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LINCS Server

System Description

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Contents

About This Book

Overview

The *LINCS Server System Description*, 585-313-209, answers basic questions about the LINCS server and its use. It provides a technical description of the system hardware, software, features, and feature packages, including requirements, specifications, and capacity information. This document is designed to supplement all other documents in the LINCS server set. A brief description of each document in the set is included in . Always refer to the appropriate document for specific information on planning, installing, operating, administering, or maintaining the system.

Intended Audiences

The target audience for the *LINCS Server System Description* includes marketing, sales, technical support, and development personnel, or anyone who is looking for basic information about the functionality or content of the platform. Primary audiences are most interested in answering questions about the product and its features, such as "What is it?" and "How does it work?" Secondary audiences for this document include training and development organizations that would be interested in answering questions about system support and service.

Release History

This document is the first release for the LINCS Server.

Training

For information on LINCS training, check the Lucent Message Institute web site at:
http://www.octel.com/octelu/index.html

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This document uses the following conventions for indicating commands and text:

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

  Example 1: Enter **change-switch-time-zone** at the `enter command:` prompt.

  Example 2: Type **high** or **low** in the `speed:` field.

- Command variables are shown in ***bold proportional italic*** type when they are part of what you must type in, for example:

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

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Please mention the name and order number of this book, *LINCS Server System Description*, 585-313-209.

1 Introduction

Overview

The LINCS server, at its most basic level, is a high-performance computer consisting of controlling hardware, a UnixWare operating system, and middleware that handles call processing and media services, as well as standard operations, administration, and maintenance. The server is designed to support the speech-processing hardware and software that is used to develop an automated voice-response system.

Typically, the server is used to enhance the functionality of telecommunication switches and services operated by local and long-distance telephone companies. It is engineered to be a platform for an interactive media-processing system that meets central-office telecommunications standards.

This chapter provides a high-level overview of the LINCS server and refers you to the chapters that provide complete information for these components.

General System Description

Hardware   The LINCS server is a CompactPCI unit with the types of hardware described below. The server is typically mounted in either a 5ESS equipment rack or a 19-inch commercial rack.

- Standard hardware — The server is equipped with all hardware that is required for the basic platform to function. Standard hardware includes a 16-slot CompactPCI backplane with a two-card CPU complex and an alarm-system module. An Ethernet LAN controller and diskette drive are integrated into the CPU complex. Standard SCSI peripherals include one to six SCA hard-disk drives, one cartridge-tape drive, and one CD-ROM drive.

- Optional hardware — Optional hardware is not required for the platform to operate but can be essential for many applications. Optional hardware includes E1/T1 digital telephony-interface circuit cards, speech and signal processing (SSP) circuit cards, and a second Ethernet LAN controller (a PCI Mezzanine card (PMC)). Optional peripheral equipment includes a monitor, keyboard, mouse, printer, and modem.

Chapter Reference

Complete information on server hardware components is given in Chapter 2, Hardware.

Software   The server comes with the software required for basic operation. Additional software is ordered and purchased according to need.

- Standard software — The following software is required for the server to operate and is included with the system. See also Features below.

    ~ UnixWare 2.1.3 operating system software
    ~ Base LINCS server software

- Optional software — Optional software is not required for the server to operate, though one or more packages may be required for your applications to operate. These software packages are ordered according to need and are purchased in addition to the base system. See also Feature Packages below.

    ~ LINCS server optional software — Includes such packages as speech-processing software and Primary Rate Interface (PRI) software.
    ~ ORACLE Relational Database Management System (RMDBS) 7.3.2 software — Some systems require a database management system. Although optional, the ORACLE RMDBS is the supported package for all systems using a database. (Systems that do not need database functionality require the Intuity CDH Stub feature package, which handles the call data that would otherwise be stored in the database.)

    In addition to the base ORACLE software, you can also purchase an ORACLE development tools package.

Chapter Reference

A complete list of standard and optional software packages for the server is given in .

Features   A *feature* is software and/or hardware that is standard with each system purchase. Some features are completely functional by themselves, while other features might require the addition of a *feature package* to be complete or more advanced. Features include basic speech capabilities, system status and monitoring, and telephony interfaces (when used in combination with the correct feature packages).

Chapter Reference

A complete description of server features is given in .

Feature Packages   A *feature package* is software and/or hardware that is used to enhance the operation or capacities of the base system. Feature packages are not required for the base system to function and are purchased separately when you want capabilities beyond what the base system provides. Feature packages provide enhancements such as speech recognition, data network interfaces, or additional hardware resources.

Chapter Reference

A complete description of server feature packages is given in .

2 Hardware

Overview

This chapter describes the LINCS server hardware, including platform capacities, and supported and orderable devices for the following:

- Standard System Hardware — all hardware required for the basic platform to function

- Optional System Hardware — supplemental hardware that generally is not required for the basic platform to run but might be required by your applications; includes telephony-interface and speech-processing circuit cards

Views of the LINCS Server

Figure 1 on page 6 shows a front view of the server and Figure 2 on page 7 shows a back view of the server.

Figure 1. Front View of the Server

1. **Hard disk drive media bay**

2. **CD-ROM drive media bay**

3. **Cartridge tape drive media bay**

4. **TAM and alarm panel**

5. **Circuit card area**

6. **CPU complex**

7. **Upper fan tray**

8. **Lower filter panel with fan tray**

scpcfrnt EWS 020499
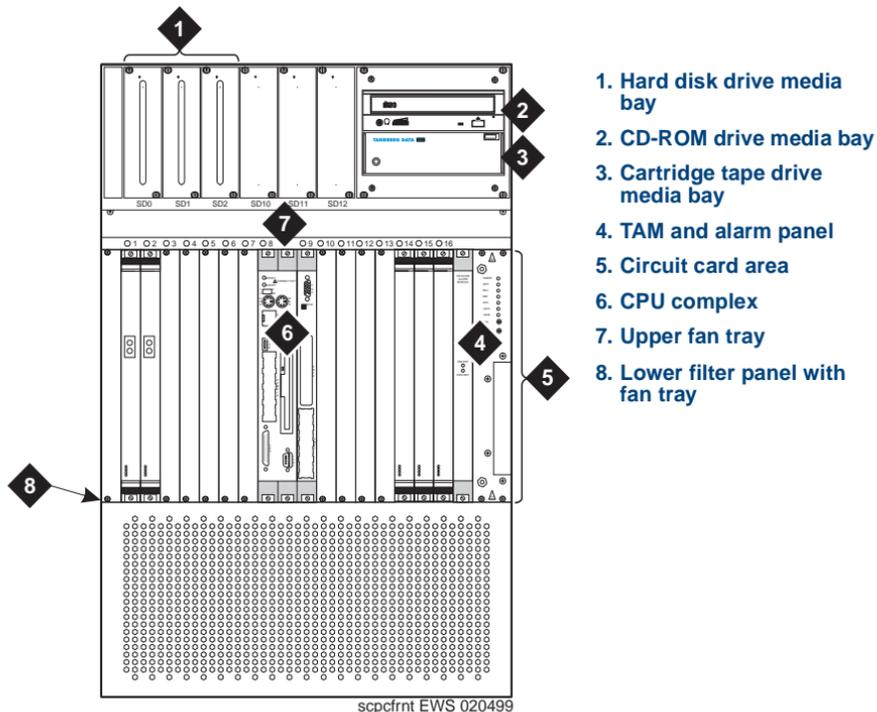
Figure 2. Back View of the Server

scpcbckg EWS 050699
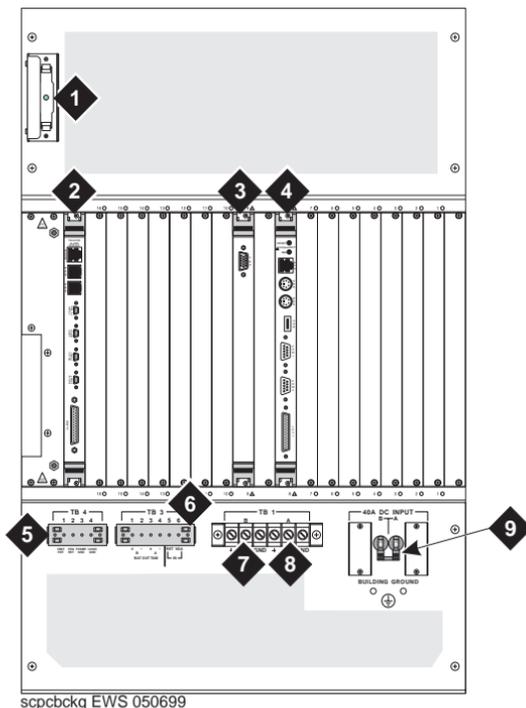
1. External SCSI terminator

2. TAM rear I/O transition card

3. IOB companion rear I/O transition card

4. SBC rear I/O transition card

5. Four-position terminal strip (Do not connect)

6. Six-position terminal strip

7. Incoming DC power source B connection

8. Incoming DC power source A connection

9. DC input A and B power switches

Standard System Hardware

The LINCS server is a CompactPCI chassis that can be mounted in a 5ESS equipment rack or a 19-inch commercial rack.

LINCS server standard hardware (hardware that is required for the basic server to operate) includes the following components, each of which is described in detail in the sections that follow.

- CompactPCI Backplane — 16 slots for circuit cards and one custom slot occupied by the Telecom Alarm Module

- Media Bays — six SCA hard-disk drive positions and two half-height drive positions

- Standard Circuit Cards — CPU complex and Telecom Alarm Module (TAM)

- Standard Buses — CompactPCI, Computer Telephony (CT), and SCSI buses

- Standard Peripheral Devices — SCA hard-disks (one to six), cartridge-tape drive, CD-ROM drive, and diskette drive, plus an external SCSI connector

- Cooling Fan Trays — two trays with a total of eight cooling fans

- Power Supplies — dual redundant 500W DC output

CompactPCI Backplane

Backplane Slots   The CompactPCI backplane provides circuit card mounting positions called *slots*. The backplane has 16 CompactPCI slots of 6U height, plus an additional custom slot where the Telecom Alarm Module (TAM) is installed. Of the 16 CompactPCI slots, slots 8 and 9 are occupied by the CPU board set (see CPU Complex (page 11)). The 14 remaining CompactPCI slots are available for telephony-interface and speech-processing circuit cards.

Rear I/O Slots   The rear panel of the CompactPCI backplane contains slots for rear input/output (I/O) transition cards. The slots on the rear of the backplane correspond in number to the slots on the front of the backplane. Circuit cards having rear I/O will have an associated rear I/O transition card that plugs into the rear of the backplane. Some circuit cards, such as the E1/T1 telephony cards, have only rear I/O.

Buses   The CompactPCI backplane contains the CompactPCI bus segments and the Computer Telephony (CT) bus. See Standard Buses (page 15) for details on these buses and the standard SCSI bus.

Media Bays

The media bay is located at the top of the server and contains eight positions:

- 6 Single Connector Architecture (SCA) SCSI hard-disk positions — devices plug into a SCA-SCSI backplane
- 2 half-height drive positions — devices use SCSI cabling

See Standard Peripheral Devices (page 16) for descriptions of the different SCSI-format devices.

Standard Circuit Cards

Standard circuit cards are required for the basic platform to function. The server provides a central processing unit (a two-card set) and a customized module for the Telecom Alarm system, both of which are described below. In the server, all circuit cards are of 6U height (10.5 in.) and are mounted vertically in the card cage area with face plates on the front. Input/output (I/O) circuit cards can have front I/O but most often use rear I/O transition cards.

To achieve speech-processing functionality, your system will need additional circuit cards, such as telephony-interface cards and speech and signal processing cards. These cards are described in Optional Circuit Cards (page 19).

CPU Complex The processor for the server is one unit (the *CPU complex*) consisting of the two connected 6U cards described below. The CPU complex occupies slots 8 and 9 in the CompactPCI backplane and is inserted or removed as one card.

- Single Board Computing (SBC) circuit card — slot 8, double width
  - ~ Processor operating at 233-MHz
  - ~ 128 Mbytes of RAM
  - ~ 512 Kbytes of level 2 cache
- I/O Companion card (IOB) — slot 9, single width

Table 1 describes components that reside in the two cards in the CPU complex. All components of the CPU complex have front access. Components having rear I/O are indicated.

Table 1. CPU Complex Components

SBC Circuit Card	I/O Companion Card
Diskette drive	SVGA Video controller module
10/100Mbit Ethernet LAN controller, integrated on SBC card (rear I/O) See Ethernet LAN Controllers below for details.	Optional, second 10/100Mbit Ethernet LAN PMC (front I/O cabled to the rear) See Ethernet LAN Controllers below for details.
	1 of 2

Table 1. CPU Complex Components

SBC Circuit Card	I/O Companion Card
Keyboard connector (front or rear I/O)	PMC (optional, for future LAN or RAID use)
Mouse connector (front or rear I/O)	
USB connector (front or rear I/O)	
Line printer (LPT) port (front or rear I/O)	
COM1 serial port (front or rear I/O)	
COM2 serial port — not available for use; connected internally to the Telecom Alarm Module. See for details.	
	2 of 2

Ethernet LAN Controllers

An Ethernet LAN connection allows for communication with other systems. The server provides an integrated Ethernet LAN controller on the SBC circuit card of the CPU complex. A second, optional Ethernet LAN PMC (PCI Mezzanine Card) can be installed on the I/O Companion card of the CPU complex. Table 2 describes characteristics of each.

