

Lucent Technologies
Bell Labs Innovations



DEFINITY[®]
Business Communications System
and GuestWorks[®] *server*
Issue 4
Overview

555-230-034
Comcode 108168881
Issue 1
January 1998

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EMC Directive 89/336/EEC

Low Voltage Directive 73/23/EEC



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About This Document

The purpose of this overview

This document provides general information about the components and capabilities of the DEFINITY[®] Business Communications System (BCS) and GuestWorks[®] *server* Issue 4. You will learn how this system provides practical and creative solutions to your business's needs.

The intended audiences

This document is written for those who have purchased or are considering the purchase of the DEFINITY BCS and for Lucent Technologies representatives and distributors who need high-level information about the system and how it can be used.

The content of this overview

This document discusses all DEFINITY BCS capabilities. It defines standard and practical solutions, but also suggests unusual or creative ones.

⇒ NOTE:

Some features and solutions are unavailable in some countries. Please contact your local account manager or authorized Lucent Technologies representative for further information about which features and solutions are available to you.

This overview includes the following information:

- Chapter 1, "Introduction," outlines basic advantages, capabilities, hardware and software components, and system configurations.
- Chapter 2, "Industry Applications," discusses how the DEFINITY BCS meets the communications requirements of several example industries.
- Chapter 3, "Desktop Solutions," discusses features that are available at your desktop computer or telephone.

- Chapter 4, "Mobility Solutions," discusses products and features that allow you to keep in touch with colleagues and clients while moving about freely inside and outside the workplace.
- Chapter 5, "Computer-Telephone Integration Solutions," discusses features that merge computer and telephone functions.
- Chapter 6, "Hospitality Solutions," discusses products and features useful for the hospitality and lodging industry.
- Chapter 7, "Data Management Solutions," discusses features that help you manage telecommunications information.
- Chapter 8, "Networking Solutions," discusses features that help you network your equipment and solutions.
- Chapter 9, "Voice Messaging Solutions," discusses features that use voice messaging to help you handle incoming and outgoing calls efficiently.
- Chapter 10, "Video Solutions," discusses features that allow you to send and receive synchronized voice and image information.
- Chapter 11, "Hunt Group Solutions," discusses features that help you set up and manage basic call management hunt groups.
- Chapter 12, "Telecommuting Solutions," discusses features that help you and your associates work effectively off-site.
- Chapter 13, "System Management Solutions," discusses the ways in which you can manage the DEFINITY BCS and related systems.
- Appendix A, "Features," summarizes the features available with the DEFINITY BCS.
- Appendix B, "Features Only in Offer Category B," summarizes the new features that are unique to this system.
- Appendix C, "Hardware for Issue 4," summarizes the new hardware that is unique to this system. This new hardware is not documented in the standard DEFINITY documents.
- Appendix D, "System Capacity Limits," lists the system's capacities.
- Appendix E, "Related Documents," lists and describes related documents.

A glossary with abbreviations and an index are also provided at the end of the document.

How to use this document

Review Chapter 1, "Introduction," to get a basic understanding of the DEFINITY BCS. Next, review Chapter 2, "Industry Applications," since it discusses specific applications that may help you apply the DEFINITY BCS creatively. Although the applications may not describe your business or situation exactly, scanning the examples will help you to generate ideas that do apply.

Read the more in-depth discussions of general applications in Chapters 3 through 13 selectively, focusing on the solutions that suit your circumstances.

Appendix A lists all of the DEFINITY BCS features and includes a short description of each. These feature descriptions help you understand the features as well as the scope of the DEFINITY BCS capabilities. The remainder of the book presents important reference material.

Conventions used in this document

The following conventions are used:

- The term *system* is used to represent the DEFINITY BCS product.
- The term *switch* is used to represent other telecommunications switching products.
- The DEFINITY BCS is used for general telecommunications and the GuestWorks *server* is used for hospitality applications.
- References to the DEFINITY BCS also include the GuestWorks *server*.

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Where to find related documents

This overview is the only paper document provided specifically for the DEFINITY BCS. See Appendix E, "Related Documents," for a detailed list of documents related to the DEFINITY BCS. Use these documents to administer, maintain, and operate the system.

With each system that is shipped from the factory, you will receive a compact disc (CD-ROM) that contains most of the supporting documents listed in Appendix E. These documents can be viewed and printed from your personal computer. The order number for the CD-ROM is 555-231-802, Issue 1.

⇒ NOTE:

Not all features in these documents will be available with the DEFINITY BCS.

How to order related documents

To obtain support documentation, contact:

