADPCM. This speech-encoding rate is the default used when encoding speech on the VIS.
- 64-Kbyte PCM — Hours of speech available for the given disk configuration using speech encoded at a rate of 64 Kbps. The speech-encoding method is pulse code modulation (PCM).

The numbers shown are theoretical maximums not likely to be achieved because there is wasted space whenever a phrase does not fill a block. For example, standard speech is stored at 32-Kbyte ADPCM. One block of speech holds 4 seconds of speech. If a phrase is less than 4 seconds, the remaining space within that speech block is not available for other use.

Table 7-7. Hours of Storage Speech Available According to Disk Setup

Disk Setup	Speech Cap (Blocks)	16 Kbyte ADPCM/SBC	24 Kbyte SBC	32 Kbyte ADPCM	64 Kbyte PCM
200 Mbyte IDE	6464	14.3	9.6	7.1	3.6
Dual 200 Mbyte	19264	42.8	28.5	21.4	10.7
600 Mbyte ESDI	32,064	71.2	44.5	35.6	17.8
Dual 600 Mbyte	70,464	156.6	104.3	78.3	39.1
1.2 Gbyte SCSI	72,307	160.6	107.5	80.3	40.1
Dual 1.2 Gbyte	72,307	160.6	107.5	80.3	40.1

Database Capacities

Table 7-8 lists the database capacities used within a Script Builder application script.

Table 7-8. Database Capacities

Item	Max. Number	Notes
Local database (LDB) table name	11 characters	
Length of LDB field names	24 characters	
LDB field size - char	50 bytes	
LDB field size - num	38 bytes	
LDB field size - date	10 bytes	Fixed size
LDB field size - time	11 bytes	Fixed size
Number of cursors open on system	255	Refer to Appendix C of <i>CONVERSANT VIS V4.0 Operations</i> , 585-350-703, for more detail
Different database tables accessed per application	10	Includes both local and remote tables
Fields specified in one LDB table with Script Builder	15	Includes both local and remote tables
Number of remote databases accessed per system	4	Up to five DB instances supported; one is always dedicated to LDB (requires SQL*NET)
Overall database size	See note	Free space restricted only by amount of space available in root file system

Report Capacities

Table 7-9 lists the capacities associated with Script Builder application script reports.

Table 7-9. Report Capacities

Item	Max. Number	Notes
Days of Call Data Detail Report storage	7	Current day plus previous 7 days are stored; data is then summarized
Days of Call Classification Report storage	365	
Days of Call Data Summary Report storage	7	Can be modified for 0 -7 days within utility /vs/bin/util/croncdh
Days of Traffic Summary Report storage	7	
Number of Event Log Messages stored	500-20K (Compressed)	

Speech Administration Capacities

Table 7-10 lists the capacities associated with recording speech from the speech administration screens.

Table 7-10. Speech Administration Capacities

Item	Max. Number	Notes
Phrase length when recorded in Script Builder	240 sec	Playing phrases consecutively eliminates the constraint
Phrase tag length	50 characters	

Performance Considerations

The performance of a VIS depends greatly upon factors such as amount of memory, amount of speech, size of application(s), call volume, etc. Since performance is a function of customer application, it is not possible to generically predict the performance of a given customer setup in the scope of this book. However, some general conclusions can be made based on performance and load tests done on a representative VIS Version 4.0 platform. The observations made in the following paragraphs were based on performance tests done using the VIS configuration detailed in Table 7-11:

Table 7-11. MAP/100 General Testing Configuration

Platform	MAP/100
CPU	486DX
Memory	16 Mbyte
Cache	Enabled
Disk	Single 1.2-Gbyte
Telephony	48 channels T1
Speech Processing	2 AYC2C SP cards

Descriptions of those areas that most significantly affect system performance are listed below. The areas listed represent VIS processing concerns. The observations listed do not include effects of UNIX processing that a customer may be doing in addition to VIS processing. For the purposes of evaluating system performance, normal production VIS activity such as call processing, touch tone entry, local database access, speech playback, etc. was simulated.

CPU Utilization Rates

If CPU idle time is less than 40 (that is, CPU time is devoted to either system processing or waiting for input/output from the disk), then speech playback performance degrades rapidly but gracefully. This is also true for voice coding performance. If a system is overutilized (idle time is less than 40), system activity evaluation should be considered.

Voice Processing

Performance considerations on voice processing were made in terms of speech playback and voice coding.

Speech Playback

Speech playback is perhaps the most widely used generic feature of the system. It poses some difficult performance issues due to the architecture of the system, the real-time nature of speech, and the great variability that can be found in how applications use speech. As a result, an application could be conceived that does not perform well even under very low channel counts. Variables that affect play performance are listed below.

Phrase Length

Phrase length affects speech play performance. The concatenation of several short phrases requires the VIS to process several talk requests. This involves retrieving several different phrases from the speech file system. With a single longer phrase, a single talk instruction is processed by the VIS and only one initial retrieval from disk is necessary.

The best way to enhance play performance is to eliminate unnecessary short phrases from applications. Do not use short phrases for silence if the silence can be concatenated with longer phrases. Avoid trimming phrases to the absolute minimum and then speaking silence phrases between other phrases. Record phrases that are always used together as a single phrase.

Active Speech Pool Size

The active speech pool is a list of all phrases used during system operation. Effective use of the speech pool depends on the quantity of unique speech required by all applications. It is best to share speech across applications and reuse speech in applications wherever possible.

Speech Coding Rate

The coding rate also affects speech play. Dense coding rates lessen the load on the CPU and the disk and reduce memory requirements. They also reduce storage space. Refer to the voice-coding capacities listed earlier in this chapter to see the difference in the number of supported channels per speech encoding rate.

Voice Coding

Coding is more resource intensive than play for CPU and SP usage for ADPCM-type algorithms. However, coding requests do not generally share the same complexities found in play requests. CPU utilization degrades when coding speech.

Call Events

In general, a small number of script events can be handled without any serious performance degradation. As scripts process more events, however, event processing costs become significant. A script with 80 seconds of speech playback and with 40 touch tones passed into the script running on 48 channels runs successfully on a 16-Mbyte version of the test platform described earlier. The same test run with 48 script events added to the application caused the VIS to not keep up with play requests. This was due to the heavy use of disk resources for event processing. The processing of events impeded the VIS from retrieving speech from the disk fast enough to avoid speech breaks.

Since event processing is spawned from the script when the call is completed, it is also possible to overload the system with calls having relatively few events but very short call-hold times. A short call hold time would be anything under 30 seconds, while a typical call-hold time would be 1.5 to 2 minutes. At the end of each call, the VIS must store call data into the database. The database access and storage times can be costly depending on the number of events stored per call. This has an impact on disk I/O performance, CPU resources, and memory.

Touch Tones

Although the system is efficient and accurate in processing touch tones, this processing overhead can be significant under load conditions. CPU processing time degrades if touch tones are received at very high rates over many channels.

Local Database

The local database is difficult to characterize since applications vary widely. In general, tables with more than 100 records used mainly for reading should be indexed on the primary key. Small tables (less than 100 records) should be left sequential (which is the default).

Complicated database interaction takes more time than sets of simple interactions. For example, it takes much less time to read 30 times from one table than it takes to perform 1 read from 30 different tables.

Host Access

Performance testing has not been done using a host interface. Difficulties lie in accounting for host delays and in generating sizable loads. Since there is no current instrumentation to divide the response time of host queries between host delay and VIS delay, performance characteristics of the VIS cannot be observed.

Product Co-Residencies

Product co-residencies on the CONVERSANT VIS platform will affect the performance of the VIS in a number of areas. Smaller amounts of disk space will be available for normal VIS activities because certain amounts are occupied by the co-resident product and its associated file systems. VIS applications written with Script Builder that employ external actions to products such as AUDIX Voice Power or FAX Attendant will utilize more processing time per transaction because of the increased complexity of the application.

Current product co-residency offerings are only available over analog T/R channels, thus limiting certain programming or architecture advantages offered with digital access from T/1, Line Side T1 (LST1) or Primary Rate Interface (PRI) connections. All optional features in addition to product co-residencies should be thoroughly investigated to avoid resource or processor conflicts.

Production Environment Considerations

Listed below are areas to consider developing Script Builder applications on a production VIS. System parameters changed in the development environment may affect either the performance or the logic of applications in the production environment and the customer may not be aware of the changes. The areas to consider when developing an application on a production system are:

- Shared Speech

Speech tags could be updated or deleted. Phrases could be shared across the production application.