Table 2. Ethernet LAN Controllers

Integrated LAN Controller	Optional LAN Controller
Integrated on SBC card of CPU complex	PMC on I/O Companion card of CPU complex
Rear I/O	Front I/O cabled to rear
Autosensing 10/100 Mbps BASE-T	Autosensing 10/100 Mbps BASE-T
RJ-45 twisted pair connector	Special cable and coupler are supplied to connect to RJ-45 cable

The Ethernet LAN controller is software programmable and provides the physical interface for the TCP/IP software that is part of the UnixWare operating system. For more information on TCP/IP, see Data Network Interfaces (page 51) in Chapter 4, Features .

| **Telecom Alarm Module** | The Telecom Alarm Module (TAM) provides an intelligent monitoring and alarm system with visual and audible alarms. Visual indicators are displayed on the alarm indicator panel. The TAM monitors and generates alarms when the following conditions occur: |

- high-temperature thresholds for the chassis are exceeded

- input voltage thresholds are not within specified range

- power supply output voltages are not within specified range

- chassis fan tray or power-supply fan fails

- watchdog timer function for the CPU complex expires, indicating the system software is not functioning

The TAM resides in a customized 17th slot in the card cage area. For more information on the TAM, see System Alarms in Chapter 4, Features .

Internal COM2 Connection

⚠ CAUTION:
The TAM connects internally to the COM2 serial port. Note that because the connection occurs inside the chassis, the external port appears to be available. Do not make connections to the external COM2—doing so will interrupt the watchdog timer communication to the CPU and might cause a system reboot.

Standard Buses

The server has two CompactPCI bus segments, one Computer Telephony (CT) bus, and one SCSI bus.

CompactPCI Bus Segments   The CompactPCI bus segments serve as the interface for the CompactPCI circuit cards. The server has two separate 8-slot, 32-bit CompactPCI bus segments. One segment consists of system slot 8 and the seven peripheral slots to the left, and the other segment consists of system slot 9 and the seven peripheral slots to its right. This bus is contained in the backplane.

CT Bus   The Computer Telephony (CT) Bus is a type of TDM bus that is used by the cards involved in speech processing (SSP and E1/T1) when they send digitized speech to other cards in the system. The CT Bus ranges from slots 1 through 16 and is contained in the backplane. This bus complies with the ECTF (Enterprise Computer Telephony Forum) H.110 standard, the hardware specification for implementing a CT bus for CompactPCI.

SCSI Bus   The SCSI bus is the interface from the SCSI controller to the SCSI devices, such as a hard-disk or tape drive. The server uses an Ultra Wide SCSI bus that runs at the rate of 40 Mbytes per second, for those devices that support it. The six hard-disk drives use Single Connector Architecture (SCA) connectivity and plug into the SCA-SCSI backplane. The cartridge tape and CD-ROM drives connect to a SCSI bus ribbon cable.

Standard Peripheral Devices

The server comes with the following standard peripheral devices. Each is described in the sections that follow. For descriptions of peripheral devices that are not required for the platform to run (such as a monitor and keyboard), see Optional Peripheral Equipment (page 23).

- Hard Disk Drives

- Cartridge Tape Drive

- CD-ROM Drive

- Diskette Drive (located on the CPU complex)

The server has an external SCSI connector for external SCSI devices. For guidelines and restrictions on using the external connector, see Adding External SCSI Devices (page 17).

Hard Disk Drives   The hard-disk drive provides storage and random access to large amounts of data for the system, including the operating system, application software, speech data, and database tables.

The server comes with at least one 4.5-Gbyte Single Connector Architecture (SCA) SCSI hard-disk drive. The server can support up to six SCA-SCSI hard-disk drives. All hard-disk drives connect to the SCSI bus and input-power by plugging into the SCA-SCSI backplane (instead of using cables), making them easy to install or replace. The hard-disk drives are located in the media bay at the top of the server.

Cartridge Tape Drive

A cartridge-tape drive is used to back up and restore files using a tape cartridge, thereby eliminating the need to restore and back up files using diskettes.

The server has one 5.25-inch, 4-Gbyte SCSI cartridge-tape drive. This unit is a half-height peripheral located at the top of the server. It uses cables to connect to the SCSI bus and input power.

CD-ROM Drive

The CD-ROM drive is used to load system software. The server has one 5.25-inch, SCSI CD-ROM drive. This unit is a half-height peripheral located at the top of the server. It uses cables to connect to the SCSI bus and input power.

Diskette Drive

The diskette drive is used to load and back up system software. The server has a single 3.5-inch diskette drive. This unit is located on the SBC card of the CPU complex (slot 8) and uses standard 3.5-inch, 1.44-Mbyte, high-density diskettes.

Adding External SCSI Devices

An external SCSI connector provides access to the SCSI bus for an external SCSI device. The external SCSI connector is a standard 68-pin Ultra Wide SCSI connector and is located on the back of the chassis.

Note: If the SCSI connector is not being used, an active termination must be plugged in to terminate the SCSI bus. A SCSI terminator is provided with all LINCS servers.

The server supports a maximum of 16 internal/external devices on the SCSI bus. The SCSI controller, CD-ROM drive, and tape drive use 3 of the positions, and the hard-disk drives use from 1 to 6 of the positions. Therefore, from 7 to 12 positions will be open for SCSI devices supported by UnixWare, depending on the number of hard-disk drives installed. Be aware, however, of the following restrictions involved in connecting an external SCSI device:

- Ultra Wide SCSI restricts cable length to one meter.

- If you use the external SCSI connector, Adaptec SCSI Host Adapter BIOS transfer speed settings must be changed to a value slower than 40 Mbytes per second. A suggested speed is 10 Mbytes per second.

- When being used, the last device on the SCSI bus must be terminated.

Cooling Fan Trays

The server contains two redundant, hot-swappable cooling fan trays. One tray is located above the card cage and contains five fans. The second tray is located below the card cage and contains three fans.

Power Supplies

The server has dual redundant, hot-pluggable power supplies that produce 500W of output power from -48V DC input. Each power supply has its own cooling fan.

Optional System Hardware

While standard hardware is required for the basic platform to function, optional hardware is required for many important features and functions. The circuit cards that provide network connections and speech-processing capabilities, for example, are optional hardware. This section describes the following optional hardware:

- Optional Circuit Cards — digital telephony-interface (E1/T1) circuit cards, speech and signal processing (SSP) circuit cards, and an Ethernet LAN PMC

- Optional Peripheral Equipment — monitor, keyboard, mouse, printer, and modem

Optional Circuit Cards

Optional circuit cards are used to provide interfaces to the public switched (telephone) network, LAN/WAN communications, and speech-processing capabilities. For more information on software associated with the following circuit cards, see Chapter 4, Features and Chapter 5, Feature Packages . This section describes the following circuit cards:

- Telephony-Interface Circuit Cards — E1/T1 (CWB2) with rear I/O transition card (CYD2)

- SSP Circuit Cards — Speech and signal processor (CWB1)

- Ethernet LAN PMC — A second, optional LAN PMC on the I/O Companion card of the CPU complex; this PMC is described with the integrated Ethernet LAN controller in Ethernet LAN Controllers (page 13).

Telephony-Interface Circuit Cards
Digital circuit cards provide the telephony interface to the system. All telephony-interface circuit cards connect to the CT bus. The server uses the E1/T1 (CWB2) circuit card, each of which has a corresponding rear I/O transition card (CYD2). CWB2 plugs into the front of the CompactPCI backplane, and CYD2 plugs into the corresponding slot of the rear of the backplane.

The CWB2 circuit card is referred to as an E1/T1 circuit card because it can be used for both T1-rate and E1-rate services. The initial release of the server uses only the T1-rate services.

Maximums and Capacities

The server has 14 CompactPCI slots that can be used for E1/T1 circuit cards; however, at least one speech and signal processing (SSP) card is required to play or code speech for the channels.

At its T1-rate, the CWB2 provides a 24-channel digital interface between the switch and the system. A T1 digital circuit carries information at a rate of 1.544 Mbps.

SSP Circuit Cards
The speech and signal processor (SSP) circuit card (CWB1) is a high-performance signal processor that is capable of simultaneous support for various speech technologies. The SSP circuit cards provide processing power to simultaneously accommodate all of the system speech technology features including speech recognition, voice code and play back, dial pulse recognition, and call classification analysis.

The SSP circuit card does not connect directly to the telephone network and must be used with at least one E1/T1 circuit card. All SSP circuit cards connect to the CT bus. SSP cards do not require external I/O and so have no corresponding rear I/O transition cards.

Maximums and Capacities

The server will support up to ten SSP CompactPCI circuit cards per system. Table 3 shows SSP circuit card channel capacities. Channel counts are based on the assumption that the entire SSP circuit card is dedicated to the specified feature.

Table 3. SSP Card Channel Capacities

Feature	Simultaneous Transactions Supported
FlexWord speech recognition, without echo cancellation	15
FlexWord speech recognition, with play and echo cancellation	12
WholeWord speech recognition, without echo cancellation	15
	1 of 2

Table 3. SSP Card Channel Capacities

Feature	Simultaneous Transactions Supported
WholeWord speech recognition, with play and echo cancellation	12
Echo cancellation	60
Voice or background music recorded in 64-Kbps PCM format with automatic gain control (AGC)	120
Voice or background music recorded in 32-Kbps ADPCM format	120
16-Kbps CELP for coding	60
16-Kbps CELP for single-speed playback	120
Text to speech	60
Dial pulse recognition	60
Call Classification Analysis (CCA)	24
	2 of 2

Ethernet LAN PMC   An integrated Ethernet LAN controller is standard on the SBC circuit card of the CPU complex. A second, optional Ethernet LAN PMC can be installed on the I/O Companion card of the CPU complex. Both are described in the section .

Optional Peripheral Equipment

The peripheral equipment described in this section is not an exhaustive list of all devices that can be used with the server. If you have equipment that you would like to use, discuss its compatibility with a Lucent Technologies representative.

For details on peripheral connections to your system, see *LINCS Server New System Installation,* 585-313-127.

In some cases, Lucent Technologies does not provide or recommend a particular model or brand of each device when ordering. Customers must inform their sales representative about the desired peripheral equipment during the planning of a new system. This section describes the following types of optional peripheral equipment:

- Monitor, Keyboard, and Mouse (supplied together)
- Printer
- Modem

Monitor, Keyboard, and Mouse	You can connect a color monitor to any server if you would like a visual user interface. When you purchase a monitor, a standard 104-key keyboard and a PS2 mouse is provided. (Note that the server can be operated and administered without a mouse.)
Printer	A printer can be used to print hard copies of system screens and reports. The server supports printers that have UnixWare 2.1.3 drivers and use parallel ports.
Modem	An external modem can be connected to the system to allow administrators, operators, or remotely located technical support personnel to initiate commands and remotely monitor the system for installation and maintenance purposes. A modem is also used if asynchronous communication with another machine or device is needed. In such cases, a modem is only used if the device is located too far away from the system to use a null-modem.
	The server supports modems that have UnixWare 2.1.3 drivers and use standard ports.

3 Software

Overview

A number of software packages are included when you purchase the LINCS server. Optional feature packages are also available and can be implemented with some combination of optional hardware and software. This chapter lists the base and optional software for the server.

• UnixWare Operating System Software — two boot diskettes; additional UnixWare software is included on the LINCS Base CD-ROM.

• LINCS Server Software — LINCS Base CD-ROM; includes Base Software, Optional Software, and additional UnixWare software.

• ORACLE RDBMS Software — ORACLE Relational Database Management System (RDBMS) 7.3.2, the supported package for systems needing a database management system; one CD-ROM (LINCS ORACLE Base CD-ROM).

In addition to the base ORACLE package, you can purchase the ORACLE development tools package; two CD-ROMs (LINCS ORACLE Tools CD-ROM and LINCS ORACLE PRO*C CD-ROM).

To see a list of what software is installed in your system, use the **pkginfo | pg** command. The **pkginfo** command is described in full in Appendix A, "Summary of Commands," in *LINCS Server Administration,* 585-313-507.

UnixWare Operating System Software

The UnixWare operating system is the software platform upon which all of the system software runs, including feature packages and applications. Use the UnixWare boot diskettes to load the UnixWare operating system.

Additional software relating to the UnixWare operating system is included on the LINCS Base CD-ROM, such as files including peripheral and networking utilities, software programming packages, and electronic documentation. The driver for the Ethernet LAN controller is also included.

LINCS Server Software

The LINCS Base CD-ROM contains the LINCS server base and optional software, as well as additional UnixWare software. LINCS base and optional software is listed below.

Base Software   The base software acts as a foundation for the rest of the system and provides an environment for the execution of the application software running on the platform. It contains all major software utilities and subsystems related to processes, maintenance, and operations and is required for the platform to operate.

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

Base software packages are as follows:

- Intuity Utilities Package
- Intuity Runtime Processing Package
- Intuity Maintenance Package
- Intuity Logger/Alerter Package
- Intuity AUDIX Logger Package
- Intuity Backup/Restore Utilities
- Telecom Alarms Package
- Platform LINCS Tuning Package
- Intuity T1/E1 Board Driver
- Intuity Administration Screens Package
- Intuity Transaction State Machine Package
- Intuity License Modification Package

The Quickstart package is also included with the base software; it comes on a single boot diskette (not the LINCS Base CD-ROM).

Optional Software   Optional software is ordered according to need and is purchased in addition to the purchase of the base LINCS software. Generally, optional software is not required for the server to operate. However, one or more optional packages may be required for your applications to operate.

Optional software packages are listed below. Most of the software packages listed are directly related to a feature package.