Business Communications Systems Publications Fulfillment Center
PO Box 4100
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In North America:
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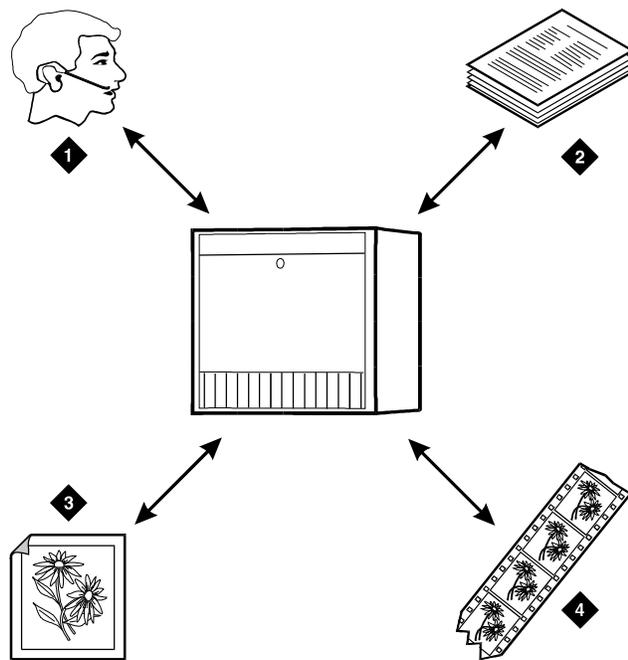
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If the reader comment form is missing, FAX your comments to +1-303-538-1741, and mention this document's name and number, *DEFINITY BCS and GuestWorks server Issue 4 Overview*, (555-230-034, Issue 1).

The DEFINITY Business Communications System organizes and routes voice, data, image, and video transmissions. See Figure 1. The transmitted information is usually digitized (distilled into representative sequences) as it is switched (organized and routed), but the system can also receive and transmit analog information.



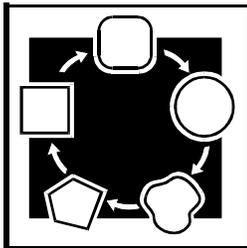
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| 1) Voice | 3) Image/Facsimile |
| 2) Data | 4) Video |

Figure 1. DEFINITY BCS

The system's advantages

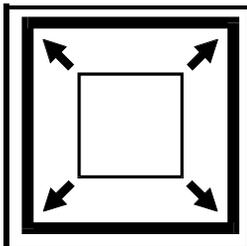
The DEFINITY BCS is an affordable system that handles basic telephony traffic as efficiently as any system available. The system can accommodate most related equipment and its modular design allows for system updates. These capabilities mean BCS/GuestWorks offers your business an exciting array of practical, solutions-oriented features.

The system adapts to global protocols



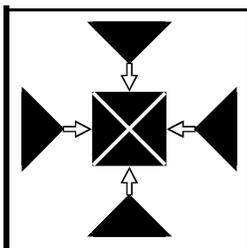
The DEFINITY BCS's open architecture and modular design make it compatible with a wide variety of hardware and software — both Lucent Technologies tools and tools from other vendors. These may include personal computers and shared servers, terminals, data access equipment, telephones, FAX machines, and property management equipment. Multilingual options are available for messaging and telephones. The system was designed to accommodate both existing and future global communications protocols. It is adaptable to varying standards world-wide, providing efficient digital switching even when connected to conventional networks.

The system expands to match business growth



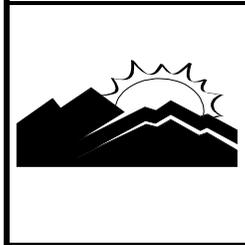
Modular port circuits, carriers (circuit shelves), and cabinets can be added to accommodate growth up to 25,000 stations. Each system can also network to other systems (Lucent Technologies systems or other types) to service many simultaneous voice, data, image and video transmissions.

The system integrates related tools



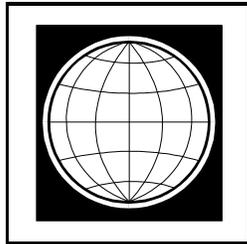
BCS/GuestWorks not only communicates with most networks and equipment throughout the world, but also unifies them by translating protocols as necessary. The system is designed to accommodate multi-media and network integration tools, in addition to features that integrate computer and telephone. The system's integrating capabilities and its association with leading-edge tools enhance the value of your related telecommunications investments.

The system is reliable and recoverable



The system is reliable by design. If adjuncts connected to the system should fail, the system keeps working until those systems are restored. If the disturbance is great enough that the system is disabled along with those other systems, the modular design provides many options for getting your communications back into service quickly.

BCS/GuestWorks is a global platform



It is compatible with video teleconferencing systems and desktop network management applications.

It accommodates existing and emerging world-wide standards and protocols.

It offers multilingual options for some applications.

Messaging services, world-class call features, multilanguage displays, and multilanguage voice messaging prompts augment your communications with associates and enhance business transactions around the globe.

⇒ NOTE:

Some applications and products are unavailable in some countries. Please check with your local distributor for further information about which features and applications are available to you.

The following section provides detailed information on why the DEFINITY BCS is the best choice for serving your global communications needs.

How BCS communicates worldwide

The DEFINITY BCS adapts to the different telecommunication standards around the world, allowing you to use the same communications system in various countries.

The following BCS capabilities are of particular interest to organizations that do business throughout the world:

- The system provides flexible language displays that allow you to administer the language in which messages are displayed on telephones.
- Terminal Translation Initialization (TTI) allows you to provide telephone service on-demand as needs change.
- Music-on-Hold for Analog Ports allows the music-on-hold device to be connected to analog line ports.
- World Class Routing allows flexible call routing for any type of national or international dialing plan. It consists of the following capabilities:
 - Flexible dialing
 - 18-digit routing
 - Automatic Route Selection (with International Direct Distance dialing calls and interexchange carrier access)
 - Automatic Alternate Routing for private networking
 - Digit conversion
- QSIG Global Networking provides compliance with the European Computer Manufacturers Association Integrated Services Digital Network-Private Rate Interface specifications. This interface supports voice and data basic call setup, supplementary services, numbering plan information, name display, number display, call forwarding (call diversion), call transfer, and transit counter.
- Enhanced Integrated Services Digital Network capabilities include:
 - Support for either Basic Rate Interface A-law or Basic Rate Interface Mu-law companding
 - Support of Integrated Services Digital Network slot maps to provide Integrated Services Digital Network capabilities in countries that require them
 - Primary Rate Interface can be carried over the PACCON (SCC and MCC hardware only) instead of the processor interface circuit pack. This greatly increases the capacity of the Primary Rate Interface link, especially where Non-Facility Associated Signaling is not allowed or available.
 - QSIG Global Networking
- Digital signaling support is available for countries that require it.