- Local Database Tables

Tables could be updated or deleted. Tables could change, or individual fields within a table may change. Also, updates done to a table outside of Script Builder (using ORACLE SQL*Plus) can lock up a table until a commit is executed. Any Script Builder application using this table will not be able to access it, and the script will "hang."

- Host Control

When developing the log-in, log-out, and recovery sequences, the 3270 card can get into a confused state. Usually, you must stop and restart the voice system to correct the problem.

- Space

Consider the following aspects when developing in a production environment:

- Root and usr file system
- Speech file system
- Database

During development, more space may be required for database tables, speech phrases, and for the application itself.

■ Data interface process (DIP) writing

VIS processes communicate with messages passed within the UNIX inter-process communication (IPC) queues. For example, the T/R Interface Process (TRIP) sends a message to the transaction state machine (TSM) telling TSM that there is a "newcall." TSM executes the instructions from the application (answer phone, announce, etc.).

If a custom DIP is written, it must also communicate using the IPC message queues. This means that if the custom DIP does not send and receive messages properly, the IPC queues may back up. When this happens, the VIS stops taking calls.

■ Testing

Before turning over a new application for production, it should undergo thorough functional and load testing. Also, if a development application does not behave as expected, it could affect current callers. The system may "crash" or reduce response time if another application is being tested.

■ Performance

Reduced performance is the biggest impact of developing applications on a production machine. The areas that may reduce performance on a production machine are:

- Use of Script Builder application generator during production hours
- Use of VIS screens and menus (that is, it is *not* recommended that sysmon run continuously on the system console as this reduces available core memory.
- Host applications that require multiple host screens per host transaction request
- Running an application that performs frequent database inserts or deletes
- Requesting call data reports during peak call periods

Release and Platform History



Overview

This appendix includes summaries of the hardware and software features introduced with the following CONVERSANT Voice Information System (VIS) in releases:

- Version 2.1 Features
- Version 3.0 Features
- Version 3.1 Features

Version 2.1 Features

CONVERSANT VIS V2.1 was introduced in December, 1991, and was offered on three different platforms:

- MAP/100C — Central Office unit that is nearly the same as the MAP/100C unit available with V4.0. It used ESDI magnetic peripherals and a 25-MHz, 386 CPU with 8-Mbytes of memory standard.
- MAP/100 — Commercial version of the MAP/100C unit that is nearly the same as the MAP/100 unit available with V4.0. It used ESDI magnetic peripherals and a 25-MHz, 386 CPU with 8-Mbytes of memory standard.
- 6386WGS — This unit was the low-end CONVERSANT platform. It was a desktop PC that provided basic features. It used IDE magnetic peripherals and a 25-MHz, 386 CPU with 8-Mbytes of memory standard. It replaced the 16-MHz 6386WGS that had been previously used for CONVERSANT VIS V2.0

Features provided by CONVERSANT VIS Version 2.1 included:

- Integrated services digital network (ISDN) primary rate interface (PRI)
This feature provided a digital interface between the VIS and another network entity, such as a 4ESS switch or DEFINITY PBX. This feature provides the following benefits which includes: voice response application access to information about calling party number (often referred to as ANI) and called party number, faster call setup, and the ability to choose the Q.931 network-specific facilities (NSF) service type for outgoing calls.
- Speech recognition of connected digit strings and isolated key words
This feature provided the ability for the VIS to accept connected strings of digits, such as an account number or credit card number during Speech Recognition transactions. The ability to recognize one key word out of a spoken phrase has also been added. Benefits of this feature include the ability to allow callers to enter specific data that can be used to identify information in a database for use during the call. The speech recognition improvements allow an application to handle callers who do not have touch tone phones. With the prompt interrupt and keyword spotting capabilities of this speech recognition package, callers have added flexibility and naturalness in transaction automation.
- Advanced Call Classification Analysis (CCA)
This feature provided more detailed identification of SITs (Special Information Tones) and higher accuracy in call progress tone classification for call transfers and outgoing calls in inter-switch and intra-switch situations.

- ADPCM and SBC speech coding

This feature provided additional choices of 16 or 24-Kbps Sub-Band Coding (SBC), 16 or 32-Kbps Adaptive Differential Pulse Code Modulation (ADPCM), or 64-Kbps PCM for speech during coding or playback. This allows the application developer to select the type of speech coding and rates used based on the trade-offs between storage space and subjective speech playback quality.

- New transaction state machine (TSM) script capabilities

This feature provided several additions to the existing VIS script capabilities, including the following listed here. For more information see the *CONVERSANT VIS Version 2.1 Application Guide*.

- The "exec" instruction for starting a different script from a script
- Background music, playing at any time, with up to one unique background for each channel
- Touch tone type-ahead option with the "setttfl" instruction
- Playback fast-forward, pause, and rewind using a new option in "tflush" and the new "talkresume" instruction
- The ability to specify the length of a phrase, when coding, in terms of seconds (instead of bytes) with the "phreserve" instruction
- The ability to determine how coding was terminated and get back the length of a coded phrase from the "vc" instruction
- The ability to have a DIP interrupt a script using the "DIP_INT" IPC message and the "EDIPINT" script event
- Bit logical operations with the "and", "or", and "not" instructions

- Script Builder load time improvements

This feature provided quicker load times for Script Builder application scripts. For example, a script with 6300 phrases takes 35 seconds to load instead of the 20 to 30 minutes it previously took.

- Faster phrase listing in Script Builder

This feature provided quicker list times for application scripts, when using CHOICE or LIST keys. For example, an application with 6300 phrases takes 40 seconds to list, compared to 20 minutes previously.

- Script Builder Hardware Integration

Script Builder Voice Editor (SBVE) now works with an SP circuit card as well as IVP cards.

 **NOTE:**

The SBVE is currently limited to working with 32-Kbps ADPCM.

- New Tip/Ring circuit card

This release introduced a new tip/ring circuit card, the IVP6, that contains more advanced signal processing capabilities. The new card, also called the AYC5, provided six channels of analog tip/ring service, and was meant to replace the VRS6 Tip/Ring network interface cards

- Manual Configurator software program

This feature introduced a configuration program for installation that selects an acceptable combination of default CPU resources for the cards being used. It assigns all optional circuit cards appropriate Interrupt numbers and RAM addresses based on the particular combination of hardware and software selected for each particular platform.

- Optional touch tone Pass Through for T1 and PRI cards.

This feature, also known as "Muting off," supported the ability to accept DTMF tones from a bridged line.

- Read-Only and Write-Only Speech File Permissions

This feature provided Read-Only and Write-Only speech access permissions to speech files on the system. This prevents files from being overwritten or tampered with by unauthorized individuals.

Customers upgrading from older CONVERSANT VIS releases to CONVERSANT VIS V2.1 noticed a few changes. Version 2.1 introduced optional feature packages, and some of the administrative screens had been changed to accommodate new capabilities. In addition, please note that Version 2.1 was not supported on the 16-MHz AT&T 6386 WGS processor (CPUs 63 and 64).

Version 3.0 Features

CONVERSANT VIS V3.0 was introduced in June, 1992, and was offered on three different platforms:

- MAP/100C — Central Office unit that is nearly the same as the MAP/100C unit available with V4.0. It used ESDI magnetic peripherals and a 25-MHz, 386 CPU with 8-Mbytes of memory standard.
- MAP/100 — Commercial version of the MAP/100C unit that is nearly the same as the MAP/100 unit available with V4.0. It used ESDI magnetic peripherals and a 25-MHz, 386 CPU with 8-Mbytes of memory standard.
- 6386WGS — This unit was the low-end CONVERSANT platform. It was a desktop PC that provided basic features. It used IDE magnetic peripherals and a 25-MHz, 386 CPU with 8-Mbytes of memory standard. It continued to replace the 16-MHz 6386WGS that had been previously used for CONVERSANT VIS V2.0

New hardware introduced with CONVERSANT VIS Version 3 included:

- An 8-Mbyte, 50-MHz Signal Processor (SP) card required for TTS (AYC9)
- An 8-port asynchronous interface card replacement (IPC-900)
- A 3270 synchronous host card replacement (CLEO PCXL 3270)
- A 4-channel T/R card (AYC6)
- A StarLAN 10 Network PC NAU 10BASET network card (PC-NAU)
- An Ethernet TCP/IP 10BASE2 network card (NP600A)
- A circuit card to support AUDIX Voice Power System 75 integration (DCP)
- An circuit card required for D-channel ASAI Interfaces (IPCI)
- Alarm Relay Unit

Features provided by CONVERSANT VIS Version 3 included:

- Text-to-Speech (TTS)

This feature allowed an application to play speech directly from ASCII text. Benefits of this feature include the use of TTS as an alternative to prerecorded phrases in applications which require speaking frequently changing text (such as names and addresses), or which have a large amount of speakable text (for example, electronic news).
- Adjunct/Switch Application Interface (ASAI)

This feature supported the AT&T ASAI for communication with the DEFINITY Communications System, Generic 3. One benefit of this feature is voice response application access to information about calling party number (often referred to as Automatic Number Identification or ANI) and called party number, with standard Tip/Ring (T/R) lines.