- Intuity ASP Driver Package
- Intuity Call Bridge Application Package
- Intuity Call Classification Analysis Package
- Intuity CDH Stub
- Intuity CSG Asynchronous Host Interface Toolkit
  - ~ ASYNC_TEST Transactions Script Builder Backup
  - ~ ASYNC_TEST Speech Script Builder Backup
- Intuity Data Collection Toolkit
- Intuity Dial Pulse Recognition Package
- Intuity Feature Test Script Package
- Intuity FlexWord Recognition Base
- Intuity FlexWord Recognition — US English
- Intuity FlexWord Toolkit

- Intuity Whole Word ASR Base
- Intuity WholeWord Recognition — US English
- Intuity Text to Speech Package
- Intuity Unix Management Screens Package
- Installit Utility for INTUITY
- Intuity Advanced PRI Package
- Intuity ISDN Primary Rate Interface Package
- Intuity Nortel NIS A211-1PRI Package
- Intuity T1 E&M Interface Package

ORACLE RDBMS Software

Many systems using the LINCS server will require database management software. One of the following software packages must be installed, according to whether or not the system requires database software:

- ORACLE RDBMS 7.3.2 — The supported package for systems that need a database management system.
- Intuity CDH Stub — Required for systems that do not install ORACLE RDBMS.

ORACLE RDBMS 7.3.2

The ORACLE Relational Database Management System (RDBMS) 7.3.2 software package allows a user to establish and maintain a local ORACLE RDBMS on the system.

The primary ORACLE software comes on its own CD-ROM. You can also purchase the ORACLE development tools, which are delivered on two additional CD-ROMS.

Base ORACLE Software (LINCS ORACLE Base CD-ROM)

The base ORACLE software is delivered on the LINCS ORACLE Base CD-ROM, which includes the packages listed below. If installing ORACLE RDBMS, note that Base and Extended package and the Integration package are required; the SQL*NET TCIP/IP package is not required.

- Base and Extended ORACLE RDBMS 7.3.2 — required for ORACLE RDBMS

- ORACLE 7 Integration Package — required for ORACLE RDBMS

- ORACLE SQL*NET TCP/IP 7.3 — optional; provides remote database connectivity

ORACLE Development Tools (Two CD-ROMs)

In addition to the ORACLE RDBMS package, you can purchase the optional ORACLE development tools. These tools are delivered on the following two CD-ROMs:

- LINCS ORACLE Tools CD-ROM — contain the following packages:

  ~ SQL*FORMS/MENU

  ~ ORACLE*ReportWriter

- LINCS ORACLE PRO*C CD-ROM — contains the PRO*C package for developing ORACLE applications in the C programming language

Intuity CDH Stub   The Intuity CDH (Call Data Handling) Stub software package is required when the ORACLE RDMBS package is not installed. The CDH Stub software manages the call data that would otherwise be stored in an ORACLE database.

The CDH Stub package is included on the LINCS Base CD-ROM.

4 Features

Overview

A *feature* is software and/or hardware that is standard with each system purchase. Some features are completely functional by themselves, while other features might require an additional *feature package* to be complete or more advanced. This chapter explains the standard features of the LINCS server. See Chapter 5, Feature Packages, for details on feature packages.

- Open Interfaces and Architecture

- User Interfaces

- Application Development Options

- Voice Response Functions

- Speech Capabilities

- System Status and Monitoring

- System Alarms

- Telephony Interfaces

- Data Network Interfaces

- Terminal Emulation

- Database Environment

Open Interfaces and Architecture

The move to more open systems in the computer and telecommunications industries is growing as standardization of hardware and software increases. Standardization makes for quicker system engineering and allows new technologies to be more easily incorporated. As used here, the term *open* means adherence to a set of industry standards or specifications that promotes interoperability, which is the ability for diverse platforms, interfaces, and software to work together smoothly. When formal standards do not exist, *open* here means general interoperability. The LINCS server uses a number of open hardware devices, interfaces, and software; this section describes some of the main ones.

CompactPCI   CompactPCI is a high-performance platform composed of many components based on industry standards. The PCI Industrial Computer Manufacturers Group (PICMG) develops specifications for PCI-based systems for industrial and telecommunications applications. The LINCS server complies with the following PICMG standards:

- PICMG 2.0 CompactPCI Specification R2.1 (for the server and cards)

- PICMG 2.5 CompactPCI Computer Telephony Specification PR1.0

The hardware for the next release of the LINCS server is compliant with PICMG 2.1 CompactPCI Hot Swap Specification R1.0.

PCI Plug and Play BIOS
The LINCS server BIOS supports PCI (Peripheral Component Interconnect) Plug and Play, which allows for circuit cards to be configured automatically when the system is started. Automatic configuration saves time and helps prevent configuration errors. The BIOS is compliant with the PCI Special Interest Group (SIG) PCI 2.1 specification. PCI SIG fosters development and sponsors specifications for PCI architecture.

Ultra Wide SCSI
The hard-disk drives in the server use Ultra Wide Small Computer System Interface (SCSI), a high-speed hardware interface for connecting peripheral devices. Ultra Wide SCSI provides fast data transfer at the rate of 40 Mbytes per second. The disk drives also use Single Connector Architecture (SCA)—the drives plug directly into the backplane, eliminating cables and making for easy replacement. See Chapter 2, Hardware for specific information on the SCSI devices in the server.

10/100 Base T Ethernet
The Ethernet interface used by the LINCS server is compliant with the Institute of Electrical and Electronic Engineers (IEEE) 802.3 Carrier Sense Multiple Access with Collision Detection (CSMA/CD) standard for LAN protocol, now a popular, world-wide networking standard. The transmission rates of 10 Mbps and 100 Mbps are supported.

TCP/IP   Transmission Control Protocol/Internet Protocol (TCP/IP) is one of the most widely accepted networking protocols for communicating across different kinds of hardware and operating systems. Very reliable, TCP/IP is one of the main software networking components of the UnixWare operating system and is used often with Ethernet LANs. TCP/IP is the de facto standard for data communications for the Internet.

ECTF H.110 CT Bus   The Enterprise Computer Telephony Forum (ECTF) is an organization dedicated to fostering Computer Telephony (CT) interoperability and publishing standards and agreements. The CT bus used in the LINCS server is compliant with the ECTF H.110 standard, which is a hardware specification for implementing a CT bus for CompactPCI. This version of the CT Bus offers greater fault tolerance and minimizes speech-processing disruption through redundant clocking.

T1 E&M   T1 E&M is a trunking arrangement where either side can initiate actions. It is a common and reliable connection between switches and networks, computer telephony systems, or other switches. The server uses robbed bit signalling and preserves high voice quality. T1 is a standard digital transmission link in the United States. T1 E&M is an optional feature package. For more information, see T1 E&M Protocol (73) in Chapter 5, Feature Packages.

AT&T PRI   AT&T Primary Rate Interface (PRI) is an ISDN (Integrated Services Digital Network) configuration that functions like an enhanced T-1 circuit. ISDN is an international telecommunications standard for voice, video, and data transmission over digital lines. With AT&T PRI, the LINCS server can communicate with Lucent Technologies or AT&T private branch exchanges (PBXs) or switches. AT&T PRI is an optional feature package. For more information, see Primary Rate Interface (63) in Chapter 5, Feature Packages.

UnixWare   UnixWare provides the power and flexibility of the UNIX operating system with its multi-tasking, multiple-user capabilities. Customers and developers can easily tailor their system with UnixWare interfaces. At the highest level, it provides system administration capabilities, shell interfaces, programming development environments, and networking interfaces, all of which allow for customization.

Network File System (NFS)   NFS, along with TCP/IP, is one of the primary software networking components of UnixWare. It allows data to be shared over a wide variety of machines, operating systems, and networks, and is a good example of interoperability.

IRAPI   Intuity Response Application Programming Interface (IRAPI) is a C-language interface for developing system applications for speech-processing and telephony functions. IRAPI is a Lucent Technologies API that communicates with UnixWare, the ORACLE RDBMS, and other applications. Application

developers who know C-language programming can easily develop custom APIs. See Application Development Options (39) for more information on IRAPI.

ORACLE RDBMS   The ORACLE Relational Database Management System (RDBMS) is a popular database system that is supported by a wide variety of platforms. It includes SQL (Standard Query Language) software to take advantage of SQL's extensive querying and processing capabilities, and you can purchase ORACLE development tools (optional) for producing reports and developing screen-based applications.

ORACLE RDBMS is an optional feature package for the LINCS server. However, it is the supported feature package if your system is going to use a database management system. See ORACLE RDBMS (61) in Chapter 5, Feature Packages for more information.

User Interfaces

The LINCS server provides a screen user interface and a command-line user interface.

Screen Interfaces   The screen user interface is invoked by using the **cvis_menu** command or **sysadm** command. These commands take users into a series of menus and screens from which they can perform various system operations, such as adding users, running reports, and so forth.

Command-Line Interfaces
The command-line user interface is initiated from the system's UnixWare prompt. Though most operations can be accomplished through the **cvis_menu** screens, you can invoke certain operations from the command line. Valid and supported commands are documented in *LINCS Server Administration*, 585-313-507.

Application Development Options

Automated transactions are known 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 system that informs it how to carry out the automated transaction. Scripts define the flow of the call and determine what the caller hears and how the caller responds to the system.

In the standard LINCS server software, the following mechanisms are provided for developing applications:

- TAS Script (Transaction Assembler Script)

- IRAPI (Intuity Response Application Programming Interface)

TAS Script
Transaction Assembler Script (TAS), formerly called Native Script, is an assembly-type instruction language. A sequence of instruction calls run within the generic TSM software that manages the low-level interactions required to operate the system. At any time, TAS can be used to assemble, load, change, or replace a script without affecting the other scripts running on TSM or other IRAPI programs running the system.

For more information on TAS script, see *Intuity CONVERSANT System Version 7.0 Application Development with Advanced Methods*, 585-313-203.

IRAPI   Intuity Response Application Programming Interface (IRAPI) is a C-language interface used to develop system applications that can be directly integrated with the other features of the UnixWare system. IRAPI gives users the capabilities offered by the system script language—the ability to play and code phrases, collect touch-tone digits, answer incoming calls, generate outgoing calls, and so forth—from a C-language program.

In addition, IRAPI within the system reduces the role and structure of TSM. The reduced TSM has been completely recoded in terms of the IRAPI, and compatibility with older scripts is maintained. The Resource Manager (RM) manages the resources and the Application Dispatch (AD) process controls the dispatching of applications with some help from the IRAPI library.

For more information on IRAPI, see *Intuity CONVERSANT System Version 7.0 Application Development with Advanced Methods*, 585-313-203.

Voice Response Functions

The LINCS server provides many voice-response functions as standard features. Most of these functions are accomplished with a script instruction. Some of the most commonly used functions include:

- Answering the line (answer function)

- Speaking to the caller (announce function), playing phrases and values in succession

- Connecting the caller to background music or prerecorded speech that has been installed on the system (background function)

- Disconnecting the system from the caller (disconnect function)

- Making calls (originate function), having the system place calls, as in surveys

You can purchase additional packages to extend your voice-response capabilities. For example, the Text-to-Speech feature package is an optional software package that converts ASCII text into spoken, computer-generated prompts and announcements; it is used to read and speak lines of text. Other feature packages include Call Bridge Application, which allows for third-party connections, and Call Classification Analysis, which provides a way to classify the disposition of a call (such as busy or no-answer) and then respond accordingly. Also available are different speech-recognition packages. All of these feature packages are described in more detail in Chapter 5, Feature Packages.

Speech Capabilities

The speech played during a call is the system's main interaction with the caller and is an important part of any application. All speech to be played as part of an application resides as UnixWare files in a mounted UnixWare file system. There are several methods for developing speech:

• Record a professional speaker

• Purchase a custom speech package from Lucent Technologies

• Share speech already recorded for another application

• Import speech from another application

• Use the Text-to-Speech optional feature package. For more information on Text-to-Speech, see Chapter 5, Feature Packages.

Coding and Storage Once speech is recorded, it must be encoded and digitized into an acceptable format. Lucent Technologies can develop custom speech packages for your system.

Digitized speech phrases are stored as digital data. The system then assigns a phrase number and stores the phrases in talkfiles. (Note that certain talkfile numbers are reserved for various optional features.) By default, talkfiles are stored in specific places on the system. Systems that have more than 72 telephone network connections can use a second hard disk drive for speech storage.

For more information on developing speech and on talkfiles and their location, see *Intuity CONVERSANT System Version 7.0 Speech Development, Processing, and Recognition,* 585-313-201.

Speech Channel Capacities

The default coding method used for recording speech on the system is adaptive differential pulse code modulation (ADPCM) using a sampling rate of 32 Kbps. Constraints on maximum capacities occur at the circuit-card level, rather than at the system level.

Table 4 shows the playback and coding channel capacity for each SSP circuit card for the various code types.

Table 4.   Speech Channel Capacities per SSP Circuit Card

Mode	ADPCM 16/32 Kbps	CELP 16 Kpbs
Playback	120	120
Record	120	60

Speech Storage Capacities

The amount of space allocated for storing speech can vary, depending on your needs and your system. One speech block consists of 8KB. The number of seconds per block depends on the coding rate of the speech-encoding method that you use, such as 16-Kbit CELP, 32-Kbit ADPCM (default), or 64-Kbit PCM.

Note: There is wasted space whenever a speech phrase does not fill a block. For example, enhanced basic speech is stored at 32-Kbit ADPCM, with 2 seconds of speech per block. If a phrase is less than 2 seconds, the remaining space within that speech block is not available for other use.

Table 5 shows sample speech storage capacities. Your system can have space allocated on both primary and secondary disks. The default allocation for speech on the first disk is 500 MB. You can allocate more space on this disk if you have it, or you can allocate additional space on a second disk.