- Generalized Multifrequency Compelled Signaling allows eighteen digits on Multifrequency Compelled facilities for incoming calls. Multifrequency Russian is also supported.
- Multifrequency Espanol interregister signaling needed in Spain for its E1 digital connectivity is supported. The protocols supported are the Public Network 2/5 and the IBERCOM 2/6.
- Cut-through on central office trunks provides connection to the central office immediately after the trunk access code is dialed and checks the digits for toll restriction.
- Added Restriction Checks allow you to block the connection of public network trunks to other public network trunks in order to allow compliance with local standards and regulations.
- Administrable Call Progress Tones allow you to select the dial tone, busy tone, ringback, reorder, and other tones that conform to local standards.
- Administrable Ring Cadence allows you to select the ring cadence for analog telephones in order to conform to local standards.
- Administrable Transmission allows you to select the transmission requirements that conform to local requirements.
- Administrable Timers support varied international trunk interface requirements, allowing you to change the timing according to local standards.
- Administrable Repetitive Call Waiting allows administration of the repetitive call waiting tone interval from 4 to 40 seconds in one-second intervals.
- Attendant Serial Calling enables the attendant to transfer trunk calls returned to the attendant position once the called party has hung up, allowing the attendant to transfer the call to another party.
- Enhanced Attendant Queue, Display, and Misoperation allows attendants to see the exact number of calls and types in queue, and to prioritize calls via their different call types for countries that require it. In addition, in countries that require this, an attendant placing a call on hold and going on hook is considered a misoperation and the attendant is alerted.
- Disconnect Supervision management avoids having system resources used indefinitely when far-end central office disconnect supervision is not provided. Resources used on the call are removed and made available for servicing new calls.
- When an internal user is the last person remaining off-hook on a call, that person's telephone will receive busy tone for 30 seconds or until the user hangs up the phone. This feature is called Busy Tone Forward Disconnect and can be enabled or disabled on a system-wide basis.
- International Toll/Code Restriction allows you to restrict calls using any international numbering plan.

- Call Detail Recording enhancements for periodic pulse metering provides periodic pulse metering pulse counts in the Call Detail Recording output record. The pulses transmitted over trunk lines from the serving central office are used to determine call charges.
- T1/E1 access and conversion allows simultaneous connection to both T1 (1.544-Mbps) and E1 (2.048-Mbps) facilities.

Most of these features are described in greater detail throughout this document. See Appendix A, "Features" for a brief description of each feature available on the system. For a complete description of the features used with the DEFINITY BCS, see *DEFINITY Administration and Feature Description*, (555-230-522, Issue 3).

Check with your local distributor for more information.

Hardware

Though the primary components are the same, your DEFINITY BCS can vary widely in size and appearance, depending on your capacity requirements. It may be as small as a single wall-mounted cabinet, or it may be as large as several tall cabinets linked together in the same room or even hundreds of kilometers apart. Regardless of configuration, however, the system's footprint is relatively small.

DEFINITY BCS's main hardware components are port networks. Up to three port networks can be connected directly to each other. When there are more than three port networks, the connections are made through a Center Stage Switch.

Processor Port Network

Every DEFINITY BCS has one Processor Port Network; it is often the only component in small systems. The Processor Port Network houses the Switch Processing Element.

The Switch Processing Element contains the central processing unit, which supervises system operation. It also contains a mass storage system for loading system software and saving system translations.

Because your application requirements may vary widely, DEFINITY BCS has three types of Switch Processing Elements available with proven capacities of 70,000 calls per hour, 140,000 calls per hour, and 250,000 calls per hour. The performance you realize will depend on the call processing, administrative, and maintenance activities in which your system is engaged.

Expansion Port Network

Expansion Port Networks are used when the system grows beyond the capacity of a single port network or must serve geographically dispersed offices. They provide additional ports as needed. A system can have up to 43 Expansion Port Networks.

Center Stage Switch

The Center Stage Switch is a connection hub that provides port network communication. It is an essential component of a DEFINITY BCS configuration if the system is composed of more than three port networks. Often it is incorporated in smaller configurations to allow for growth. The Center Stage Switch consists of from one to three switch nodes. Switch nodes are composed of one or two switch node carriers, depending on whether the system is being duplicated for enhanced reliability. Each carrier can reside in the Processor Port Network cabinet or an Expansion Port Network cabinet. One switch node can accommodate up to 15 Expansion Port Networks.

Carriers and Cabinets

Carriers are enclosed shelves composed of vertical slots that hold circuit packs. Circuit packs make up the logic, memory, and switching circuitry for the system. Port circuit packs connect to telephones, computers, and communications lines. The carriers are designed to accept any type of port circuit pack in each circuit pack position.