Other benefits of this feature include the ability to monitor and route calls, and the ability to pass the status of calls to a host for use in presenting data screens to live agents.

- **AUDIX Voice Power Coresidency**

This feature allowed access to AUDIX Voice Power Voice Mail capabilities by CONVERSANT VIS Script Builder scripts. The ability of AUDIX Voice Power R2.1.1 to coreside with CONVERSANT VIS provides the capability for both AUDIX Voice Power and CONVERSANT VIS applications to run simultaneously on different channels of the system.

- **Local Area Network (LAN) Connectivity**

This feature provided the interface between a CONVERSANT VIS and a 10BASET (StarLAN-10) or a 10BASE2 (ThinNet) TCP/IP Local Area Network (LAN). Benefits of this feature include the ability to communicate with other systems, including non-CONVERSANT VIS, on the LAN.

- **Remote Database Access**

Employing SQL*NET and a TCP/IP LAN, this enhancement provided Script Builder developed scripts with the ability to read and modify tables in remote ORACLE databases. Script Builder access to remote ORACLE databases for table creation/schema modification and read/modify access during script development is also provided.

- **Form Filler Plus**

This feature allowed scripts to capture speech from callers for later retrieval and transcription. Benefits of this feature include the ability to capture, by spoken word, information which would be difficult to enter with Touch Tones, such as a name and address.

- **CompuLert/Switching Control Center System (SCCS) Interface**

This feature provided an interface to both the CompuLert centralized maintenance system for minicomputers and the SCCS centralized maintenance system for local 4ESS switching systems. Benefits of this feature include the ability for a user at the CompuLert/SCCS to monitor and remotely administer the CONVERSANT VIS. This feature can be coupled with an alarm relay unit (ARU) to provide alarm notification.

- **NetView Alarm Interface**

This feature provided a mechanism for transmitting high priority CONVERSANT VIS error messages to an IBM host as Operator Generated Alarms (OGAs) over the same link used for the 3270 interface.

Enhancements introduced in CONVERSANT VIS Version 3 include:

- Dynamic Data Interface Process (DIP) Assignment. This enhancement prevented DIP number clashes among DIPs for different applications by automatically allocating a unique message queue at run time for each DIP.
- ORACLE Version 6.0.30
- Script Builder Enhancements:
 - External Action / External Function Enhancement. Any argument of External Actions / External Functions could be used to return numeric data to the calling script. This facilitates programming with external actions and external functions by removing the restriction requiring arguments to be of type character if data were to be returned to them.
 - Background Music or Speech Action. A Script Builder External Action which provided the ability for a script to connect the caller to background music or speech which has been prerecorded and loaded on the system.
 - Message Coding Action. This is a Script Builder External Action provided the ability for a script to record the caller's speech and store it in the system.
 - Execute Action. A Script Builder External Action which provided the ability for a script to terminate the current application on a channel, without hanging up the call, and execute another application on the same channel. Data may be transferred from the terminated application to the newly executed application.
 - Type-ahead Action. A Script Builder External Action which provided the ability for a caller to enter touch tone digits in advance of prompts, after which the script will advance the caller to the appropriate point in the script.

Many of the external actions above were available previously only at a native script language level.

- T1 DTMF Recognition Algorithm option. A modified algorithm was provided as an option from the standard LSSGR DTMF recognition algorithm. This optional algorithm is less prone to the simulation of DTMF digits by echoed human voice prompts originating from the CONVERSANT VIS. It also eliminates the recognition of echoed tones which have passed through a bridged configuration.

- 3270 Host Interface Enhancements
 - Dual hosts. This enhancement provided an additional Physical Unit (PU) support from a CONVERSANT VIS. This allows connection of a CONVERSANT VIS to two different Front End Processors (FEPs) or to a single FEP shared by one or more hosts, each link supporting up to 32 Logical Units (LUs).
 - File Transfer. This enhancement provided the ability for file transfer, initiated by a CONVERSANT VIS, to be conducted in either direction between an IBM host and the VIS.
- PRI Enhancements:
 - Provided the ability for PRI channels to specify the type of ANI a Script Builder script gets.
 - Provided the ability for intercepted calls to determine the dialed number (redirecting number).
 - Provided the ability for the Script Builder scripts to determine the service type on incoming calls.
 - Provided the ability for the Script Builder scripts to set the ANI on outbound calls.
- Command line entry. This enhancement provided the ability to run a subset of CONVERSANT VIS administrative commands via a command line entry interface.
- Software Load from cartridge tape. This enhancement provided the ability for both UNIX software and the base CONVERSANT VIS software to be installed from cartridge tape.

Version 3.1 Features

CONVERSANT VIS V3.1 was introduced in April, 1993, and its software was offered on three different platforms:

- MAP/100C — Central Office unit that is nearly the same as the MAP/100C unit available with V4.0. It used SCSI magnetic peripherals and a 25-MHz, 386 CPU with 12-Mbytes of memory standard.
- MAP/100 — Commercial version of the MAP/100C unit that is nearly the same as the MAP/100 unit available with V4.0. It used SCSI magnetic peripherals and a 25-MHz, 386 CPU with 12-Mbytes of memory standard.
- MAP/40 — This unit was newly introduced as a replacement to the previous low-end CONVERSANT platform, the 6386WGS. It was a desktop PC that provided basic and advanced features. It used IDE magnetic peripherals and a 25-MHz, 386 CPU with 12-Mbytes of memory standard. It replaced the 25-MHz 6386WGS that had been previously used for CONVERSANT VIS V2.0

New hardware introduced with CONVERSANT VIS Version 3 include:

- A new hardware platform, the MAP/40, a PC-sized replacement for the AT&T 6386WGS
- A 1.2-Gbyte Small Computer System Interface (SCSI) hard disk drive
- A 525-Mbyte SCSI cartridge tape drive
- New 4-channel T/R card, the AYC6B
- New 6-channel T/R card, the AYC5B
- New T1 circuit card, the AYC11
- A circuit card that supported central office external alarming
- A speech production kit

Features provided by CONVERSANT VIS Version 3.1 include:

- **New MAP/40 Hardware Platform**

This unit was introduced as a replacement to the previous low-end CONVERSANT platform, the 6386WGS. It is a deskmountable PC that provides basic and advanced features. It uses IDE magnetic peripherals and a 25-MHz, 386 CPU with 12-Mbytes of memory standard. It replaced the 25-MHz 6386WGS that had been previously used for CONVERSANT VIS V2.0

- **Base UNIX Software Upgrade**

The CONVERSANT VIS V3.1 introduced a software upgrade from UNIX release 3.2 Version 2.2, to UNIX Release 3.2 Version 2.3. The UNIX upgrade was required to support the SCSI peripherals feature also added in this release. In addition, it provides a flexible platform for expanding the system memory beyond 12-Mbytes.

- **3270 Host Communication Enhancements for Remote Operations**

This feature added significant enhancements to the existing file transfer capabilities in the 3270 Synchronous Host Communications package. Some of the benefits include:

- A procedure for modifying the application-dependent features of the file transfer capability in a way transparent to the software
- Establishing and maintaining a Logical Unit-to-Logical Unit (LU-LU) session between the VIS and IBM mainframe, via a dedicated LU at up to 56 Kbps.
- Sending files from the VIS to a specified destination on the IBM mainframe when available and/or on demand.
- Requesting files from the IBM mainframe at configurable times
- Executing batch files and sending the output to the IBM mainframe.

The above functionality provides a defined interface to link the VIS remote OA&M capabilities into network management on the host. This is not a turn-key package, hence, customer-developed software must be developed to make use of this defined interface.