Table 5. Sample Speech Storage Capacities

Disk	No. of Speech Blocks (8KB/blk)	16 Kbit CELP/ADPCM (4 sec/blk)	32 Kbit ADPCM (2 sec/blk)
4.5-Gbyte SCSI (500MB = default allocation on first disk)	62,500	~70 hrs	~35 hrs
Each additional 2-Gbytes allocated, dedicated to speech	256,000	~290 hrs	~145 hrs

System Status and Monitoring

The system is set up with several mechanisms to help customers troubleshoot and correct problems with the system. This section highlights some of those mechanisms. For more information on menus and screens, see *LINCS Server Administration,* 585-313-507.

Diagnostics The diagnose procedure is used to perform diagnostics on E1/T1 or SSP circuit cards or the CT bus. To fully diagnose the system hardware, diagnose all the circuit cards and the bus.

Diagnose is accomplished through the Configuration Management menu or the **diagnose card** and **diagnose bus** commands.

System Monitor System monitor is used to verify that each incoming telephone trunk and its associated E1/T1 circuit card is functioning properly. You may display the Voice Channel and Host Session Monitors through the System Monitor menus.

System monitor is accomplished through the System Monitor menus or the **sysmon** command.

Trace Tracing capabilities allow you to trace the actions of a specified process or channel. Trace messages are stored in a trace buffer for future viewing. The trace capability is one way to view how a call is being handled and therefore is a useful tool when troubleshooting problems in an application.

Trace is accomplished through the Command Menu Trace Service menu or the **trace** command. See *LINCS Server Administration,* 585-313-507, for more information.

Local System Status and Alerting
The system uses messages to alert you to problems, potential problems, or a change in the status of the system. These message are collected in the Message Log Report and can be displayed to a screen using the Message Log Report Screen. Through the use of this Message Log Report, a customer or technician can detect, report, and fix problems as quickly as possible to minimize disruption to normal service. (For the procedure to run the Message Log Report, see Chapter 7, "Common Administration," in *LINCS Server Administration,* 585-313-507.)

System Alarms

The Telecommunication Alarm Module (TAM) provides an intelligent monitoring and alarm system for the LINCS server hardware resources and operating system. Most central-office telecommunications equipment separate their system maintenance and alarm messages into three classes: CRITICAL, MAJOR, and MINOR. A programmer can classify each system message into one of these three classes and can trigger a separate alarm corresponding to each alarm class.

The TAM offers both visual and audible alarms. Visual indicators of an alarm are displayed on the alarm panel. Alarm information is sent over the COM2 serial port.

⚠ CAUTION:

The TAM connects internally to the COM2 serial port. Note that because the connection occurs inside the chassis, the external port appears to be available. Do not make other connections to the COM2—doing so will interrupt the watchdog timer communication to the CPU and might cause a system reboot.

The resources that the TAM monitors are described below.

Internal Chassis Temperatures   Two sensors monitor the temperature of the air entering and exiting the chassis. Table 6 shows the default first and second thresholds for high temperatures. If the temperature exceeds the first threshold, the TAM is set to generate a MAJOR alarm. A CRITICAL alarm is generated if the temperature continues to rise and exceeds the second threshold.

Table 6. Temperature Thresholds

Sensor	First Threshold and Alarm Status	Second Threshold and Alarm Status
Air Inlet	38C — MAJOR	49C — CRITICAL
Air Outlet	46C — MAJOR	60C — CRITICAL

Input Voltage Levels

The input voltage levels are monitored according to the default low and high levels given in Table 7. A CRITICAL alarm is generated if the voltage level falls below the low threshold or exceeds the high threshold.

Table 7. Input Voltage Level Thresholds

Input Voltage Sensor	Low Threshold	High Threshold
-48VA	-36.0V	-72.0V
-48VB	-36.0V	-72.0V

Power Supplies

Sensors monitor the state of the two power supplies and the voltage levels for the four power supply outputs.

If a power supply is detected as missing or not functioning, a MAJOR alarm is generated.

Voltage levels for the four power supply outputs are monitored according to the levels given in Table 8 on page 49. A CRITICAL alarm is generated if a voltage level falls below the low threshold or exceeds the high threshold.

Table 8. Power Supply Output Voltage Thresholds

Output Voltage Sensor	Low Threshold	High Threshold
+3.3V	+3.069V	+3.531V
+5V	+4.65V	+5.35V
+12V	+11.2V	+12.84V
-12V	-11.2V	-12.84V

Cooling Fans

The TAM monitors operation of the ten cooling fans in the server, as listed below. If a sensor detects that a fan has stopped running, the TAM generates a MAJOR alarm.

- Power supply fans (2)
- Upper-tray cooling fans (5)
- Lower-tray cooling fans (3)

CPU Status

A watchdog timer is set to monitor the operation of the central processing unit (CPU), with a refresh rate of 30 seconds. If the watchdog timer expires, indicating the UnixWare operating system has failed, a CRITICAL alarm is generated and the system is reset.

Telephony Interfaces

The system connects to the public switch telephone network (PSTN) to communicate with external callers. This interface to the PSTN uses a digital connection to send information to callers. In some system applications, it also connects to private data networks so it can access host computer databases for information to complete certain types of calls.

The system supports asynchronous private data network interfaces. These interfaces provide connections from the system to other computing devices such as remote monitoring systems as well as host computer databases.

Digital interfaces are established with the E1/T1 (CWB2) circuit card and its rear I/O transition card (CYD2). Supported protocols are T1 E&M and Primary Rate Interface (PRI). For descriptions of these packages, see Chapter 5, Feature Packages.

In a digital configuration, the system provides connectivity through an E1/T1 circuit to digital network facilities such as a central office switch. E1/T1 connections also provide dialed number identification service (DNIS) information for automation of incoming calls for customers with multiple 800 or 900 numbers. If your system has PRI, E1/T1 connections also provide automatic number identification (ANI).

See *Intuity CONVERSANT System Version 7.0 Communication Development*, 585-313-202, for more information on digital interfaces. For more information on digital connection switch settings, see *LINCS Server Administration,* 585-313-507.

Data Network Interfaces

The LINCS server supports the Transmission Control Protocol/Internet Protocol (TCP/IP) data network communication interface, through base and optional software and hardware.

TCP/IP is a process-to-process protocol. TCP/IP within the system provides high-speed data transmission over a 10/100Mbit Ethernet local area network (LAN). The server provides an integrated Ethernet LAN controller on the CPU complex. A second Ethernet LAN PMC is optional. The Ethernet Driver package is part of the base software.

Terminal Emulation

The following terminal types are supported for administrative screens under the UnixWare operating system:

- AT386 (console)
- 4410 (Terranova or PROCOMM PLUS emulations)
- 513 (Terranova emulation)
- 4425
- 715 BCT, 605
- Sun terminal
- Sun shell tool

Database Environment

The LINCS server uses the ORACLE Relational Database Management System (RDBMS) 7.3.2 software to provide a database system and management tools. However, because not all systems require database functionality, the ORACLE RDBMS is an optional, rather than standard, feature of the server.

Although ORACLE RDBMS is optional, it is the supported feature package if your system is going to need a database management system. Note that if you do not install ORACLE RDBMS, you must install the Intuity CDH Stub feature package to handle the call data that would otherwise be stored in an ORACLE database. Both ORACLE RDBMS and Intuity CDH Stub are described in Chapter 5, Feature Packages.

5 Feature Packages

Overview

A *feature package* is software and/or hardware used to enhance the operation or capacities of the base system. Feature packages are not required for the basic server and voice system to function and are not supplied with the base system. Feature packages are purchased separately from the base software.

This chapter describes each feature package available with the LINCS server and states software and hardware requirements. Note that the software and hardware requirements assume that the base software and the hardware required for the platform to run are already installed. Feature packages are presented in alphabetical order.

- Asynchronous Host Interface Toolkit

- Call Bridge Application

- Call Classification Analysis

- CDH Stub

- Data Collection Toolkit

- Dial Pulse Recognition

- FlexWord Toolkit

- [ORACLE RDBMS](#)

- [Primary Rate Interface](#)

- [Speech Recognition Packages](#)

  - [WholeWord Speech Recognition](#)

  - [FlexWord Speech Recognition](#)

- [T1 E&M Protocol](#)

- [Text-to-Speech](#)

Asynchronous Host Interface Toolkit

The Asynchronous Host Interface Toolkit provides operational software, source code, and documentation to develop system applications that access host computers using an asynchronous data communication interface.

The asynchronous host interface toolkit offers these functions:

- 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

- Multiplexes messages from multiple channels onto the asynchronous line

- Performs normal transaction processing functions while handling multiple asynchronous messages on a fully loaded system

One asynchronous communication port, labeled COM1, is provided as standard equipment and is available to use. A second port, COM2, is used only for the Telecom Alarm Module.

⚠ CAUTION:
The TAM connects internally to the COM2 serial port. Note that because the connection occurs inside the chassis, the external port appears to be available. Do not make other connections to the COM2—doing so will interrupt the watchdog timer communication to the CPU and might cause a system reboot.

Table 9 lists asynchronous host interface toolkit capacities.

Table 9.   Asynchronous Host Interface Toolkit Capacities

Item	Maximum Number	Comments
Physical asynchronous connections allowed to the system	1	Two connections exist (COM1 and COM2), but COM2 is connected to the Telecom Alarm Module. See cautionary text above.
Host systems to which asynchronous connections may be made	2	
Multiplexed channels (sessions) allowed per link	24	48 channels is the maximum number per system (two links)
Transfer rate, in Kbits/second (Kbps)	28.8	
Message size, in characters	127	
Messages recognized by the system per link, per second	2	At 19.2-Kbps with capacity reserved for normal processing functions

Call Bridge Application

The Call Bridge Application feature package allows an application to place an outbound call to a third party and maintain the connection while the caller interacts with the third party. When the third party hangs up, the script continues with the next action step. The call bridge feature is used most often when call transfer is not available on the private branch exchange or central office.

Call Classification Analysis

The Call Classification Analysis (CCA) feature package allows application developers to classify the disposition of originated and transferred calls. Some of the dispositions include busy, answered, ring no-answer, and reorder. CCA provides *intelligent transfer*, a type of call transfer where the application dials the third-party number to start the transfer and then listens to the call progress signals to determine if the line is busy, ringing, or has been answered. CCA has a rudimentary voice-energy detector for identifying answered calls.

CDH Stub

The CDH (Call Data Handling) Stub feature package is required if the ORACLE Relational Database Management System (RDBMS) 7.3.2 software is not installed on the LINCS server. ORACLE RDBMS is the supported package for any system that must have database functionality. If the system does not need database functionality, CDH Stub must be installed to dispense with the call data in the message queue that would otherwise be stored in an ORACLE database.

Data Collection Toolkit

The Data Collection Toolkit feature package is available on a custom basis only. This toolkit provides support for collecting speech samples by authorized Lucent Technologies affiliates who then build custom speech recognition models for the collected data. This data is also forwarded and archived at Lucent Technologies for future speech modeling; such data collection and development is key for producing and refining WholeWord speech recognition vocabularies.

Developing a vocabulary for WholeWord speech recognition requires a large number of speech samples for each utterance or word. This toolkit provides the proper method of speech-sample collection. Because of the need for extremely uniform and accurate sample-taking, this package is only provided to certain development partners who agree to collect speech samples to further enhance their WholeWord speech recognition accuracy.

This tool may also be used to create custom vocabulary sets outside of the list of words that are included in the standard vocabulary set ("zero" through "nine", "yes", "no", and "oh"). However, custom vocabulary is still time consuming and more costly to develop than a FlexWord vocabulary.

Dial Pulse Recognition

The Dial Pulse Recognition (DPR) feature package allows users with rotary telephones, or push-button telephones that generate dial pulses, to interact with system applications. DPR processes the caller input by using a recognizer that relies on the speech and signal processing (SSP) circuit card. (Touch-tone input requires resources from the telephony interface circuit card.) DPR can be added on a channels per system basis to all supported digital interfaces.

DPR recognizes the digits on a rotary phone, which consists of 0 through 9 but not the asterisk (*) or pound sign (#). Barge-in, also referred to as "dial-through," is also supported and allows callers to enter dial-pulse input during the system prompts; callers do not have to listen to the entire prompt before responding.

DPR can work simultaneously with either WholeWord or FlexWord speech recognition, although the WholeWord and FlexWord recognizers are not able to work together. Combining DPR with a speech recognizer gives the caller the choice of using dial pulse or touch tone input, as well as spoken input. If the standard recognition types with this feature package do not meet your needs, Lucent Technologies can develop custom recognition types for you. For additional information, contact your Lucent Technologies representative.

For more information, see *Intuity CONVERSANT System Version 7.0 Speech Development, Processing, and Recognition,* 585-313-201.

Hardware Requirements   At least one SSP circuit card (CWB1) and one E1/T1 circuit card (CWB2) must be installed and operational.

FlexWord Toolkit

The FlexWord Toolkit feature package provides enhancements to the FlexWord recognition feature package. (See FlexWord Speech Recognition (page 70). The FlexWord Toolkit makes it possible to separate FlexWord vocabularies from the FlexWord Recognition package so that you can create your own words, wordlists, and vocabularies. You can also verify and fine-tune the phonetic definitions of the words in the wordlists, and package and install the customer-defined vocabularies.

The FlexWord Toolkit can operate with the system still running; you do not need to shut down the voice system to run the toolkit.

Note: It is recommended that you use the Text-to-Speech (TTS) feature package when you are developing a US English FlexWord vocabulary to ensure that errors are not introduced while editing the FlexWord phoneme strings. This checking helps avoid minor errors in FlexWord phoneme strings that can cause a large degradation in recognition accuracy.