Each cabinet contains at least one carrier. The circuit packs fit into connectors attached to the rear of the slots. Every connector is connected to signal buses and power supplies in the cabinet. The cabinets also house equipment that supplies power backup, ringing signal voltage, and mass storage for software translations.

There are three types of cabinets:

- Compact Modular Cabinet. This cabinet functions like the Compact Single-Carrier Cabinet, but up to three of the cabinets can be connected together. The CMC can be mounted on the wall and is intended for smaller configurations.
- Single-Carrier Cabinet. These cabinets are modular, can be connected to Expansion Port networks, and can be stacked up to four high. They are often used by small businesses that are growing or expect to grow.
- Multicarrier Cabinet. A tall cabinet that contains up to five carriers and can be connected to Expansion Port networks. Multicarrier Cabinets are used by businesses that require larger configurations.

Compact Modular Cabinets

Figure 2 shows a Compact Modular Cabinet.

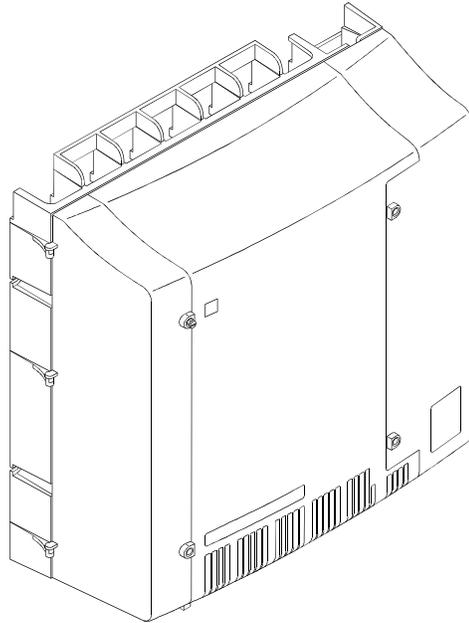


Figure 2. Compact Modular Cabinet (CMC)

The compact modular cabinet has the following characteristics:

- Up to three cabinets can be connected together.
- It allows small organizations to expand while keeping the initial investment moderate.
- It can be mounted on a wall.
- It contains ten universal port slots.
- The first two universal port slots in the first cabinet are dedicated to the processor complex.

The Compact Modular Cabinet is used as a Processor Port Network only.

Single-Carrier Cabinets

Figure 3 shows a typical single-carrier cabinet.

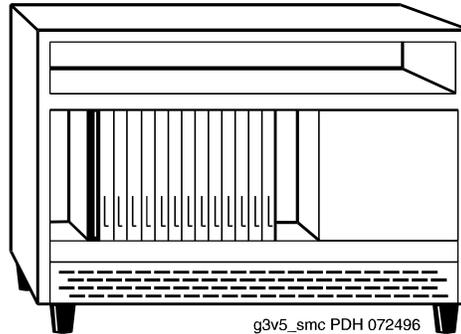


Figure 3. Typical Single-Carrier Cabinet (SCC)

A maximum of four single-carrier cabinets can be stacked on top of each other to form a single Processor Port Network or Expansion Port Network. There are four types of single-carrier cabinets:

- Control cabinet (located in the Processor Port Network only), which contains ports and a control complex (for call processing).
- Expansion control cabinet (optional and located only in an Expansion Port Network), which contains ports, a tone-clock, an interface to a Processor Port Network cabinet, and a maintenance interface.
- Port cabinet (located in the Processor Port Network and in Expansion Port Networks), which contains ports and an interface to an expansion control cabinet.

Figure 4 shows a typical cabinet stack.

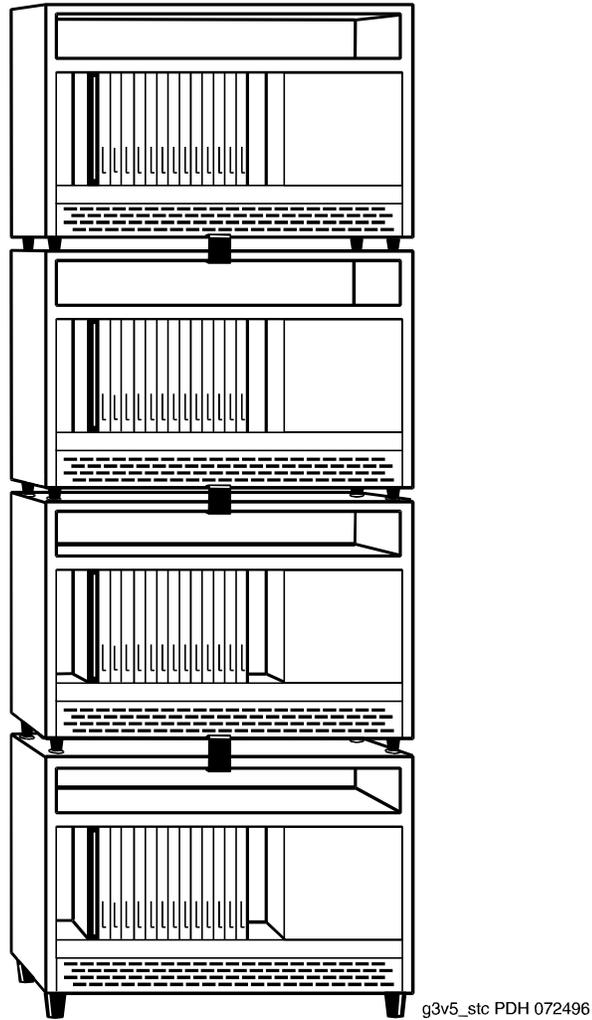


Figure 4. Typical cabinet stack (four cabinets maximum)

Multicarrier Cabinets

Figure 5 shows a typical multicarrier cabinet.