- **Improved System Maintenance**

This base system improvement of CONVERSANT VIS V3.1 allowed the system to assist with the determination and explanation of problems it encounters during operation. The following system enhancements provided for improved system maintenance and troubleshooting:

- Certification of a specific terminal as suitable for use as a VIS remote terminal.
- The ability to cause an automatic reboot following a UNIX operating system panic
- System maintenance message audit and correction
- System maintenance message presentation improvements

- T1 diagnostic test improvements
- A new alarm circuit card to drive externally located remote alarms
- **Small Computer System Interface (SCSI) Magnetic Peripherals**

This feature introduced SCSI magnetic peripherals to two VIS hardware platforms. The devices include the hard disk drive, cartridge tape drive, and the controller circuit card. The following summarizes these improvements:

 - SCSI hard disk drives 1.2-Gbytes in size are supported for new MAP/100C and MAP/100 platforms. Older platforms are not allowed to be upgraded to replace ESDI peripherals with SCSI devices.
 - SCSI cartridge tape drives 525-Mbytes in size are supported for new MAP/100C and MAP/100 platforms. Older platforms are not allowed to be upgraded to replace ESDI peripherals with SCSI devices.
 - Mixing ESDI and SCSI peripherals on a platform is not supported.
 - CONVERSANT VIS V3.1 software continues to support ESDI peripherals on older hardware platforms. This allows software functionality to be upgraded on existing hardware platforms.
- **SCSI Disk Mirroring**

This feature introduced mirroring for SCSI hard disk drives in MAP/100C and MAP/100 systems. Mirroring configures and manages a data storage system so that each hard disk drive has an independent backup copy kept on another identical hard disk drive.

The functionality of SCSI disk mirroring is only available with systems equipped with two SCSI hard disk drives.
- **Updated Tip/Ring and T1 Circuit Cards**

This was a user transparent feature that provided support for updated tip/ring and T1 circuit cards, functionally equivalent to the previous circuit cards certified for V3.0 systems. Minor modifications were made because certain components used in manufacturing the cards are no longer available. The updated cards have improved profiles because of relocated TDM bus connectors on each one. The new circuit cards are designated as follows:

 - AYC5B — New IVP6 circuit card
 - AYC6B — New IVP4 circuit card
 - AYC11 — New T1 circuit card

- **Speech Production Kit**

This orderable feature package, designed to be used with the optional Script Builder software feature package, provided an interface to the CONVERSANT VIS for speech recording and storage through the use of a microphone and/or recording/playback equipment, instead of through a telephone handset. The unit accepts audio from a tape recording system or microphone, and feeds it to the CONVERSANT VIS through a standard tip/ring port. This direct connection results in a much cleaner recording than if the sound had traveled through air and an inefficient telephone handset before being digitized and stored in memory.

- **Central Office External Alarms**

This feature package, used only on the MAP/100C supported a means for administering externally accessible alarm relay units for central office isle alarms.

External Alarms provides the capability to enable, disable, display, reinit, retire, or test external alarms using commands included with the External Alarms Interface software package.

CONVERSANT VIS Application Examples

B

Overview

This section lists and describes various transactions that can be automated by the CONVERSANT VIS, along with the functionality that the system provides to customers while automating a business transaction.

The CONVERSANT VIS is designed to meet a wide variety of user needs, by allowing clients to purchase it for a specific application, and expand the system capabilities at a later date to support additional applications.

Application Creation

The CONVERSANT VIS represents a custom voice system for companies who purchase it. Most applications that are run on the system are uniquely designed to support the business requirements of the purchasing company. All applications can be programmed by using the Script Builder application development software package. The application software can be written by any of the following groups:

- The purchasing company's system administrator
- Software development groups within AT&T
- External organizations such as AT&T Voice Processing Co-marketers (VPCs)

Typical CONVERSANT Applications

There are five typical categories of CONVERSANT Applications:

- Automated attendant

These functions allow callers to access departments or individuals without the use of personnel or expensive Direct Inward Dial (DID) facilities. These types of applications increase both productivity and client satisfaction since customers can quickly be connected with the correct department or individual.
- Bulletin board

This type of application is typically used for the dissemination of frequently requested information. Some examples of bulletin board applications include providing callers with the hours of operations, or rates and pricing quotes.
- Form filler

This allows a caller to verbally "fill in a form" by responding to voice prompts. This versatile application greatly increases staff productivity since callers leave pertinent information that can be transcribed by personnel at non-peak hours.
- Transactions

Applications based on a transaction are generally interactive between either a host computer and database, or a local database residing on the CONVERSANT platform itself. Transaction-based applications are usually more interactive between the caller and the CONVERSANT VIS, and include examples such as funds transfers, order entry, or completing account applications.
- Product Co-Residency Integration

This category of application allows a single VIS application script to invoke other standard telecommunication products such as AUDIX Voice Power and FAX Attendant. These products give an application the liberty to invoke voice mail features such as the ability to record, send, and retrieve messages, produce broadcast messages, light a message waiting lamp, and support group listings, and provide the same basic functionality towards FAX transmissions as well.

This type of application requires the purchase of at least one of the following:

 - AUDIX Voice Power Software
 - FAX Attendant Software

Sample Applications

The following pages represent a few of the possible transactions that can be automated by the CONVERSANT VIS.

Automated Attendant

One of the country's largest processors of bank card transactions provides credit authorizations for more than 3,700 financial institutions and 500,000 retail merchants nationwide. Although three-quarters of the authorizations are completed through point-of-sale terminals, the company still receives a high volume of "voice authorizations," about 30,000 per day. Because of this high amount of voice authorizations, the company had to increase its staff during busy holiday seasons, adding to the already expensive cost/authorization ratio associated with voice authorizations.

The company added three CONVERSANT VISs to work with its System 85 ACD and MEGACOM 800 Service. The 800 service can be configured to the client's specifications, so that the ACD automatically refers incoming calls to either an operator or to the CONVERSANT VIS, which uses a simulated voice to prompt the caller through the authorization process easily and quickly.

Because each CONVERSANT VIS can manage the transaction volume of 32 operators, the company has essentially increased its capabilities by an equivalent of more than 64 people, without the attendant labor costs. The company has reduced operator staffing by 70 percent, and reallocated 25 percent of the work space reserved for voice authorizations since the voice system went into service in 1989.

The CONVERSANT VIS currently handles more than 60 percent of all voice authorizations, with the same speed and reliability of the operators. The systems are expected to save the company an estimated \$750,000 per year in labor cost alone.

Bulletin Board Application

A New Jersey-based transportation company that serves only the eastern and central U.S. is receiving an increasing number of rate and shipment tracking inquiries from customers across the nation. Customers call the local trucking office during regular business hours and speak to a customer service agent who provides rate quotes and shipment-tracking status, as well as actually taking orders for shipments. This company cannot handle the increased call volumes and still maintain a high level of customer service.

With the help of a CONVERSANT VIS, a centralized electronic solution was made to provide callers with rate quotes and shipment tracking. A single 800 number was established for nationwide access to the business, and 14 T1 trunks terminated directly to the CONVERSANT VIS at their headquarters in New Jersey.

The CONVERSANT VIS is linked to a host computer, which stores rate tables and shipment tracking information. Callers seeking rate quotes are prompted to input the zip code of the originating and terminating locations, shipment weight, and class. For shipment tracking, the caller is prompted to enter the Bill of Lading or Purchase Order number which is translated by the CONVERSANT VIS to the host computer to retrieve the shipment record. The CONVERSANT VIS then uses synthesized voice to convey the shipment information back to the caller.

Form Filler Application

A midwestern university needed to better manage its quarterly course registration process for 50,000 students. Coordinating the schedules of student, faculty, and classrooms was a major undertaking. In addition, the university wanted to incorporate a fee assessment feature so that students who change classes can have their fees shifted accordingly.

The university chose a CONVERSANT VIS to automate its registration system so the process could be less time consuming for students and administrators alike. When students call the course registration number, they enter the quarter for which they want to register, their social security number, their personal access code, and their schedule request. The system provides voice prompts to lead the students through the registration process. Students can add or drop classes, choose secondary classes if a selected class is closed, verify fee statements, and check current mailing addresses.

The university can better manage resources because the CONVERSANT VIS enables it to analyze course demand from preregistration levels, then issue a revised schedule that matches students' preferred class times with faculty and classroom availability. An on-line fee assessment feature automatically changes fees according to schedule changes made by students. For example, if a part-time student makes changes that qualify him/her for full-time status, the fees will reflect this change. In the future, students will be allowed to pay fees through the system by entering their credit card numbers.