For more information on the FlexWord Toolkit, see *Intuity CONVERSANT System Version 7.0 Speech Development, Processing, and Recognition,* 585-313-201.

Software and Hardware Requirements

- Text-to-Speech feature package (required for US English)
- At least one SSP circuit card (CWB1) and one E1/T1 circuit card (CWB2)
- ASP driver (required for US English)

ORACLE RDBMS

The ORACLE Relational Database Management (RDBMS) System 7.3.2 software package allows a LINCS user to establish and maintain a local ORACLE RDBMS on the system. This package is the supported package for systems that need a database management system. It includes optional ORACLE SQL*NET TCP/IP software for establishing remote database connectivity.

Note: The Intuity CDH Stub software package is required when the ORACLE RDMBS package is not installed. The CDH Stub software manages the Call Data Handling traffic data that would otherwise be stored in an ORACLE database. The CDH Stub package is included on the LINCS Base CD-ROM.

In addition to the ORACLE RDBMS package, you can purchase the optional development tools package, described in ORACLE Development Tools below.

For complete information on the delivery media for the different ORACLE packages, see ORACLE RDBMS 7.3.2 in Chapter 3, Software .

ORACLE Development Tools	The ORACLE development tools package contains the following tools:

- SQL*FORMS/MENU — for developing screen-based ORACLE applications (LINCS ORACLE Tools CD-ROM)

- ORACLE*ReportWriter — for developing ORACLE applications to produce reports from the database (LINCS ORACLE Tools CD-ROM); see ORACLE Reports below for information on the kinds of reports available

- PRO*C — for developing ORACLE applications in the C programming language (LINCS ORACLE PRO*C CD-ROM)

ORACLE Reports

ORACLE RDBMS reports make it possible to create a compiled list of system statistics, including the number of calls made to the system, transfer attempts, or call information for a specific day. The Reports Administration screen gives you access to system reports, including system call classification reports, call data detail reports, call data summary reports, message log reports, and traffic reports. The system enables you to tailor each report to your needs and specifications.

Table 10 shows storage capacities for system reports.

Table 10. Storage Capacities for Reports

Report	Maximum Storage Capacity
Call Data Detail Report	7 days of data (data is sorted from the current day plus data from 7 previous days, then summarized)
Call Classification Report	365 days of data
	1 of 2

Table 10. Storage Capacities for Reports

Report	Maximum Storage Capacity
Call Data Summary Report	7 days of data
Traffic Summary Report	7 days of data
Event Log Messages	500–20 Kbps messages (compressed)
	2 of 2

Primary Rate Interface

The primary rate interface feature package allows the system to communicate directly with a Lucent Technologies or AT&T private branch exchange or switch using the AT&T ISDN Primary Rate Interface (PRI). The ISDN PRI is a digital interface and only supports E1 or T1 line usage.

Note: Although the ISDN PRI package supports both E1 and T1 lines, this release of the LINCS server supports only T1 lines.

Supported Switches

The ISDN PRI package can be used with the following switches:

- 4ESS

- 5ESS — Note that 5ESS does not support Non-Facility Associated Signaling (NFAS) for AT&T PRI.

- DEFINITY — G3i, System 85, and System 75 (not used by the LINCS server)

- Phase 1 or Phase 2 Service Node Controller

- ISDN Network Controller

- Nortel DMS-100 — Requires the Nortel NIS A211-1PRI package

PRI Versions Two different versions of the primary rate interface feature package can be used with the server:

- ISDN Primary Rate Interface package

  This version of PRI supports ISDN-PRI at both the E1 and T1 rate and supports the E1/T1 circuit card (CWB2). It supports ISDN-PRI interfaces at the TAS Script, IRAPI, and General Purpose PRI library levels.

- Advanced PRI package

  This version requires the preceding ISDN Primary Rate Interface version and provides a developer's toolkit for more advanced PRI services.

  This package includes a developer's guide and sample applications that show how to go beyond the built-in features of the ISDN Primary Rate Interface version. Also included are sample applications that extend the IRAPI library to receive or send additional Information Elements (IEs), exchange additional information messages with the switch, and use the General Purpose PRI library to more flexibly exchange messages with the

switch. Note that this package only needs to be installed on developer machines; it does not need to be installed on customer machines that are running General Purpose PRI applications.

Due to the potential for signaling errors or fraud, and the development expertise required, this package is limited to Lucent Technologies or others with a need for this level of control. Development organizations within these companies may use the Advanced PRI version to develop other add-on applications that meet specific customer needs.

Software and Hardware Requirements

- Intuity ISDN Primary Rate Interface package — The Advanced PRI package is optional, but it requires the ISDN PRI package.

- At least one E1/T1 (CWB2) circuit card, installed and operational

Documentation   Documentation for the PRI feature package is a separate document that is included with the package.

PRI Interface Capacities   shows primary rate interface capacities. Note that PRI on 5ESS requires a separate D-channel for each T1 (for example, 13 23B+D can be used).

Table 11. Primary Rate Interface Capacities

Component	Maximum Number	Comments
Data channels on CWB2, per system	13	For example, up to 13 23B+D interfaces are supported
Supported voice channels per system at the T1 rate	310	310 B-channels are supported when using 2 D-channels; for example, 167B+D (7 T1 cards) and 143B+D (6 T1 cards) for a total of 310 channels *or* 299 B-channels are supported when using 13 23B+D interfaces

Depends on the capability of the switch. Not all switches support all PRI configurations. |
| SSP circuit cards required to support voice services | 1 or more | An SSP circuit card is required for voice coding or playback with all E1/ T1 circuit cards. |

For more information on ISDN PRI, see *Intuity CONVERANT System Version 7.0 Communication Development,* 585-313-202. For more information about Advanced PRI, consult a Lucent Technologies sales representative.

Speech Recognition Packages

Speech recognition is a capability that allows the system 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, including 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.

Because of the differences in speech recognition applications, there are two distinct methods of providing this feature package:

• WholeWord Speech Recognition — based on comparing entire spoken words

• FlexWord Speech Recognition — based on comparing phonemes (units of sound)

Both WholeWord and FlexWord can be added on a channels per system basis.

For more information on both WholeWord and FlexWord speech recognition, see *Intuity CONVERSANT System Version 7.0 Speech Development, Processing, and Recognition,* 585-313-201.

WholeWord Speech Recognition

WholeWord speech recognition 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 speech recognition is well suited to tasks where the required input is digits or "yes" and "no" responses. WholeWord custom vocabulary packages are also available. If you have special words, such as "checking" or "savings," that need to be recognized, Lucent Technologies can develop the software to recognize those requested words. Lucent Technologies collects speech samples of the requested words and creates statistical models of each word.

If you require a larger customized vocabulary, FlexWord speech recognition may be more appropriate. See FlexWord Speech Recognition below for more information on FlexWord. Both WholeWord and FlexWord input can be used in the same application.

All WholeWord speech recognition language packages support connected digit recognition and barge-in.

Software and Hardware Requirements

- WholeWord ASR Base feature package

- WholeWord Recognition feature package — US English

- At least one SSP circuit card (CWB1) and one E1/T1 circuit card (CWB2), installed and operational

WholeWord Capacities

Table 12 lists WholeWord speech recognition capacities.

Table 12. WholeWord Speech Recognition Capacities

Item	Max. Number	Notes
Channels of simultaneous speech recognition per SSP card	15	SSP card dedicated to WholeWord, without barge-in
	12	SSP card dedicated to WholeWord, with play and barge-in
Connected digits recognized (using standard recognition types)	24	Application dependent; recognition accuracy improves significantly if fixed length is used

For more information on WholeWord speech recognition capacities, see *Intuity CONVERSANT Speech Development, Processing, and Recognition,* 585-313-201.

FlexWord Speech Recognition

FlexWord speech recognition provides a different method of constructing and recognizing speech vocabularies than does WholeWord. The FlexWord speech recognition package relies on phonemic recognition.

The English language is made of approximately 40 phonemes. These phonemes are units of sound that, when strung together in particular orders, form recognizable words. The word "sales," for example, consists of four phonemes: "s-A-l-z." The FlexWord speech recognition package operates on this principle so that custom vocabularies can be created much more easily and cheaply than if done with WholeWord technologies.

Because FlexWord vocabularies are much easier and less time consuming to construct, customers have a cost-effective method of designing large, customized vocabularies.

The system also incorporates FlexWord technology improvements, namely, word spotting and phrase screening, into the FlexWord Speech Recognition package. Word spotting provides the ability to search past extraneous speech input during recognition. Phrase screening provides the ability to reject speech that is outside the FlexWord vocabulary.

FlexWord Toolkit The FlexWord Toolkit feature package provides enhancements to the FlexWord recognition feature and enables customers to define application-specific vocabularies. For more information, see in this chapter.

Software and Hardware Requirements

- FlexWord Recognition Base feature package
- FlexWord Recognition feature package — US English
- ASP driver, installed and operational
- At least one SSP circuit card (CWB1) and one E1/T1 circuit card (CWB2), installed and operational.

FlexWord Capacities

Table 13 lists FlexWord speech recognition capacities.

Table 13. FlexWord Speech Recognition Capacities

Item	Max. Number	Notes
Words in a wordlist	500	
Wordlists	200	
Total words (phrases)	2000	If you have an application that requires more than 2000 words/phrases, contact your Lucent Technologies representative for assistance.
		1 of 2

Table 13. FlexWord Speech Recognition Capacities

Item	Max. Number	Notes
Channels of simultaneous speech recognition per SSP card	15	SSP card dedicated to FlexWord, without barge-in
	12	SSP card dedicated to FlexWord, with play and barge-in
		2 of 2

For more information on the FlexWord speech recognition feature package, see *Intuity CONVERSANT Speech Development, Processing, and Recognition,* 585-313-201.

T1 E&M Protocol

The T1 E&M protocol feature package supports the E1/T1 (CWB2) circuit card and provides T1 signaling types and the following three addressing types:

- DTMF (dual tone multi-frequency)

- MF (multi-frequency)

- Dial pulse

For more information on this feature and other features that use the T1 E&M protocol, see *Intuity CONVERSANT System Version 7.0 Communication Development,* 585-313-202.

Hardware Requirements   This package requires that at least one E1/T1 (CWB2) circuit card be installed and operational.

Text-to-Speech

The Text-to-Speech (TTS) feature package allows you to include speech in an application using ASCII text as input. The text is converted to synthesized speech via the speech and signal processing (SSP) card. Speech is available in US English, spoken in a male voice. The text can be used for text retrieved from a database or host, or for prompts, and can be spoken in an application with synthesized speech.

Text-to-Speech can be added on a channels per system basis.

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 amounts of 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 can distinguish between different classes of text, such as zip codes and telephone numbers, and will pronounce the text string in the appropriate spoken format. When constructing speech, parameters such as pitch and duration are adjusted to make the outcome sound more natural. In addition, the ASCII text is preprocessed to expand abbreviations. For example, "Dr." would be expanded to "doctor" or "drive," depending on the context.

For more information on this feature package, see *Intuity CONVERSANT System Version 7.0 Speech Development, Processing, and Recognition,* 585-313-201.

Hardware Requirements   At least one SSP circuit card (CWB1) and one E1/T1 circuit card (CWB2) must be installed and operational.

Capacities   The maximum number of concurrent instances of TTS on one dedicated SSP card is 60.

6 Requirements and Specifications

Overview

This chapter provides information on the requirements and specifications that each LINCS server system requires for proper operation:

- Platform Specifications — Power requirements, space requirements, and environmental considerations

- Telephony Interface Specifications — General telephony specifications and specifications for T1 E&M and ISDN-PRI type configurations

- Data Communications Specifications — General specifications for asynchronous connections

Platform Specifications

This section presents the power and space requirements for the LINCS server and provides temperature and humidity guidelines.

Power Requirements

Note the following power requirements for the LINCS server:

- Each server, modem (optional), and printer (optional) should be located near a power source.

- Communication cables must be kept separate from power cables. Installation of communication and power cables must be in accordance with National Electrical Codes (NEC) and country-specific requirements.

Table 14 shows the power that must be available for each server.

Table 14. Power Requirements

Attribute	LINCS Server
Volts DC (VDC)	-48
Amps	16 DC
Maximum power output	500W
Heat dissipation	2700 BTU/hr

Table 15 shows the power that must be available for each optional monitor.

Table 15. Power Requirements for Optional Monitor

Attribute	Monitor
Volts AC (VAC)	100–240 VAC auto sensing
Hertz (Hz) (power)	50–87 Hz
Phase	Single
Amps (US)	3.0 (fused)
Input cords	NEMA 5-15P
Unit input receptacles	IEC-320 inlet

Space Requirements

Table 16 shows the dimensions of the LINCS server:

Table 16. Space Requirements for LINCS Server

Height	Width	Depth
66.7 cm (26.25 in.)	43.8 cm (17.25 in.)	42.5 cm (16.75 in.) plus 5 cm (2 in.) for SCSI terminator guard on back of server

Weight   The weight of the server will vary according to the components installed, ranging from approximately 95 lbs to 113 lbs. A server with all standard hardware installed (no SSP or E1/T1 circuit cards) and three hard-disk drives weighs 97 lbs (43.65 kg).

Environmental Considerations   Locate each server in an area that follows the temperature and humidity requirements shown in Table 17.

Table 17. Temperature and Humidity Requirements

Condition	Operating State	Nonoperating State
Temperature	+10 to +38°C (+50 to+100°F)	-40 to +60°C (-40 to+140°F)
Relative humidity	20 to 55%, 20 to 80% short-term	5 to 95%, noncondensing

Telephony Interface Specifications

The LINCS server supports up to 144 code and play voice channels and up to 312 channels for bridging applications.