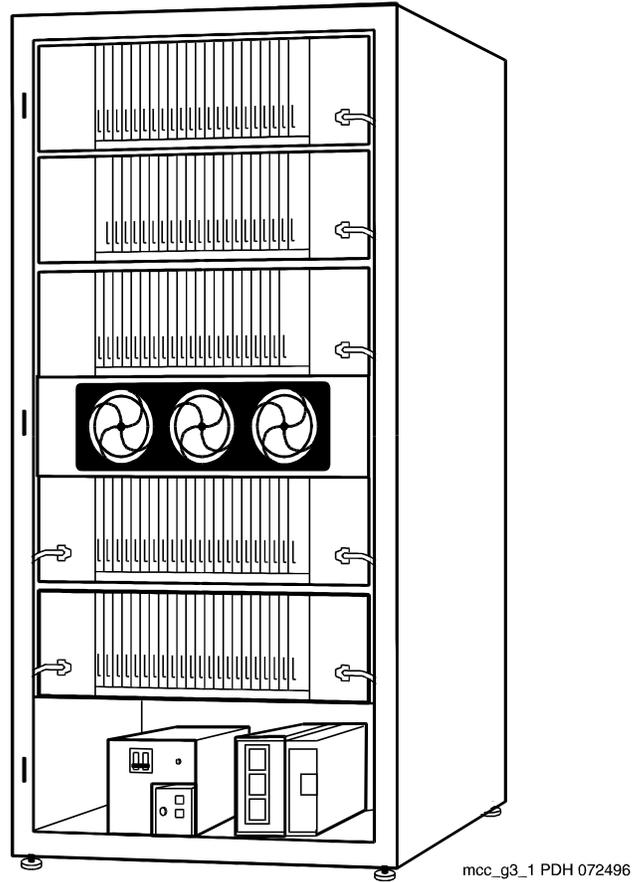


Figure 5. Typical Multicarrier Cabinet (MCC)

There are three types of multicarrier cabinets:

- The Processor Port Network cabinet, which contains:
 - The processor that performs call processing
 - Ports
 - An interface to an Expansion Port Network cabinet (optional)
 - A Center Stage Switch (optional)
- The Expansion Port Network cabinet, which contains:
 - Additional ports

- Interfaces to the Processor Port Network cabinet and other Expansion Port Network cabinets
- Maintenance interface
- Components of a Center Stage Switch (optional)
- The auxiliary cabinet, which contains equipment used for optional system-related hardware.

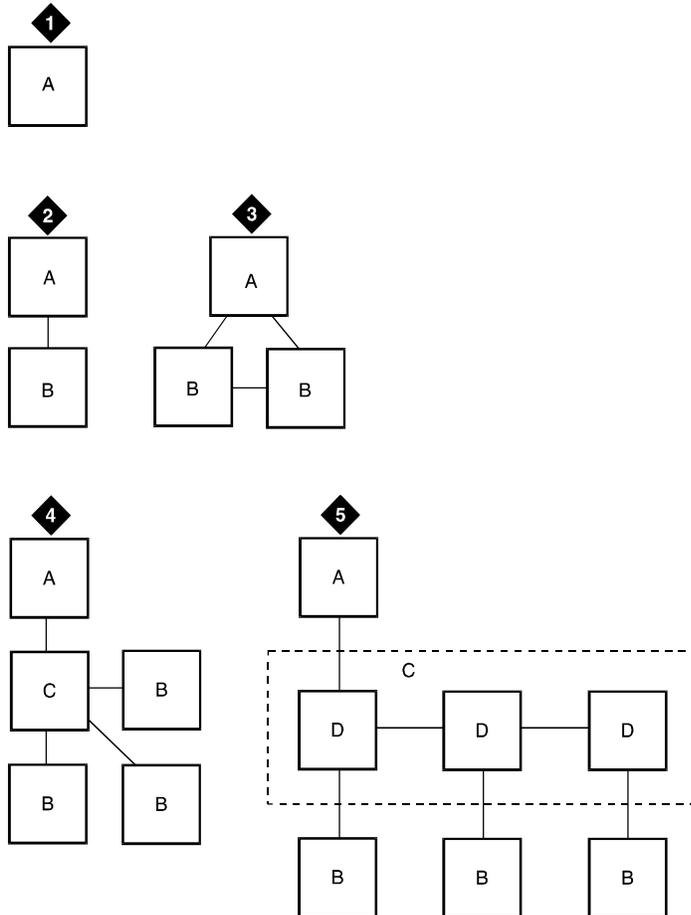
Control, duplicated control, expansion control, port, and switch node carriers can be installed in multicarrier Processor Port Network and Expansion Port Network cabinets. (See the descriptions of these carriers in the previous section “Single-Carrier Cabinets”.)

For more detailed hardware information, see the *DEFINITY ECS Release 6 System Description Pocket Reference*, 555-230-211, Issue 2.

Standard configurations

The DEFINITY BCS hardware can be configured in a variety of ways, depending on the number of endpoints the switch serves and the number of circuit packs required to connect the endpoints.