Transaction Application

A Detroit-based company that sells and administers vehicle service contracts was short-staffed because of growing business and a management directive to not increase the staff size. The 24-agent inbound telemarketing center, which handled calls from car dealership and individual customers, was handling more than 3,000 calls a day.

The company installed a CONVERSANT VIS to work with its AT&T System 75 and MEGACOM® 800 Service. The System 75's automatic call distributor (ACD) directs calls that come in on the consumer 800 number to live agents, and calls from a second 800 number through the CONVERSANT VIS. Dealers are able to process multiple contract transactions on each call, and because the system is

available 24 hours-a-day, dealers can call at their convenience, often after their own business hours have ended.

With the CONVERSANT VIS, dealers can enter a customer's vehicle identification, or service contract number, determine what the individuals' warranty or contract covers, and update the customer's records on the mainframe computer.

Product Co-Residency Applications

A hotel and casino in Nevada wanted to upgrade the telecommunications capabilities at its properties. The new system had to link a seven building casino complex in Reno with its Lake Tahoe resort by using a single system. The resort wanted to offer new guest services, such as automatic wake up and automatic room display on telephone sets. In addition, the resort wanted to cut down on guest phone write-offs due to "ring/no-answer" calls.

The resort installed an AT&T DEFINITY Communications System Generic 1 and Generic 2, and a CONVERSANT VIS which offers co-resident AUDIX Voice Power voice mail. More than 3,000 employees use AUDIX VP and guests can access its auto attendant feature for information on restaurants, airlines, shows, etc.

Persons around the country can dial a 1-800 number to receive information in the form of FAX transmissions on shows, rates, and schedules through the use of FAX Attendant Co-Residency with the CONVERSANT VIS and AUDIX Voice Power. Requests for wake-up calls are accepted by a CONVERSANT VIS and are provided by the co-resident AUDIX. Reservations to the resort are also provided by the VIS. Future plans include PBX-to-host computer applications, where guest preferences (from casino games to restaurants) will be easily accessed from the database by reservation agents. The open architecture of the system provides the resort with a flexible platform.

Abbreviations

A

AC

Alternating current

ACD

Automatic call distributor

ADPCM

Adaptive differential pulse code modulation

ANI

Automatic number identification

ARU

Alarm relay unit

ASAI

Adjunct/Switch Application Interface

ASCII

American Standard Code for Information Interchange

ASI

Analog switch integration

B

BB

Bulletin board

bps

Bits per second

BSC

Binary synchronous communication

C

CCA

Call classification analysis

CDH

Call data handler

CICS

Customer Information Control System

CMP

Companion circuit card

CMS

Call Management System

CO

Central office

CPE

Customer provided equipment or customer premise equipment

CPU

Central processing unit

CSU

Channel service unit

D

dB

Decibels

DB

Database

DBMS

Database management system

DC

Direct current

DCE

Data communications equipment

DCP

Digital communications protocol

DIO

Disk input and output process

DIP

Data interface process

DMA

Direct memory access

DNIS

Dialed number identification service

DSP

Digital signal processor

DTE

Data terminal equipment

Abbreviations

DTMF

Dual tone multi-frequency

E

EBCDIC

Extended Binary Coded Decimal Interexchange Code

EIA

Electronic Industries Association

EISA

Extended Industry Standard Architecture

EMI

Electromagnetic interference

ESD

Electrostatic discharge

ESDI

Extended Serial Data Interface

ESS

Electronic Switching System

F

FACE

Framed Access Command Environment Interface

FCC

Federal Communications Commission

FDD

Floppy disk drive

FIFO

First-in-first-out processing order

foos

Facility out-of-service state

G

GSE

Graphical Speech Editor

GUI

Graphical user interface

H

HDD

Hard disk drive

hwoos

Hardware out-of-service state

Hz

Hertz

I

IBM

International Business Machines

ICK

Integrity checking process message class

ID

Identification

IE

Information element

inserv

In-service state

IPC

Interprocess communication

IPC

Intelligent Ports Card (IPC-900)

IPCI

Integrated personal computer interface

IRQ

Interrupt request

ISA

Industry Standard Architecture

ISDN

Integrated Services Digital Network

ISV

Independent Software Vendor

ITAC

International Technical Assistance Center

IVP4

Integrated Voice Processing card with 4 analog channels

IVP6

Integrated Voice Processing card with 6 analog channels

IVPSS

Integrated Voice Processing System Software

K**Kbps**

Kilobites per second

Kbyte

Kilobyte

L**LAN**

Local area network

LDB

Local database

LED

Light-emitting diode

LN

Load number

LU

Logical unit

M**manoos**

Manually out-of-service state

MAP

Multi-Application Platform

Mbps

Megabits per second

Mbyte

Megabyte

ms

Millisecond

msec

Millisecond

MHz

Megahertz

MTC

Maintenance process

N**NCP**

Network Control Program

NEBS

Network Equipment Building Standards

NEMA

National Electrical Manufacturers Association

netoos

Network out-of-service state

nonex

Nonexistent state

NRZ

Non Return to Zero

NRZI

Non Return to Zero Inverted

O**OEM**

Original equipment manufacturer

P**PBX**

Private branch exchange

PC

Personal computer

PCB

Printed circuit board

Abbreviations

PCM

Pulse code modulation

PEC

Price element code

PRI

Primary rate interface

PSTN

Public switch telephone network

PS&BM

Power supply and battery module

R

RAM

Random access memory

RECOG

Speech recognition feature message class

RDBMS

ORACLE relational database management system

REN

Ringer equivalence number

RFS

Remote file sharing

RM

Resource manager

RMB

Remote maintenance board

RTS

Request to send

S

SBC

Sub-band coding

SCCS

Switching Control Center System

SCSI

Small Computer System Interface

SDLC

Synchronous Data Link Control

SIMM

Single inline memory module

SNA

Systems Network Architecture

SP

Signal processor circuit card

SPIP

Signal processor interface process

SPPLIB

Speech processing library

SQL

Structured Query Language

sysgen

System generation

T

TCC

Technology Control Center

TCP/IP

Transmission control protocol/internet protocol

TDM

Time division multiplexing

TE

Terminal emulator

TLP

Transmission level plan

T/R

Tip/Ring circuit card

TRIP

Tip/Ring interface process

TSC

AT&T Technical Services Center

TSO

Technical Service Organization

TSO

Time Share Operation

TSM

Transaction state machine process

TTS

Text-to-Speech

TWIP

T1 interface process

U

UK

United Kingdom

USOC

Universal service ordering code

UVL

Unified Voice Library

V

VDC

Video display controller

VIS

Intuity CONVERSANT Voice Information System

VPC

Voice processing comarketer

VRU

Voice response unit

VROP

Voice response output process

Glossary

3270 interface

A link between one or more VIS machines and a host mainframe. In CONVERSANT Voice Information System (VIS) documentation, the 3270 interface means the link between one or more VIS machines and an IBM host mainframe.

4ESS

A large, AT&T central office switch used to route calls through AT&T's telephone network.

ACD

See "Automatic Call Distributor."

ADPCM

See "Adaptive Differential Pulse Code Modulation."

Adaptive Differential Pulse Code Modulation

A means of encoding analog voice signals into digital signals by adaptively predicting future encoded voice signals. This adaptive modulation method reduces the number of bits required to encode voice. See also "Pulse Code Modulation."

adjunct products

Products (for example, Adjunct/Switch Application Interface) that the CONVERSANT Voice Information System (VIS) administers via cut-through access to the inherent management capabilities of the product itself; this is in opposition to CONVERSANT VIS's ability to administer the switch directly.

Adjunct/Switch Application Interface

An optional feature package that provides an Integrated Services Digital Network-based interface between AT&T PBX's and adjunct processors.

affiliate

A business organization that AT&T controls or which with AT&T is in partnership.

Alarm Relay Unit

A unit used in central office telecommunication arrangements that transmits warning indicators from telephone communications equipment (like the CONVERSANT VIS) to audio

alerter

A system process which responds to patterns of events logged by the "logdaemon" process.

analog

An analog signal, such as voice or music, that varies in a continuous manner. An analog signal may be contrasted with a digital signal, which represents only discrete states.

application

Made of several components which provides an automated version of the communication between a caller and an attendant.

application administration

The component of the VIS that provides access to the applications currently available on your system and helps you to manage and administer them.

application installation

A two-step process in which the VIS invokes the TSM script assembler for the specific application name and files are moved to the appropriate directories.

application verification

A process in which the VIS verifies that all the components needed by an application are complete.