Note: If your system is going to use more than 144 channels, you must tune the NCHANNELS parameter accordingly. Use the following commands: **/etc/conf/bin/idtune** and **/etc/conf/bin/idbuild -B**

Table 18 through Table 20 on page 86 show the various digital interface specifications for all E1/T1 protocols.

General Specifications

Table 18. Digital Telephony Interface General Specifications

Attribute	Specification for CWB2/CYD2 Circuit Cards
Trunk types	T1 E&M, ISDN-PRI
Physical connector	RJ-48C
Line impedance	100 Ohms
FCC registration	(Registration has been applied for, but confirmation was not available in time for this publication.)
	1 of 5

Table 18. Digital Telephony Interface General Specifications

Attribute	Specification for CWB2/CYD2 Circuit Cards
Safety approval	UL-1459 and UL-1950 for US markets
Clock rate	1.544 Mb/seconds +/- 32 ppm
Pulse width	323 (nominal)
Electrical compliance	ANSI T1.403, T1.408
Clock/timing/jitter compliance	AT&T TR62411, Stratum 4 enhanced
Framing	D4, ESF
Line coding/zero suppression	AMI/ZCS, AMI/B8ZS
Signal level	3.0V nominal peak to peak up to 655 feet (A CSU is required if the distance to the DS-X is greater than 655 feet.)
Remotely initiated loopback	via CSU only
Recommended CSU type	Paradyne (PEC 21581-ESF), Verilink 551VST List 2, or equivalent. (A CSU is required for long haul connections, wet loop connections, or to provide power line and/or other types of primary protection.)
	2 of 5

Table 18. Digital Telephony Interface General Specifications

Attribute	Specification for CWB2/CYD2 Circuit Cards
Input gain	
~ DS-1 to CTBus, non-bridging	0dB nominal[*]
~ DS-1 to CTBus, bridge to analog port	0dB
~ DS-1 to CTBus, bridge to digital port	0dB
Output gain	
~ CTBus to DS-1, non-bridging	0dB
~ CTBus to DS-1, bridge to analog port	+3dB nominal*
~ CTBus to DS-1, bridge to digital port	0dB nominal*
DTMF generation	
~ Power level	-7dBm per tone nominal*
~ Timing	70mS ON, 70mS OFF nominal*
	3 of 5

Table 18. Digital Telephony Interface General Specifications

Attribute	Specification for CWB2/CYD2 Circuit Cards
DTMF detection	
~ Power levels, frequency deviation, twist, duration	Nominally comply with Bellcore LSSGR section 6.* With DTMF muting enabled, the DTMF receiver's minimum ON time for detection is increased and may not meet LSSGR requirements. DTMF muting does not impact LSSGR compatibility during call setup.
~ Number of DTMF receivers	24
MF generation	
~ Power level	-8Bm per tone nominal*
~ Timing	70mS ON, 70mS OFF nominal*
~ KP timing	100mS ON, 70mS OFF nominal*
MF detection	
~ Power levels, frequency deviation, twist, duration	Nominally comply with Bellcore LSSGR section 6*
~ Number of MF receivers	24
	4 of 5

Table 18. Digital Telephony Interface General Specifications

Attribute	Specification for CWB2/CYD2 Circuit Cards
Call progress tone generation	
~ Power level	-20dBm per tone nominal*
~ Cadence timing	• Busy tone — 500mS ON, 500mS OFF nominal* • Ring tone — 2 S ON, 4 S OFF nominal* • Reorder tone — 250mS ON, 250mS OFF nominal*
Dial pulse generation timing	60mS ON, 40mS OFF, 650mS interdigit time nominal*
Supported protocols	• T1 E&M • AT&T T1 ISDN-PRI • Nortel NIS A211- ISDN PRI
	5 of 5

* Can be tuned through digital switch interface packages

Specifications for T1 E&M

Table 19. T1 Telephony Interface Specifications for T1 E&M Type Configurations

Attribute	Specifications for CWB2/CYD2 Circuit Cards
DS-1 framing	D4
DS-1 line coding	AMI-ZCS
Protocol	Robbed-bit (A-bit only) 4-wire E&M
Alerting in/out	Wink/wink
Wink generation	230 mS nominal (tunable:* 20–2500 msec)
Wink detection range	100–350 mS
Addressing (outgoing)	DTMF (touch tone) or MF, 15-digit maximum
	1 of 2

Table 19. T1 Telephony Interface Specifications for T1 E&M Type Configurations

Attribute	Specifications for CWB2/CYD2 Circuit Cards
Addressing (incoming)	DTMF (touch tone) or MF, 16-digit maximum
~ DNIS digits	Will wait for up to 15 digits nominally[*]. Can also be configured to not wait for DNIS digits.
~ Initial digit timer	Will wait for up to 4 seconds for first digit. Can also be configured to not wait for digits.
~ Interdigital timer	Will wait for up to 2 seconds between digits.
ANI capacity	Not supported
Transfer capability	Not supported
	2 of 2

[*] Can be tuned through digital switch interface packages

Specifications for ISDN-PRI

Table 20. Digital Telephony Interface Specifications for ISDN-PRI Type Configurations

Attribute	Specifications for CWB2/CYD2 Circuit Cards
DS-1 framing	For T1 rate, ESF (recommended) or D4
DS-1 line coding	B8ZS (with ESF framing only) or ZCS (with D4 framing only)
B-channel capacities	Without NFAS[*]: 23 B+D per board for T1 With NFAS: 47B+D, 71B+D, 95B+D, and so forth in increments of 24, up to 167B+D in slots 1-7 and i143B+D in slots 10-15 Not all switches support all configurations
D-channel capacities	Multiple D-channels are supported up to the maximum number of E1/T1 boards (13 channels for 13 T1 boards)
Interface ID	1 (for card with a D-channel, not selectable) 2–13 (for card without a D-channel)
DNIS capacity	0–15 digits
	1 of 2

Table 20. Digital Telephony Interface Specifications for ISDN-PRI Type Configurations

Attribute	Specifications for CWB2/CYD2 Circuit Cards
ANI capacity	0–15 digits
D-channel backup	Not supported
Transfer capability	Not supported
	2 of 2

* Non-Facility Associated Signalling

For additional information on T1 telephony interfaces, see *Intuity CONVERSANT System Version 7.0 Communication Development,* 585-313-202.

Data Communications Specifications

Table 21 details the data communications characteristics for the LINCS server.

Table 21. Data Communications Characteristics

Attribute	Asynchronous Specifications
Ports	1–9
Ports available for host communication	1 (COM1) — The Telecom Alarm is connected internally to the second port (COM2) which precludes it from external use. See System Alarms (page 46) in Chapter 4, Features , for details.
Simultaneous host sessions (LUs)	N/A
Mode	Full duplex
Protocols	Xon/Xoff
Data rates	To 28.8 Kbps
Interface	EIA-232C

A **Documentation Guide**

Overview

The System Description document is designed to supplement all other documents in the LINCS server document set. This appendix provides a list of the documentation that supports the LINCS server system (Table 22), followed by a more detailed description of each document. Documents cover the following topics:

- System Description — General description of the hardware and software packages (*LINCS Server System Description*)

- Installation — Installing the LINCS server and peripherals (*LINCS Server New System Installation*)

- Administration — Administering the system and common operations (*LINCS Server Administration*)

- Maintenance — Installing and replacing hardware and software (*LINCS Server Maintenance*)

- Troubleshooting, Alarms, and Common Procedures — Online help system for troubleshooting and diagnostics; includes common system procedures (*System Reference*)

- Application Design and Development — References for developing speech applications (*Speech Development, Processing, and Recognition* and *Application Development with Advanced Methods*)

- [Speech and Communication Development](#) — Reference for developing communication interfaces (*Communication Development*)

- [Database Management](#) — Documentation set for ORACLE RDBMS

- [UnixWare Operating System](#) — Documentation set for Unixware

Documentation Set Listing

Each document in the LINCS server set is listed in [Table 22](#). See the section [Documentation Set Descriptions](#) for a detailed description of each document.

Table 22. Supporting Documents for LINCS Server

Title	Document Number	Comcode
LINCS Server System Description	585-313-209	108407461
LINCS Server New System Installation	585-313-127	108407453
LINCS Server Administration	585-313-507	108407487
LINCS Server Maintenance	585-313-126	108407446
LINCS Server System Reference	585-313-210	108407479
		1 of 2

Table 22. Supporting Documents for LINCS Server

Title	Document Number	Comcode
Intuity CONVERSANT System Version 7.0 Speech Development, Processing, and Recognition	585-313-201	108231986
Intuity CONVERSANT System Version 7.0 Communication Development	585-313-202	108173626
Intuity CONVERSANT System Version 7.0 Application Development with Advanced Methods	585-313-203	108178674
LINCS Server Documentation on CD-ROM	585-313-806	108410200
ORACLE On-Line Documentation CD-ROM	585-310-920	108242942
ORACLE 7.3 Server Custom Library Set	N/A	108242819
ORACLE SQL*Net 2.3 Custom Documentation Set	N/A	108242934
UnixWare 2.1.2 User Documentation	N/A	108288622
		2 of 2

Documentation Set Descriptions

System Description   *LINCS Server System Description*

Document number 585-313-209
Issue 1
May 1999

Provides a technical description of the LINCS server. This document is intended primarily for sales and sales support organizations, administrators, product design organizations, and account executives. Other audiences include the technical services, training, and development.

Topics include: hardware, software, feature and feature package descriptions, requirements and specifications, and a documentation guide.

Installation   *LINCS Server New System Installation*

Document number 585-313-127
Issue 1
May 1999

Describes procedures to install a LINCS server (that has been assembled loaded, and tested at the factory) and peripherals, make connections, and perform initial administration and acceptance testing of the system. This document is intended primarily for on-site technical personnel who are

responsible for installing the system and performing initial administration and acceptance testing.

Topics include: getting started (including a system installation checklist), unpacking and installing the server, connecting peripherals, making cable connections and powering up, and verifying the system status.

Appendices include: troubleshooting procedures, pinouts, and a system installation checklist.

Administration   *LINCS Server Administration*

Document number 585-313-507
Issue 1
May 1999

Provides the procedures needed to perform full system administration for the UNIX operating system, the voice system, feature packages, switch interfaces, databases, and common operations.

This document is intended primarily for system administrators. Other audiences include field support and helpline personnel.

The appendix includes a summary of commands.

Maintenance   *LINCS Server Maintenance*

Document number 585-313-126
Issue 1
May 1999

Provides a single source of information and procedures needed to maintain a LINCS server. This document is intended primarily for the personnel responsible for installing the system and performing routine and scheduled maintenance. This book is also useful to the system administrator who wants to troubleshoot the system.

Topics include: getting inside the computer, installing or replacing circuit cards, replacing the hard disk drive and other components, installing base system software, LINCS server software, and optional feature software.

Appendices include: installing ORACLE packages, component ordering numbers, how to build a system, and disaster recovery.

Troubleshooting, Alarms, and Common Procedures	*LINCS Server System Reference*

Document number 585-313-210
Issue 1
May 1999

Provides information on basic troubleshooting procedures for the most common system problems, diagnostic procedures, common system procedures, as well as a list of system alarms and messages.

This document is intended primarily for the on-site service technician and system administrators. Other audiences include technical support organizations and helpline personnel.

Application Design and Development	*Intuity CONVERSANT System Version 7.0 Speech Development, Processing, and Recognition*

Document number 585-313-201
Issue 2.0
April 1998

Serves as a reference for those who develop applications for the system using speech development features. This book is intended primarily for application developers. Other audiences include service support technicians, research and development teams, and marketing and sales groups.

Topics include: developing and editing speech, recognizing speech input, including WholeWord Speech Recognition, FlexWord Speech Recognition, and Dial Pulse Recognition, and how to put it all together.

Appendices include: enhanced basic speech formats, speech file formats, calculating O.S. index, Test-to-Speech formats, and advanced Text-to-Speech features.

Intuity CONVERSANT System Version 7.0 Application Development with Advanced Methods

Document number 585-313-203
Issue 1.0
April 1998

Serves as a reference for those who develop applications for the system using the TSM script level language and/or C-language, and provides information about designing software applications, processing speech, and writing programs that integrate the application and the generic software. This book is intended primarily for those who write application scripts. Other audiences include development, sales and service support, and training.

Topics include: application design and structure, TAS script instructions, data interface processes, IRAPI programming, and the message logger.

Appendices include: summary of TAS script instructions and C-library functions.

Speech and Communication Development

Intuity CONVERSANT System Version 7.0 Communication Development

Document number 585-313-202
Issue 1.0
April 1998

Serves as a reference for those who are responsible for establishing the communication interface between the caller, administrators, and the system. This book is intended primarily for application developers. Other audiences include field support, technical support, helpline personnel, and voice processing comarketers.

Topics include: analog telephony interfaces, digital telephony interfaces, the adjunct/switch application interface, converse vector step routing, call classification analysis, data network communications, and data network connectivity alarms.

An appendix contains transmission level adjustment information.

UnixWare Operating System

UnixWare 2.1.2 User Documentation

Complete documentation (paper only) on how to use UnixWare is included with the LINCS server.