Figure 6 shows the five main system configurations.



- | | |
|--|---------------------------|
| 1) Basic System | A) Processor Port Network |
| 2) Directly Connected System | B) Expansion Port Network |
| 3) Directly Connected System with Two EPNs | C) Center Stage Switch |
| 4) CSS-Connected System with up to 15 EPNs | D) Switch Node |
| 5) CSS-Connected System with up to 43 EPNs | |

Figure 6. Standard configurations

The main configurations are:

1. Basic system consisting of a Processor Port Network (PPN) only.
2. Directly-connected system consisting of two Port Networks (PNs): one PPN and one Expansion Port Network (EPN) connected directly together.
3. Directly-connected system consisting of three PNs (one PPN and two EPNs) connected directly together.
4. Center Stage Switch-connected system consisting of up to 15 EPNs interconnected by one Switch Node (SN) to the PPN.
5. Center Stage Switch-connected system consisting of up to 21 EPNs interconnected by two SNs to the PPN, and up to 43 EPNs interconnected by three SNs to the PPN.

Direct-Connect configurations

Direct-connect configurations have these distinguishing characteristics:

- Every port network is connected to every other port network via an expansion interface circuit pack and a fiber optic cable.
- Each fiber is connected to a fiber transceiver that can transmit great distances.

In large systems, a port network can be hundreds of kilometers away from the central site. These remote port networks are connected to the other port networks via a Digital Signal Level 1 (DS1 — T1 or E1) link attached to a converter board, which in turn is connected to the expansion interface. The converter board converts the fiber optic signals between DS1 protocol and the internal expansion interface protocol so the signal can travel over dedicated public or private lines.

Center Stage Switch configurations

Center Stage configurations have these distinguishing characteristics:

- An expansion interface in every port network is connected to a switch node interface in the Center Stage Switch.
- Remote Expansion Port Networks require T1/E1 Converter pairs at the remote end and switch node T1/E1 Converter pairs at the switch node. In the pairs, the T1/E1 Converter board converts the fiber optic signals between T1/E1 protocol and the internal expansion interface protocol so the signal can travel over dedicated public or private lines.
- Switch node interfaces and fiber optic cables are also required for communication between switch node carriers. The number of switch node interfaces required depends on the call traffic between port networks whose switch node interfaces reside in different carriers.

Reliability and recoverability

Much of DEFINITY BCS's reliability and recoverability can be attributed to the switch architecture and the power of the system software. The distributed processor architecture provides subsystem processors on each circuit pack. A standard maintenance routine is conducted automatically by the system, as are periodic backups of translations.

Based on the needs of your organization, two redundancy configurations are available:

- Standard reliability
- High reliability (G3r systems only)

Standard reliability

The built-in duplication of many of its parts makes the system inherently reliable. In addition to the dual bus, the system includes:

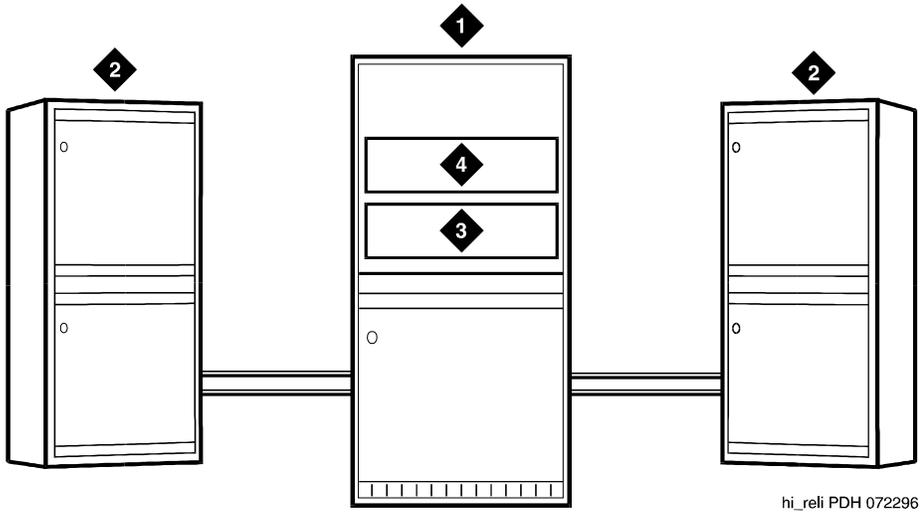
- One control carrier
- One tone-clock circuit pack per port network
- Port networks interconnected by single fiber cables (SCC and MCC hardware only)

High reliability

High reliability systems (G3r only) include the following:

- Two control carriers (located in the Processor Port Network cabinet), which contain duplicate processor and tone-clock circuit packs (one is active and the other is in standby)
- One tone-clock circuit pack per Expansion Port Network
- Duplicate connections between the Center Stage Switch and the Processor Port Network
- Expansion port networks connected by single fiber cables
- Duplicate switch node clock circuit packs (one is active and the other is in standby) in each switch node carrier