ASCII

An acronym for American Standard Code for Information Interchange, a standard for data representation. ASCII code represents alphanumeric characters as binary numbers. The code includes 128 upper- and lower-case letters, numerals, and special characters. Each alphanumeric and special character has an ASCII code (binary) equivalent that is one byte long.

asynchronous communication

A method of data transmission in which bits or characters are sent at irregular intervals and bits or characters are spaced by start and stop bits and not by time. See also "synchronous communication."

asynchronous data unit

An electronic communications device that allows computer systems to communicate over asynchronous lines more than 50 feet in length.

AUDIX Voice Power

A complete voice-mail messaging system accessed and operated by touch-tone telephones and integrated with a switch or "Private Branch Exchange."

Automatic Call Distributor

A phone system that recognizes and answers incoming calls and completes these calls based on a set of instructions contained in a database. The Automatic Call Distributor can send the call to an operator or group of operators as soon as the operator has completed a previous call or after the system has played a message to the caller.

Automatic Number Identification

A method of identifying the calling party by automatically receiving a string of digits that identifies the calling station of a particular customer.

back up

To preserve a copy of the information in a file in a different location, so that the data will not be lost in the event of hardware or system failure.

backing up an application

A utility that makes an archive copy of a completed application or makes an interim copy of an application in progress. The backup copy can be restored to the VIS if the online version is damaged, or if you make revisions and wish to go back to the previous version.

barge-in

A capability provided by WholeWord Speech Recognition that allows a caller to speak their response to the VIS prompt and have that response recognized before the prompt has finished playing.

batch file

A file containing one or more lines, each of which is a command executable by the UNIX shell.

Binary Synchronous Communications

A character-oriented synchronous link protocol.

blind transfer protocol

A protocol in which a call is completed as soon as the extension is dialed, without having to wait to see if the phone is busy, or if the caller answered.

BSC

See "Binary Synchronous Communications."

bundle

In the context of the Enhanced File Transfer package, this term is used to denote a single file, a group of files (package), or a combination of both.

byte

A unit of storage in the computer. On many systems, a byte is eight bits (binary digits), the equivalent of one character of text.

Call Classification Analysis

An optional feature package that allows application developers to classify the disposition of originated and transferred calls.

call data event

A parameter that specifies a list of variables that are appended to a call data record at the end of each call.

Call Data Handler process

A software process that accumulates generic call statistics and application events.

Called Party Number

The number dialed by someone making a telephone call. It can be used by telephone switching equipment to selectively route an incoming call to a particular department or agent.

call progress tones

Standard telephony sounds that indicate the status of the call. These sounds include busy, fast busy, ringback, reorder, etc.

card cage

An area within a CONVERSANT VIS platform that contains and secures all of the standard and optional circuit cards used in the system.

cartridge tape drive

A high-capacity data storage/retrieval device that can be used to transfer large amounts of information onto high-density magnetic cartridge tape based on a predetermined format. This tape can be removed from the system and stored as a backup, or used on another system.

caution

An admonishment used when there is a possibility of a service interruption.

CCA

See "Call Classification Analysis."

CDH

See "Call Data Handler process."

central office

An office or location in which large telecommunication machines such as telephone switches and network access facilities are maintained. These locations follow strict installation and operation requirements.

Central Processing Unit

A component of the VIS that is based on either the Multi-Application Platform 100 (MAP/100), the Multi-Application Platform 40 (MAP/40), or the Multi-Application Platform 100C (MAP/100C).

CICS

See "Customer Information Control System."

cluster controller

A bisynchronous interface that provides a means of handling remote communication processing.

command

An instruction or request given by the user to the VIS software to perform a particular function. An entire command consists of the command name and options.

CompuLert/SCCS Interface

An optional feature that enables remote or console monitoring of error messages generated from the CONVERSANT VIS. CompuLert is a centralized maintenance system for monitoring minicomputers, computer mainframes, etc. The Switching Control Center System (SCCS) is similar to the CompuLert system but is used to support 4ESS local switching systems.

configuration

The arrangement of the software and hardware of a computer system or network. The CONVERSANT Voice Information System configuration includes either a standard or custom processor, peripheral equipment (for example, printers, modems), and software applications. Configuration also refers to the way the switch network is set up; that is, the types of products that are in the network and how those products communicate.

configuration management

The component of the VIS that allows you to manage the current configuration of voice channels, host sessions, and database connections, assign scripts to run on specific voice channels or host sessions assign functionality to SP and T1 cards, and perform various maintenance functions.

Converse Data Return (conv_data)

A Script Builder action that supports the DEFINITY call vectoring (routing) feature by enabling the switch to retain control of vector processing the VIS environment. It supports the DEFINITY "converse" vector command to establish a two-way routing mechanism between the switch and the VIS to facilitate data passing and return.

controller circuit card

A circuit card used on a computer system that controls its basic functionality and makes the system operational. These cards are used to control magnetic peripherals, video monitors, and basic system communications.

copying an application

A utility in which information from a source application is directed into the destination application.

co-residency

The ability of two products or services to operate and interact with each other on a single hardware platform. An example of this is the co-residency of AUDIX Voice Power on a CONVERSANT VIS platform.

CPU

See "Central Processing Unit."

crash

An interactive utility for examining the operating system core and for determining if system parameters are being exceeded.

custom speech

Unique words or phrases to be used in CONVERSANT VIS voice prompts that are recorded for a customer on a custom basis.

custom vocabulary

A specialized package of unique words or phrases created on a pre-customer basis and used by WholeWord or FlexWord Speech Recognition purposes.

Customer Information Control System

Considered part of the operating system that manages resources for running applications (for example, IND\$FILE). Note that TSO and CMS provide analogous functionality in other host environments.

danger

An admonishment used when there is a possibility of personal injury.

data interface process

A software process that communicates with Script Builder applications.

database

A structured set of files, records, or tables.

database fields

Used to extract values from a local database and form the structure upon which a database is built.

database table

A structure, made up of columns and rows, that holds information in a database. Database tables provide a means of storing information that change too often to "hard-code," or permanently store, in the transaction outline.

debug

The process of locating and correcting errors in computer programs. This process is also referred to as troubleshooting.

default

The way a computer will perform a task in the absence of other instructions.

diagnose

The procedure used to perform diagnostics on Tip/Ring, T1, or SP cards or a bus.

Dialed Number Identification Service

A service that allows incoming calls to contain information about the phone number for which it is destined.

directory

A type of file used to group and organize other files or directories.

DNIS

See "Dialed Number Identification Service."

DIP

See "data interface process."

display errdata

A command that displays system errors sent to the logger.

DSO

Digital Service Level 0 (64,000 bps).

DTMF

See "Dual Tone Multi-Frequency."

Dual 3270 Links

A feature that provides an additional physical unit (PU) to allow a cost-effective means of connecting to two host computers. The customer can connect a VIS to two separate FEPs or to a single FEP shared by one or more host computers. Each link supports a maximum of 32 LUs.

Dual Tone Multi-Frequency

A touch tone.

dump space

An area of the disk that is fixed in size and should equal the amount of RAM on the system. The operating system “dumps” an image of core memory upon system crashes. The dump can be fetched after rebooting for analysis of what may have caused the crash.

Earth recall

A method of call transfer used by some PBXs outside of the U.S. Special considerations must be taken when identifying and tuning some communication protocol parameters before attempting to interface another machine to a system that uses this method of call transfer.

Enhanced Serial Data Interface

A software- and hardware-controlled method used to store data on magnetic peripherals.

error message

A message on the screen indicating that something is wrong and possibly suggesting how to correct it.

Error Tracker Process

See “etStub.”

Ethernet

Another name for a local area network that uses 10BASE5 or 10BASE2 coaxial cable and InterLan signaling techniques.

etStub

A system process which processes pre-Version 3.1 error message logging requests. These requests are transformed and passed on to the “logdaemon” process.

external actions

Specific tasks and interfaces controlled by CONVERSANT VIS software that allow a Script Builder application script to invoke processes and interact with other products or services. For example, a CONVERSANT VIS application script can invoke AUDIX Voice Power functionality through the used of an external action within an application script.