Database Management	The following ORACLE documentation sets are available:

- ORACLE On-Line Documentation CD-ROM
  Document number 585-310-920

- *ORACLE 7.3 Server Custom Library Set*   (paper documentation)

  ~ *Oracle7 Server Concepts, 7.3*

  ~ *Oracle7 Server Administrator's Guide, 7.3*

  ~ *Server Application Developer's Guide, 7.3*

  ~ *Server SQL Reference Manual, 7.3*

  ~ *Server Utilities Guide*

  ~ *Server Messages, 7.3*

  ~ *Server Reference*

  ~ *PL/SQL User's Guide and Reference, 2.3*

  ~ *Programmer's Guide to the Oracle Call Interfaces*

  ~ *Programmer's Guide to the Oracle Pro*C/C++ Precompiler*

  ~ *Programmer's Guide to Oracle Precompilers*

  ~ *SQL*Plus User's Guide and Reference*

- *ORACLE 7SQL*Net 2.3 Custom Documentation Set*
  (paper documentation)

  - *Oracle Network Manager Administrator's Guide, 2.3*
  - *Oracle Network Product Troubleshooting Guide, 2.3*
  - *Understanding SQL*Net, 2.3*

Numerics

23B+D

23 bearer (communication) and 1 data (signaling) channel on a T1 PRI circuit card.

30B+D

30 bearer (communication) and 1 data (signaling) channel (plus framing channel 0) on an E1 PRI circuit card.

47B+D

47 bearer (communication) and 1 data (signaling) channel on two T1 PRI circuit cards.

4ESS®

A large Lucent central office switch used to route calls through the telephone network.

5ESS®

A Lucent electronic switching machine used to route calls through the telephone network or private branch exchange.

A AC

alternating current

ACD

automatic call distributor

AD

application dispatch

AD-API

application dispatch application programming interface

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, the Adjunct/Switch Application Interface) that the system administers via cut-through access to the inherent management capabilities of the product itself; this is in opposition to the ability of the system to administer the switch directly.

ADPCM

adaptive differential pulse code modulation

ADU

asynchronous data unit

advanced speech recognition

A speech recognition ability that allows the system to understand WholeWord and FlexWord™ inputs from callers.

affiliate

A business organization that Lucent controls or with which Lucent is in partnership.

AGL

application generation language

ALERT

System alerter process

alerter

A system process that responds to patterns of events logged by the "logdaemon" process.

American Standard Code for Information Interchange

A standard code for data representation that represents alphanumeric characters as binary numbers. The code includes 128 upper- and lowercase letters, numerals, and special characters. Each alphanumeric and special character has an ASCII code (binary) equivalent that is 1 byte long.

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.

ANI

automatic number identification

announcement

A message the system plays to the caller to provide information. The caller is not asked to give a response. Compare to prompt.

API

Application programming interface

application

The automated transaction (interactions) among the caller, the voice response system, and any databases or host computers required for your business.

application administration

The component of the system that provides access to the applications currently available on your system and helps you to manage and administer them.

application verification

A process in which the system verifies that all the components needed by an application are complete.

ASCII

American Standard Code for Information Interchange

ASI

analog switch integration

ASR

advanced speech recognition

asynchronous communication

A method of data transmission in which bits or characters are sent at irregular intervals and spaced by start and stop bits rather than by time. Compare to synchronous communication.

asynchronous data unit

An electronic communications device that allows computer systems to communicate over asynchronous lines more than 50 feet (15 m) in length.

automatic call distributor

That part of a telephone system that recognizes and answers incoming calls and completes these calls based on a set of instructions contained in a database. The ACD 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.

B back up

The preservation of the information in a file in a different location, so that the data is not lost in the event of hardware or system failure.

backing up an application

Using a utility that makes an archive copy of a completed application or an interim copy of an application in progress. The back-up copy can be restored to the system if the on-line version is damaged, or if you make revisions and want to go back to the previous version.

barge-in

A capability provided by WholeWord speech recognition and Dial Pulse Recognition (DPR) that allows callers to speak or enter their responses during the prompt and have those responses recognized (similar to the Speak with Interrupt capability). See also echo cancellation.

batch file

A file containing one or more lines, each of which is a command executable by the UNIX shell.

BB

bulletin board

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 telephone is busy or if the caller answered.

bps

bits per second

BRDG

call bridging process

bridging

> The process of connecting one telephone network connection to another over the system TDM bus. Bridging decreases the processing load on the system since an active bridge does not require speech processing, database access, host activity, etc., for the transaction.

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 8 bits (binary digits), which is the equivalent of one character of text.

C   call classification analysis

> A process that enables application designers to use information available within the system to classify the disposition of originated and transferred calls. CCA is an optional feature package.

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 the person making a telephone call. Telephone switching equipment can use this number to selectively route an incoming call to a particular department or agent.

caller

The party who calls for a service, gets connected to the system, and interacts with it. As the system can also make outbound calls for service, the caller can also be the person who responds to those outbound calls.

call flow

See transaction.

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 hardware 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.

CAS

channel associated signalling

caution

An admonishment or advisory statement used in the system documentation to alert the user to the possibility of a service interruption or a loss of data.

CCA

> call classification analysis

CDH

> call data handler process

CELP

> code excited linear prediction

central office

> An office or location in which large telecommunication devices such as telephone switches and network access facilities are maintained. These locations follow strict installation and operation requirements.

central processing unit

> See processor.

CGEN

> Voice system general message class

channel

> See port.

channel associated signaling

A type of signaling that can be used on E1 circuit cards. It occurs on channel 16.

CICS

Customer Information Control System

circuit card upgrade

A new circuit card that replaces an existing card in the platform. Usually the replacement is an updated version of the original circuit card to replace technology made obsolete by industry trends or a new system release.

cluster controller

A bisynchronous interface that provides a means of handling remote communication processing.

CO

central office

code excited linear prediction

A means of encoding analog voice signals into digital signals that provides excellent quality with use of minimum disk space.

command

> An instruction or request the user issues to the system software to make the system perform a particular function. An entire command consists of the command name and options.

configuration

> The arrangement of the software and hardware of a computer system or network. The system configuration includes either a standard or custom processor, peripheral equipment (for example, printers and 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 system 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 SSP and E1/T1 circuit cards, and perform various maintenance functions.

connect and disconnect (C and D) tones

> DTMF tones that inform the system when the attendant has been connected (C) and when the caller has been disconnected (D).

connected digits

A sequence of digits that the system can process as a group, rather than requiring the caller to enter the digits one at a time.

controller circuit card

A circuit card used on a computer system that controls its basic functionality and makes the system operational. These circuit 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.

coresidency

The ability of two products or services to operate and interact with each other on a single hardware platform.

CPE

customer provided equipment or customer premise equipment

CPN

called party number

CPT

[call progress tones](#)

CPU

[central processing unit](#)

CPU Complex

The processor for the LINCS server consisting of a single-board computing circuit card and an I/O companion board (SBC/IOB). The CPU complex is also used in other compactPCI platforms.

crash

An interactive utility for examining the operating system core and for determining if system parameters are being exceeded.

CSU

channel service unit

custom speech

Unique words or phrases to be used in system voice prompts that Lucent Technologies custom records on a per-customer basis.

custom vocabulary

A specialized package of unique words or phrases created on a per-customer basis and used by WholeWord or FlexWord speech recognition.

Customer Information Control System

Part of the operating system that manages resources for running applications (for example, IND$FILE).

CVS

converse vector step

D danger

An admonishment or advisory statement used in system documentation to alert the user to the possibility of personal injury or death.

data interface process

A software process that communicates with Script Builder applications.

database

A structured set of files, records, or tables.

database field

A field used to extract values from a local database and form the structure upon which a database is built.

database record

The information in a database for a person, product, event, etc. The database record is made up of individual fields for each information item.

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 changes too often to "hard-code," or store permanently, in the transaction outline.

dB

decibel

DB

database

DBC

database checking process

DBMS

database management system

DC

direct current

DCE

data communications equipment

DCP

digital communications protocol

debug

The process of locating and correcting errors in computer programs; also referred to as troubleshooting.

default

The way a computer performs a task in the absence of other instructions.

default owner

The owner of a channel when no process takes ownership of that channel. The default owner holds all idle, in-service channels. In terms of the IRAPI, this is typically the Application Dispatch process.

diagnose

The process of performing diagnostics on a bus or on Tip/Ring, E1/T1, or SSP circuit cards.

dial ahead

The ability to collect and process touch-tone inputs in sequence, even when they are received before the prompts.

dial pulse recognition

A method of recognizing caller pulse inputs from a rotary telephone.

dialed number identification service

A service that allows incoming calls to contain information about the telephone number for which it is destined.

dial through

A capability provided by touch-tone and dial pulse recognition that allows callers to enter their responses during the prompt and have those responses recognized (similar to the Speak with Interrupt capability). See also barge-in and echo cancellation.

DIO

disk input and output process

DIP

data interface process

directory

A type of file used to group and organize other files or directories.

display errdata

A command that displays system errors sent to the logger.

DMA

direct memory address

DNIS

dialed number identification service

DPR

dial pulse recognition

DSP

digital signal processor

DTE

data terminal equipment

DTMF

dual tone multi-frequency

DTR

data terminal ready

dual tone multi-frequency

A touch-tone sound that is an audio signal including two different frequencies. *DTMF feedback* is the process of the "switch" providing this information to the system.

DTMF muting is the process of ignoring these tones (which might be simulated by human speech) when they are not needed for the application.

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 when the system crashes. The dump can be fetched after rebooting to help in analyzing the cause of the crash.

E **E&M**

Ear and Mouth

E1 / T1

Digital telephony interfaces, commonly called *trunks*. E1 is an international standard at 2.048 Mbps. T1 is a North American standard at 1.544 Mbps.

Ear and Mouth

A common T1 trunking protocol for connection between two "switches."

EBCDIC

Extended Binary Coded Decimal Interexchange Code

echo cancellation

The process of making the channel quiet enough so that the system can hear and recognize WholeWord and dial pulse inputs during the prompt. See also barge-in.

editor system

A system that allows speech phrases to be displayed and edited by a user.

EIA

Electronic Industries Association

EISA

Extended Industry Standard Architecture

EMI

electromagnetic interference

Enhanced Basic Speech

Pre-recorded speech available from Lucent Technologies in several languages. Sometimes called standard speech.

error message

A message on the screen indicating that something is wrong with a possible suggestion of how to correct it.

ESD

electrostatic discharge

ESS

electronic switching system

EST

Enhanced Software Technologies, Inc.

ET

error tracker

Ethernet

A name for a local area network that follows IEEE standard 802.3. Supported implementations are 10BaseT and/or 100BaseT.

event

The notification given to an application when some condition occurs that is generally not encountered in normal operation.

EXTA

external alarms feature message class

external actions

Specific predefined system tasks that Script Builder can call or *invoke* to interact with other products or services. When an external action is invoked, the systems displays a form that provides choices in each field for the application developer to select. Examples are Call_Bridge, Make_Call, SP_Allocate, SR_Prompt, etc. In Voice@Work, external actions are treated as external functions.

external functions

Specific predefined (or customer-created) system tasks that Voice@Work or Script Builder can call or *invoke* to interact with other products or services. The function allows the application developer to enter the argument(s) for the function to act on. Examples are concat, getarg, length, substring, etc. See also external actions.

F   **FCC**

Federal Communications Commission

FDD

floppy disk drive

feature

A function or capability of a product or an application within the system.

feature package

An optional package that may contain both hardware and software resources to provide additional functionality to a standard system.

feature_tst script package

A standard system software program that allows a user to perform self-tests of critical hardware and software functionality.

FEP

front end processor

field

See [database field](#).

FIFO

first-in-first-out processing order

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 using the file transfer system (FTS).

filename

Alphabetic characters used to identify a particular file.

FlexWord™ speech recognition

A type of speech recognition based on subword technology that recognizes phonemes or parts of words in a specific language. See also [subword technology](#).

foos

facility out-of-service state

FTS

file transfer process message class

function key

A key, labeled F1 through F8, on your keyboard to which the system software gives special properties for manipulating the user interface.

G **GEN**

PRISM logger and alerter general message class

grammar

The inputs that a recognizer can match (identify) from a caller.

GUI

graphical user interface

H   **hard disk drive**

A high-capacity data storage/retrieval device that is located inside a computer platform. A hard disk drive stores data on nonremovable 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.

hardware upgrade

Replacement of one or more fundamental platform hardware components (for example, the CPU or hard disk drive), while the existing platform and other existing optional circuit cards remain.

HDD

hard disk drive

hwoos

hardware out-of-service state

Hz

Hertz

IBM

International Business Machines

iCk or ICK

The system integrity checking process.

ID

identification

IDE

integrated disk electronics

idle channel

A channel that either has no owner or is owned by its default owner and is onhook.

IE

information element

IEEE

Institute of Electrical and Electronic Engineers

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.

independent software vendor

A company that has an agreement with Lucent Technologies to develop software to work with the system to provide additional features required by customers.

indexed table

A table that, unlike a nonindexed table, can be searched via a field name that has been indexed.

industry standard architecture

A PC bus standard that allows processors and other circuit cards to communicate with each other.

INIT

voice system initialization message class

initialize

To start up the system for the first time.

inserv

in-service state

Integrated Services Digital Network

A network that provides end-to-end digital connectivity to support a wide range of voice and data services.

intelligent CCA

Monitoring 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. The monitoring capabilities are dependent on the network interface circuit card and protocol used.

interface

The access point of a system. With respect to the system, the interface is designed to provide you with easy access to the software capabilities.

interrupt

The termination of voice and/or telephony functions when some condition occurs.

Intuity Response Application Programming Interface

A library of commands that provide a standard development interface for voice-telephony applications.

IOB

I/O companion card to the SBC. This is part of the CPU Complex.

IPC

interprocess communication

IPC

intelligent ports card (IPC-900)

IRAPI

Intuity Response Application Programming Interface

IRQ

interrupt request

ISA

industry standard architecture

ISDN

Integrated Services Digital Network

ISV

independent software vendor

ITAC

International Technical Assistance Center

K Kbps

kilobytes per second

Kbyte

kilobyte

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 system to recognize a single word in the middle of an entire phrase spoken by a caller in response to a prompt.