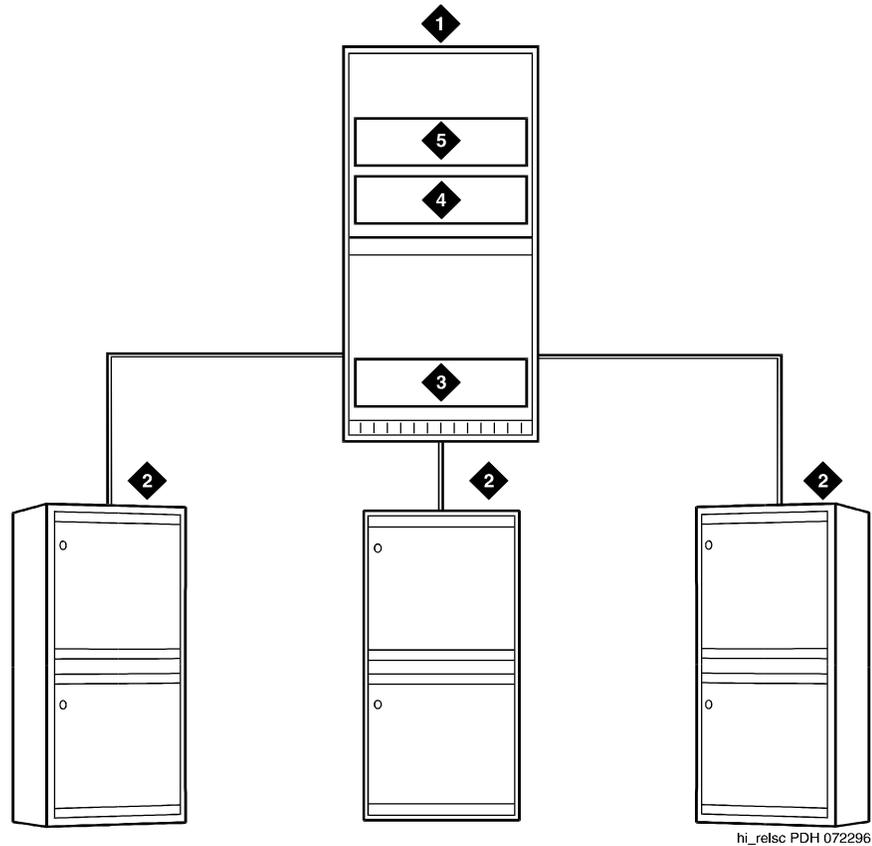
Figure 7 shows a high reliability, directly connected system.



- | | |
|---------------------------|------------------------------|
| 1) Processor Port Network | 3) Control Carrier |
| 2) Expansion Port Network | 4) Duplicate Control Carrier |

Figure 7. High reliability, directly-connected DEFINITY BCS

Figure 8 shows a high reliability center stage system, where the Center Stage Switch is connected to both the active and standby control carrier.



- 1) Processor Port Network
- 2) Expansion Port Network
- 3) Center Stage Switch
- 4) Control Carrier
- 5) Duplicate Control Carrier

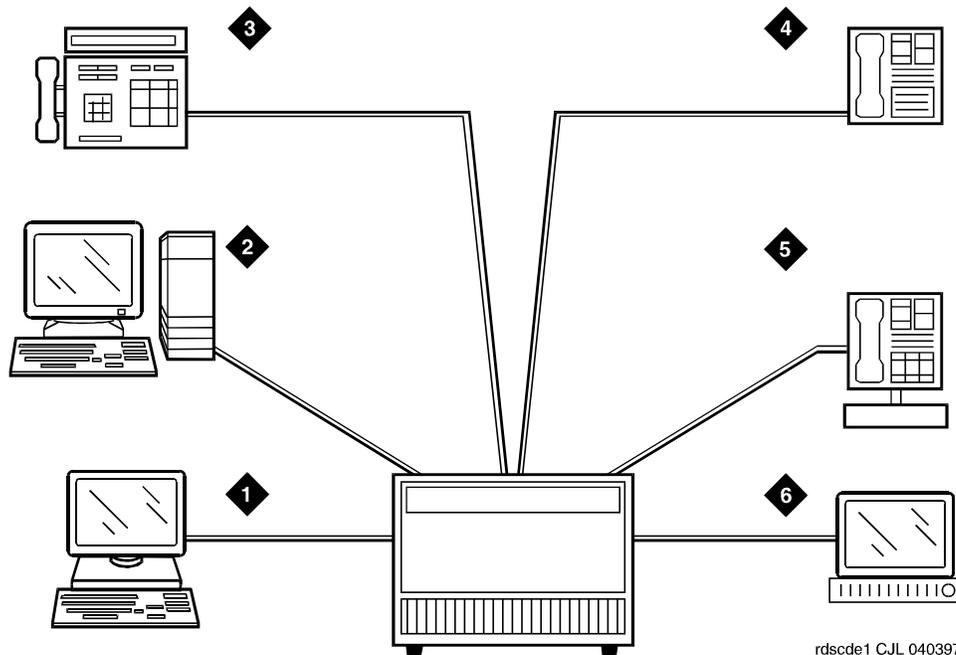
Figure 8. High reliability, Center Stage DEFINITY BCS

Connections to the DEFINITY BCS

The DEFINITY BCS can be connected to a variety of adjuncts, station equipment, and networks. See Figure 9. This flexibility allows you to acquire or design applications as your organization evolves.

NOTE:

Actual equipment may look different than the equipment shown.