FACE

See “Framed Access Command Environment.”

feature

A function or capability of a product or an application within the CONVERSANT VIS.

feature package

An optionally purchased package that may contain both hardware and software resources, which provides additional functionality to a standard system.

featuretst

A standard CONVERSANT VIS software program that allows a VIS user to perform self-tests of critical hardware and software functionality.

field

A “slot” in a VIS window that holds one column of information in a row.

file

A collection of data treated as a basic unit of storage.

file transfer

An option that allows you to transfer files interactively or directly to and from UNIX. File transfer is performed either interactively or directly using the File Transfer System.

filename

Alphabetic characters used to identify a particular file.

Form Filler Plus

An optional feature package that provides the capability for application scripts to record caller's responses to prompts for later transcription and review.

Framed Access Command Environment

An interface that enables you to execute a variety of administrative procedures including, disk operations, user login setup, and peripherals setup.

function key

A key, labeled F1 through F8, on your keyboard to which the CONVERSANT VIS software gives special properties for manipulating the user interface.

Graphical Speech Editor

A window-driven, X Windows/Motif based, graphical user interface (GUI) that can be accessed to perform different functions associated with the creation and editing of speech files to be used by VIS applications.

hard disk drive

A high-capacity data storage/retrieval device that is located inside a computer platform. A hard disk drive stores data on non-removable high-density magnetic media based on a predetermined format for retrieval by the system at a later date.

hardware

The physical components of a computer system. The central processing unit, disks, tape and floppy drives, etc., are all hardware.

host computer

A computer linked to a network providing a range of services, such as database access and computation. The host computer operates in a time-sharing manner with other computers linked to it via the network.

ICK

The system integrity checking process.

IND\$FILE

The standard SNA file transfer utility that runs as an application under CICS, TSO, and CMS. IND\$FILE is independent of link-level protocols such as BISYNC and SDLC.

indexed table

A table that, unlike a non-indexed table, may be searched via a field name that has been indexed.

initialize

To start up the system for the first time.

Integrated Services Digital Network

A network that provides end-to-end digital connectivity to support a wide range of voice and data services.

Integrated Voice Processing card

The IVP4 or IVP6 card.

intelligent transfer protocol

A transfer protocol that monitors the line after dialing is complete to determine whether a busy, reorder (fast busy), or other failure has been encountered. It also recognizes when the extension is answered or if the extension is not answered after a specified number of rings.

interface

The access point of a system. With respect to the VIS, the interface is designed to provide you with easy access to the software's capabilities.

ipcs

A command that reports interprocess communication facilities status.

ISDN

See "Integrated Services Digital Network."

keyboard mapping

In emulation mode, this feature enables the keyboard to send 3270 keyboard codes to the host according to a configuration table set up during installation.

keyword spotting

A capability provided by WholeWord Speech Recognition that allows the VIS to recognize a single word in the middle of an entire phrase spoken by a caller in response to a prompt.

LAN

See "local area network."

Line Side T1

A digital method of interfacing a CONVERSANT VIS to a PBX or switch using T1-related hardware and software.

listfile

An ASCII catalog that lists the contents of one or more talkfiles. Each application script is typically associated with a separate listfile. The listfile maps speech phrase strings used by application scripts into speech phrase numbers.

local area network

A data communications network in a limited geographical area. The local area network provides communications between computers and peripherals.

local database

A database residing on the VIS.

logical unit

A type of SNA Network Addressable Unit.

logdaemon

System information and error logging process.

logger

See "logdaemon"

logging on/off

Entering or exiting the CONVERSANT Voice Information System software.

LU

See "logical unit."

magnetic peripherals

Data storage devices that use magnetic media to store information. Such devices include hard disk drives, floppy disk drives, and cartridge tape drives.

main screen

The CONVERSANT VIS VERSION 4.0 screen, from which you are able to enter FACE or Voice System Administration.

maintenance process

A software process that runs temporary diagnostics.

Manual Configurator Program

A software program that resolves or blocks the allocation of CPU and memory resources for controlling and optional circuit cards.

master

A board that provides clock information to the TDM bus.

megabyte

A unit of memory equal to 1,048,576 bytes (1024 x 1024). It is often rounded to one million.

Microsoft

A company that manufactures software products, primarily for IBM-compatible computers.

mirroring

A method of data backup that allows all of the data transactions to the primary hard disk drive to be copied and maintained on a second identical drive in near real time. If the primary disk drive crashes or becomes disabled, all of the data stored on it (up to 1.2 billion bytes of information) is accessible on the second mirrored disk drive.

MS-DOS

A personal computer DOS operating system developed by the Microsoft Corporation.

MTC

See "maintenance process."

NetView

An optional feature package that transmits high priority (major or critical) messages to the host as Operator-Generated Alerts (OGAs) over the 3270 host link. The NetView Alarm feature package does not require a dedicated LU.

non-indexed table

A table that may be searched only in a sequential manner and that may not be searched via a field name.

note

An admonishment used to supply supplementary information for the topic being discussed.

null value

An entry containing no value. A field containing a null value is normally displayed as blank and is different from a field containing a value of zero.

on-line help

Messages or information that appear on the user's screen when a "function key" (F1 through F8) is pressed.

Operator Generated Alerts

System monitoring messages transmitted from the CONVERSANT VIS or other computer system to an IBM host computer that are classified as critical or major.

option

An argument used in a command line to modify program output by modifying the execution of a command. When you do not specify any options, the command will execute according to its default options.

ORACLE

A company that produces Relational Database Management software. It is also used as a generic term that identifies a database residing on a local or remote system that is created and maintained using an ORACLE RDBMS product.

PBX

See "Private Branch Exchange."

PCM

See "Pulse Code Modulation."

peripheral (device)

Equipment such as printers or terminals that is in addition to the basic processor.

phoneme

A single basic sound of particular spoken language. The English language contains 40 phonemes that represent all basic sounds used with the language. As an example, the word "one" can be represented with three phonemes, "w" - "uh" - "n." Phonemes vary between languages because of guttural and nasal inflections, and syllable constructs.

phrase tag

A string of up to 50 characters that identify the contents of a speech phrase used by an application script.

poll

A message sent from a central controller to an individual station on a multi-point network inviting that station to send if it has any traffic to send.

polling

A network arrangement whereby a central computer asks each remote location whether they wish to send information. This arrangement enables each user or remote data terminal an opportunity to transmit and receive information on shared facilities.

Primary Rate Interface

An optional feature package that provides a digital interface capable both of receiving and originating telephone calls directly from/to an AT&T 4ESS switch.

Private Branch Exchange

A private switching system, either manual or automatic, usually serving an organization, such as a business or government agency, and usually located on the customer's premises.

processor

In CONVERSANT Voice Information System documentation, the computer on which the UNIX Operating System and CONVERSANT Voice Information System software runs. In general, the part of the computer system that processes the data. Also known as the "central processing Unit."

ps

A command that shows active processes. This command displays the process table and can be used to determine which processes are consuming large amounts of system resources, such as CPU time.

Pulse Code Modulation

A digital modulation method of encoding voice signals into digital signals. See also "Adaptive Differential Pulse Code Modulation."

raw mode

Conveys data from a terminal to a user without processing the data.

recovery

The process of using copies of the VIS software to reconstruct files that have been lost or damaged. See also "restore."

remote database

The component of the VIS that provides access to information not currently on the VIS.

remote maintenance circuit card

A CONVERSANT VIS circuit card that is equipped standard with all new Version 4.0 purchases. This card, available with or without a built-in modem, allows remote personnel (for example, field support) to access all CONVERSANT VIS machines with a standard simplified process.

reports administration

The component of the VIS that provides access to system reports, including VIS call classification reports, call data detail reports, call data summary reports, message log reports, and traffic reports. In addition, if AUDIX Voice Power R2.1.1 is installed on your system, the reports administration component gives you access to AUDIX Voice Power reports.

restore

The process of recovering lost or damaged files by retrieving them from available backup tapes or from another disk device. See also "recovery."

restore application

A utility that replaces a damaged application or restores an older version of an application.

roll back

To cancel changes to a database since the point at which changes were last committed.

rollback segment

A portion of the database which records actions which should be undone under certain circumstances. rollback segments are used to provide transaction rollback, read consistency, and recovery.

root space

An area of the disk that houses the UNIX Operating System, all VIS executables and data files, Script Builder application files, and the database.

sar

A command that is associated with the system activity report package.

screen pop

A method of delivering a screen of information to a telephone operator at the same time a telephone call is delivered. This is accomplished by a complex chain of tasks that include identifying the calling party number, using that information to access a local or remote ORACLE database, and pulling a "form" full of information from the database using an ORACLE database utility package.