L **LAN**

local area network

LDB

local database

LED

light-emitting diode

library states

The state information about channel activities maintained by the IRAPI.

LIFO

last-in-first-out processing order

LINCS

Lucent Integrated Network Call Server

line side E1

A digital method of interfacing a system to a PBX or "switch" using E1-related hardware and software.

line side T1

A digital method of interfacing a system 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 LAN provides communications between computers and peripherals.

local database

A database residing on the system.

LOG

System logger process message class

logical unit

A type of SNA Network Addressable Unit.

logdaemon

A UNIX system information and error logging process.

logger

See logdaemon.

logging on/off

Entering or exiting the system software.

LSE1

line side E1

LST1

line side T1

LU

logical unit

M 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 system screen from which you are able to enter either the System Administration or Voice System Administration menu.

maintenance process

A software process that runs temporary diagnostics and maintains the state of circuit cards and channels.

manoos

manually out-of-service state

masked event

An event that an application can ignore (that is, the application can request not to be informed of the event).

master

A circuit card that provides clock information to the TDM bus.

Mbps

megabits per second

MByte

megabyte

megabyte

A unit of memory equal to 1,048,576 bytes (1024 x 1024). It is often rounded to one million.

menu

Options presented to a user on a computer screen or with voice prompts.

MF

multifrequency

MHz

megahertz

ms

millisecond

msec

millisecond

MS-DOS

A personal computer disk operating system developed by the Microsoft Corporation.

MTC

maintenance process

multifrequency

Dual tone digit signalling (similar to DTMF), used for trunk addressing between
network switches or by network operators.

multithreaded application

A single process/application that controls several channels. Each thread of the application is managed explicitly. Typically this means state information for each thread is maintained and the state of the application on each channel is tracked.

N NCP

Network Control Program

NEBS

Network Equipment Building Standards

NEMA

National Electrical Manufacturers Association

netoos

network out-of-service state

non-facility associated signalling

NFS

network file sharing

NM-API

Network Management - Application Programming Interface

NMVT

network management vector transport

nonex

nonexistent state

nonindexed table

A table that can be searched only in a sequential manner and not via a field name.

nonmasked event

An event that must be sent to the application. Generally, an event is nonmaskable if the application would likely encounter state transition errors by trying to it.

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.

O   OEM

original equipment manufacturer

on-line help

Messages or information that appear on the user's screen when a "function key" (F1 through F8) is pressed.

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 executes 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.

P   PBX

private branch exchange

PC

personal computer

PCB

printed circuit board

PCI

peripheral component interconnect

PCI Mezzanine Card

A PCI module, such as a LAN or RAID controller, that connects to the CPU Complex IOB companion card.

PCM

pulse code modulation

PEC

price element code

peripheral (device)

Equipment such as printers or terminals that is in addition to the basic processor.

peripheral component interconnect

A newer, higher speed PC bus that is gradually displacing ISA for many components.

permanent process

A process that starts and initializes itself before it is needed by a caller.

phoneme

A single basic sound of a particular spoken language. For example, the English language contains 40 phonemes that represent all basic sounds used with the language. The English 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 filtering (screening)

The rejection of unrecognized speech. The WholeWord and FlexWord speech recognition packages can be programmed to reprompt the caller if the system does not recognize a spoken response.

phrase tag

A string of up to 50 characters that identifies the contents of a speech phrase used by an application script.

platform migration

See platform upgrade.

platform upgrade

The process of replacing the existing platform with a new platform.

pluggable

A term usually used with speech technologies, in particular standard speech, to indicate that a basic algorithmic technique has been implemented to accept one or more sets of parameters that tailors the algorithm to perform in one or more languages.

PMC

PCI Mezzanine Card

poll

A message sent from a central controller to an individual station on a multipoint network inviting that station to send if it has any traffic.

polling

A network arrangement whereby a central computer asks each remote location whether it wants to send information. This arrangement enables each user or remote data terminal to transmit and receive information on shared facilities.

port

A connection or link between two devices that allows information to travel to a desired location. See telephone network connection.

PRI

Primary Rate Interface

Primary Rate Interface

An ISDN term for connections over E1 or T1 facilities that are usually treated as trunks.

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 system documentation, the computer on which UnixWare and system software runs. In general, the part of the computer system that processes the data. Also known as the central processing unit.

prompt

A message played to a caller that gives the caller a choice of selections in a menu and asks for a response. Compare to announcement.

pseudo driver

A driver that does not control any hardware.

PSTN

public switch telephone network

pulse code modulation

A digital modulation method of encoding voice signals into digital signals. See also adaptive differential pulse code modulation.

R **RAID**

redundant array of independent disks

RAID Array

An assembly of disk drives configured to provide some level of RAID functionality

RAM

random access memory

RDMBS

ORACLE relational database management system

RECOG

speech recognition feature message class

recognition type

The type of input the recognizer can understand. Available types include touch-tone, dial pulse, and Advanced Speech Recognition (ASR), which includes WholeWord and FlexWord speech recognition.

recognizer

The part of the system that compares caller input to a grammar in order to correctly match (identify) the caller input.

record

See database record.

recovery

The process of using copies of the system software to reconstruct files that have been lost or damaged. See also restore.

remote database

Information stored on a system other than your current system that can be accessed by your current system.

REN

ringer equivalence number

reports administration

The component of a system that provides access to system reports, including call classification, call data detail, call data summary, message log, and traffic reports.

restore

The process of recovering lost or damaged files by retrieving them from available back-up 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.

reuse

The concept of using a component from a source system in a target system after a software upgrade or platform migration.

RFS

remote file sharing

RM

resource manager

roll back

To cancel changes to a database since the point at which changes were last committed.

rollback segment

A portion of the database that records actions that should be undone under certain circumstances. Rollback segments are used to provide transaction rollback, read consistency, and recovery.

RTS

request to send

S SCA

single connector architecture

SBC

A single-board computing circuit card used in LINCS servers. It is part of the CPU complex.

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

The set of instructions for the system to follow during a transaction.

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 system (see also Voice@Work).

SCSI

small computer system interface

SDN

software defined network

shared database table

A database table that is used 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.

SID

station identification

single-threaded application

An application that runs on a single voice channel.

slave

A circuit card that depends on the TDM bus for clock information.

SLIP

serial line interface protocol

small computer system interface

A disk drive control technology in which a single SCSI adapter circuit card plugged into a PC slot is capable of controlling as many as seven different hard disks, optical disks, tape drives, etc.

SNA

> systems network architecture

SNMP

> simple network management protocol

software

> The set or sets of programs that instruct the computer hardware to perform a task or series of tasks — for example, UnixWare software and the system software.

software upgrade

> The installation of a new version of software in which the existing platform and circuit cards are retained.

source system

> The system from which you are upgrading (that is, your system as it exists *before* you upgrade).

speech and signal processor circuit card (CWB1)

> The high-performance signal processing circuit card capable of simultaneous support for various speech technologies.

speech energy

The amount of energy in an 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 filesystem

A collection of several talkfiles. The filesystem is organized into 16-Kbyte blocks for efficient management and retrieval of talkfiles.

speech modeling

The process of 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 space

An area that contains all digitized speech used for playback in the applications loaded on the system.

speech phrase

A continuous speech segment encoded into a digital string.

speech recognition

The ability of the system to understand input from callers.

SPIP

signal processor interface process

SPPLIB

speech processing library

SQL

structured query language

SR

speech recognition

SSP

[speech and signal processor circuit card (CWB1)]

standard speech

The speech package available in several languages containing simple words and phrases produced by Lucent Technologies for use with the system. 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 voice prompts and messages to the caller. This feature is also called Enhanced Basic Speech.

standard vocabulary

A standard package of simple word speech models provided by Lucent Technologies and used for WholeWord speech recognition. These phrases include the digits "zero" through "nine," "yes," "no," and "oh," or the equivalent words in a specific local language.

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.

subword technology

A method of speech recognition used in FlexWord recognition that recognizes phonemes or parts of words. Compare to WholeWord speech recognition.

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 that is depressed when the handset is resting in the cradle (in other words, is *on hook*). The device is raised when the handset is picked up (in other words, when the telephone 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 system that enables you to define the interaction between the system 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 telephone 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. Compare to asynchronous communication.

SYS

> UNIX system calls message class

sysgen

> system generation

system administrator

The person assigned the responsibility of monitoring all system software processing, performing daily system operations and preventive maintenance, and troubleshooting errors as required.

system architecture

The manner in which the system software is structured.

system message

An event or alarm generated by either the system or end-user process.

system monitor

A component of the system that tests to verify that each incoming telephone line and its associated Tip/Ring or T1 circuit card is functional. Through the "System Monitor" component, you are able to see displays of the Voice Channel and Host Session Monitors.

T **T1**

A digital transmission link with a capacity of 1.544 Mbps.

table

See [database table](#).

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 can contain up to 65,535 phrases, and the speech filesystem can contain multiple talkfiles.

talkoff

The process of a caller interrupting a prompt, so the prompt message stops playing.

TAM

[telecom alarm module](#)

target system

The system to which you are upgrading (that is, your system as you expect it to exist *after* you upgrade).

TAS

[transaction assembler script](#)

TCP/IP

transmission control protocol/internet protocol

TDM

time division multiplexing

telecom alarm module

An intelligent alarm module that provides critical, major, and minor alarm indicators.

telephone network connection

The point at which a telephone network connection terminates on a system. Supported telephone connections are Tip/Ring, T1, and E1.

Text-to-Speech

An optional feature that allows an application to play US English 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 prerecorded speech. Text-to-Speech application development is supported through Voice@Work and Script Builder.

ThickNet

A 10-mm (10BASE5) coaxial cable used to provide interLAN communications.

ThinNet

A 5-mm (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, with each assignment being for a discrete time interval.

Tip/Ring

Analog telecommunications using four-wire media.

token ring

A ring type of local area network that allows any station in the network to communicate with any other station.

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

The interactions (exchanges) between the caller and the voice response system. A transaction can involve one or more telephone network connections and voice responses from the system. It can also involve one or more of the system optional features, such as speech recognition, 3270 host interface, FAX Actions, etc.

transaction assembler script

The computer program code that controls the application operating on the voice response system. The code can be produced from Voice@Work, Script Builder, or by writing directly in TAS code.

transaction state machine process

A multi-channel IRAPI application that runs applications controlled by TAS script code.

transient process

A process that is created dynamically only when needed.

troubleshooting

The process of locating and correcting errors in computer programs. This process is also referred to as debugging.

TSO

time share operation

TSM

transaction state machine process

TTS

Text-to-Speech

TWIP

T1 interface process

U

UK

United Kingdom

US

United States of America

UNIX Operating System

A multiuser, multitasking computer operating system originally developed by Lucent Technologies.

UNIX shell

The command language that provides a user interface to the UNIX operating system.

upgrade scenario

The particular combination of current hardware, software, application and target hardware, software, applications, etc.

usability

A measurement of how easy an application is for callers to use. The measurement is made by making observations and by asking questions. An application should have high usability to be successful.

USOC

universal service ordering code

UVL

unified voice library

V **VDC**

video display controller

vi editor

A screen editor used to create and change electronic files.

virtual channel

A channel that is not associated with an interface to the telephone network (Tip/Ring, T1, LSE1/LST1, 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 can be initiated only by a "virtual seizure" request to TSM from a DIP.

vocabulary

A collection of words that the system is able to recognize using either WholeWord or FlexWord speech recognition.

vocabulary activation

The set of active vocabularies that define the words and wordlists known to the FlexWord recognizer.

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vocabulary loading

The process of copying the vocabulary from the system where it was developed and adding it to the target system.

Voice@Work

An optional software package that provides a graphical interface to assist in development of voice response applications on the system (see also Script Builder).

voice channel

A channel that is associated with an interface to the telephone network (T1, E1, or PRI). Any system application can run on a voice channel. Voice channel applications can be initiated by being assigned to particular voice channels or dialed numbers to handle incoming calls or by a "soft seizure" request to TSM from a DIP or the **soft_szr** command.

voice processing co-marketer

A company licensed to purchase voice processing equipment 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 SSP circuit cards) and data storage devices (for example, hard disk, etc.)

voice response unit

A computer connected to a telephone network that can play messages to callers, recognize caller inputs, access and update a databases, and transfer and monitor calls.

voice system administration

The means by which you are able to administer both voice- and nonvoice-related aspects of the system.

VPC

voice processing co-marketer

VROP

voice response output process

VRU

voice response unit

W **warning**

An admonishment or advisory statement used in system documentation to alert the user to the possibility of equipment damage.

watchdog timer

An timer that activates a [TAM](#) alarm when CPU activity is not received within the 30-second threshold.

WholeWord speech recognition

An optional feature, available in several languages, based on whole-word technology that can recognize the numbers one through zero, "yes", and "no" (the key words). This feature is reliable, regardless of the individual speaker. This feature can identify the key words when spoken in phrases with other words. A string of key words, called *connected digits*, can be recognized. During the prompt announcement, the caller can speak or use touch tones (or dial pulses, if available). See also [whole-word technology](#).

whole-word technology

The ability to recognize an entire word, rather than just the phoneme or a part of a word. Compare to "subword technology."

wink signal

An interruption of current to a busy lamp indicating that there is a line on hold.

word

A unique utterance understood by the recognizer.

wordlist

A set of words available for FlexWord recognition by an application during a Prompt & Collect action step.

word spotting

The ability to search through extraneous speech during a recognition.

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