Script Builder

An optional software package that provides a menu-oriented interface designed to assist in the development of custom voice response applications on the VIS.

SCSI

See "Small Computer System Interface."

shared database table

Using the same database table in more than one application.

shared speech

Speech that is a part of more than one application.

shared speech pools

A parameter that allows the user of a voice application to share speech components with other applications.

Single Inline Memory Modules

A method of containing Random Access Memory (RAM) chips on narrow circuit card strips that attach directly to sockets on the CPU circuit card. Multiple SIMMs are sometimes installed on a single CPU circuit card.

slave

A board that depends on the TDM bus for clock information.

Small Computer System Interface

A disk drive control technology in which a single SCSI adapter card plugged into a PC slot is capable of controlling as many as seven different hard disks, optical disks, tape drives, etc.

software

The set or sets of programs that instruct the computer hardware to perform a task or series of tasks -- for example, the UNIX operating system software and the VIS Version 4.0 software.

speech energy

The amount of energy in a audio signal. Literally translated, it is the output level of the sound in every phonetic utterance.

speech envelope

The linear representation of voltage on a line. It reflects the sound wave amplitude at different intervals of time. This envelope can be plotted on a graph to represent the oscillation of an audio signal between the positive and negative extremes.

speech file

A file containing an encoded speech phrase.

speech file-system

A collection of several talkfiles. The file-system is organized into 16-Kbyte blocks for efficient management and retrieval of talkfiles. The CONVERSANT VIS speech file-system is not consistent with standard UNIX file-systems, and can not be referenced with standard UNIX commands such as "ls," "cat," etc.

speech modeling

Creating WholeWord Speech Recognition algorithms by collecting thousands of different speech samples of a single word and comparing them all to obtain a statistical average of the word. This average is then used by a WholeWord Speech Recognition program to recognize a single spoken word.

speech phrase

A continuous speech segment encoded into a digital string.

Speech Recognition

An optional feature that provides speaker independence, connected digit recognition, key word spotting, prompt interrupt, and DTMF support functionality.

speech space

An area that contains all digitized speech used for playback in the applications loaded on the system.

standard speech

The speech package containing simple words and phrases produced by AT&T for use with a CONVERSANT VIS. This package includes digits, numbers, days of the week, and months, each spoken with initial, medial, and falling inflection. The speech is in digitized files stored on the hard disk to be used in the voice prompts played by the VIS.

standard vocabulary

A standard package of simple word speech models provided by AT&T and used for WholeWord Speech Recognition purposes. These phrases include the digits "zero" through "nine," "yes," "no," and "oh."

string

A contiguous sequence of characters treated as a unit. Strings are normally bounded by white spaces, tabs, or a character designated as a separator. A string value is a specified group of characters symbolized by a variable.

Structured Query Language

A standard data programming language used with data storage and data query applications.

swap space

An area of the disk that is fixed in size depending on the amount of Random Access Memory (RAM) that is on the system. This area is used to temporarily store programs (swap in and out) that are competing for CPU time and cannot remain in core memory due to size constraints.

switch

A software and hardware device that controls and directs voice and data traffic. A customer-based switch is known as a "Private Branch Exchange."

switch hook

The device at the top of most telephones which is depressed when the handset is resting in the cradle (on hook). The device is raised when the handset is picked up (the phone is off hook).

switch hook flash

A signaling technique in which the signal is originated by momentarily depressing the "switch hook."

switch interface administration

The component of the VIS that enables you to define the interaction between the VIS and switches by allowing you to establish and modify switch interface parameters and protocol options for both analog and digital interfaces.

switch network

Two or more interconnected switching systems.

synchronous communication

A method of data transmission in which bits or characters are sent at regular time intervals, rather than being spaced by start and stop bits. See also "asynchronous communication."

System 75

An advanced digital switch supporting up to 800 lines that provides voice and data communications for its users.

System 85

An advanced digital switch supporting up to 3,000 lines that provides voice and data communications for its users.

system administrator

The person assigned the responsibility of monitoring all VIS software processing, performing daily system operations and preventive maintenance, and troubleshooting errors as required.

system architecture

The manner in which the CONVERSANT Voice Information System software is structured.

system message

An event or alarm generated by either a VIS or end user process.

system monitor

A component of the VIS in which tests are performed to verify that each incoming telephone line and its associated tip/ring or T1 card is functional. Through the "System Monitor" component, you are able to see displays of the Voice Channel and Host Session Monitors.

T1

A digital transmission link with a capacity of 1.544 Mbps.

table

A collection of records that are logically grouped together.

talkfile

An ASCII file that contains the speech phrase tags and phrase tag numbers for all the phrases of a specific application. The speech phrases are organized and stored in groups. Each talkfile may contain up to 65535 phrases and the speech file-system may contain multiple talkfiles.

TDM

See "Time-Division Multiplex."

Terminal Emulator

Software which allows the VIS to temporarily transform itself into a "look alike" of an IBM 3270 terminal. In addition to providing full 3270 functionality, the Terminal Emulator enables you to transfer files to and from UNIX.

Text-to-Speech

An optional feature that allows an application to play speech directly from ASCII text by converting that text to synthesized speech. The text may be used for prompts or for text retrieved from a database or host, and can be spoken in an application with prerecorded speech. Text-to-Speech application development is supported through Script Builder.

ThickNet

A 10-millimeter (10BASE5) coaxial cable used to provide InterLan communications.

ThinNet

A 5-millimeter (10BASE2) coaxial cable used to provide InterLan communications.

Time-Division Multiplex

A method of serving a number of simultaneous channels over a common transmission path by assigning the transmission path sequentially to the channels, each assignment being for a discrete time interval.

Tip/Ring

A term used to denote analog telecommunications using four-wire media.

trace

A command that can be used to monitor the execution of a script.

traffic

The flow of information or messages through a communications network for voice, data, or audio services.

transaction

Comprised of the exchanges between the caller and the voice system.

Transaction State Machine process

A software process that controls transactions via script execution and commands. The Transaction State Machine Process manages interaction with the network, manages interaction with other parts of the Voice System, allocates and frees devices and channels, and executes script language programs.

troubleshoot

The process of locating and correcting errors in computer programs. This process is also referred to as debugging.

TSM

See "Transaction State Machine process."

TTS

See "Text-to-Speech."

UNIX Operating System

A multi-user, multitasking computer operating system developed by Bell Telephone Laboratories division of AT&T.

UNIX shell

The command language that provides a user interface to the UNIX operating system.

usr space

An area of the disk that houses user home directories and files, and is used at installation time to temporarily load some feature packages. This is also a file system which is fixed in size once the system is partitioned at installation.

vi editor

A screen editor used by the VIS to create and change electronic files.

virtual channel

A channel that is not associated with an interface to the telephone network (Tip/Ring, T1, or PRI). Virtual channels are intended to run "data only" applications which do not interact with callers but may interact with DIPs. Voice or network functions (for example, coding or playing speech, call answer, origination or transfer) will not work on a virtual channel. Virtual channel applications may be initiated only by a "virtual seizure" request to TSM from a DIP.

VIS

See "Voice Information System."

vocabulary

A collection of words that a VIS is able to recognize using either WholeWord or FlexWord Speech Recognition.

voice channel

A channel that is associated with an interface to the telephone network (Tip/Ring, T1, or PRI). Any VIS application may run on a voice channel. Voice channel applications may be initiated by being assigned to particular voice channels or dialed numbers to handle incoming calls or they may be initiated by a "soft seizure" request to TSM from a Data Interface Process (DIP) or the soft_srz command.

Voice Information System

A computer connected to a telephone network that handles touch-tone input, voice response, and line transfer. The Voice Information System uses a screen-based, menu-driven user interface to interact with the system operator or administrator.

Voice Processing Co-Marketer

A company licensed to purchase voice processing equipment, such as the CONVERSANT VIS, to market and sell based on their own marketing strategies.

Voice Response Output Process

A software process that transfers digitized speech between system hardware (for example, Tip/Ring and SP cards) and data storage devices (that is, hard disk, etc.)

Voice System Administration

The means by which you are able to administer both voice and non-voice related aspects of the system.

VROP

See "Voice Response Output Process."

warning

An admonishment used when there is a possibility of equipment damage.

wink signal

An interruption of current to a busy lamp indicating that there is a line on hold.

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