- | | |
|--|--|
| 1) Computer (BRI or analog circuit) | 4) Telephone (BRI, DCP, or analog circuit) |
| 2) Manager Terminal (PC with TERRANOVA ECS Administration) | 5) Telephone with Data Module |
| 3) Attendant Console | 6) Video Monitor for conferencing (BRI or DCP circuit) |

Figure 9. DEFINITY BCS connections

Adjunct connections

In addition to station connections, the system includes many connections for adjunct (subordinate, related) equipment. The system provides an advanced X.25 (called BX.25) dedicated link adjunct interface, which can support a variety of adjuncts, including the DEFINITY AUDIX Messaging System (internal).

The system provides two Electronic Industries Association (EIA) RS-232 ports: one for a PC using the TERRANOVA ECS Administration terminal emulator and one for a spare connection. In addition, a tip/ring connector with a built-in modem is provided for remote administration.

These RS-232 ports also work with the following typical adjuncts:

- Property Management System
- Call Detail Recording Utilities
- Call Detail Recording printer
- Basic Call Management System terminals
- System printer

The system uses an analog line circuit to support the following voice adjunct and interface functions:

- Loudspeaker paging
- Music-on-hold
- Queue status indications
- Recorded announcement
- External alarm inputs

The system supports an auxiliary trunk interface that connects to equipment supporting the following features:

- Recorded announcement
- Music-on-hold
- Loudspeaker paging

The system supports the following network interfaces:

- Electronic Tandem Network
- Integrated Services Digital Network-Primary Rate Interface

Telephone connections

All signals between analog telephones and the system are in analog form over a pair of wires. Digital telephones using the Digital Communications Protocol (DCP) employ digital transmission for integrated voice and data signals and control signals. Transmission is over a connection consisting of one or two pairs of wires. Each connection supports one signaling channel and two information (voice and data) channels.

The 8400-series digital telephones automatically detect whether they are plugged into a two-wire or four-wire digital line circuit card. The 9400-series digital telephones, also known as Europhones, provide support for two-wire installations. (The 9400-series telephones are not available in the United States.) The 6400-series telephones are new 2-wire digital telephones that are available world-wide.

Like the digital DCP telephones, ISDN telephones transmit voice, data, and control signals digitally. With the ISDN telephones, however, the transmission employs the world-wide standard BRI protocol between the system and the telephone.

Network connections

Lucent Technologies is the first vendor to provide compatibility with the QSIG global networking protocol. This means you can connect the DEFINITY BCS with other switches throughout the world. QSIG Global Networking was developed to comply with the QSIG standards developed by the European Computer Manufacturer's Association and the International Standardization Organization. It supports the ISDN-Primary Rate Interface connection from system to system as long as both systems support the same protocol.

The system supports both E1 and DS1 facilities. As industry standards around the world, E1 and DS1 provide the latest alternative to analog trunking. T1/E1 access and conversion allows simultaneous connection to both T1 (1.544 Mbps) and E1 (2.048 Mbps).

The system's support of ISDN-Primary Rate Interface, ISDN-Basic Rate Interface, and available public network services means that you can achieve full end-to-end ISDN connectivity and take advantage of ISDN services and features. The system provides ISDN support for up to 1000 telephones.

The system also supports connection to an Electronic Tandem Network. Different Electronic Tandem Network locations are connected via analog or digital tie trunks. For example, a Digital Signal Level 1 interface can act as a high-speed (1.544 Mbps) digital backbone for voice and data communications between Electronic Tandem Network locations.

For more information, see Chapter 8, "Networking Solutions."

Power

DEFINITY BCS can accept a variety of AC or DC power. The system can operate without requiring a power transformer in almost any part of the world.

During a power outage, individual cabinets (single or multicarrier) will continue to function for up to 15 seconds; the multicarrier cabinet will function for up to 10 minutes without power, depending on configuration. Optionally, an uninterruptible power supply can protect a DEFINITY BCS system from under or over-voltage conditions, line frequency fluctuations, and power blackout of short duration. A battery backup system can be used to provide power for up to 8 hours, depending on the type and quantity of circuit packs and amount of traffic during the holdover period.

Software

All DEFINITY BCSs (and related Lucent Technologies systems) use similar software. To provide this commonality while still accommodating wide variations in configurations and options, the system dynamically allocates internal memory storage. Memory is sized when the system is initialized, selecting the proper software parameters based on the hardware configuration.

The DEFINITY BCS and GuestWorks *server* Issue 4 provides a variety of features. See Appendix A, "Features," for a listing of features available on the system.

Chapter overview

The following application discussions explain how the DEFINITY Business Communications System meets communications challenges in various industries. Though the specific requirements of the industries vary, the general information presented here can help to generate ideas. Even if none of the applications precisely match your situation, the examples may suggest creative solutions you can apply to suit your needs.

In the financial services industry, for example, banks, brokerage houses and insurance companies now offer many of the same services. In this chapter, industries are presented in the broadest terms, with little regard for overlap. For example, the insurance industry can be considered under both the "Healthcare" and "Financial services" headings.

In most cases it is difficult to consider the DEFINITY BCS without also considering its array of options. Many of the solutions discussed in this chapter are enabled by optional hardware and software. The system is the essential integrating platform that coordinates and enhances these specialized tools. Even if your intention is to purchase a basic system, it is important to gain some understanding of the many options the system provides so you can eventually capitalize on those advantages.

⇒ NOTE:

Some features and solutions are unavailable in some countries. Please contact your local account manager or authorized Lucent Technologies representative for further information about which features and solutions are available to you.

Education (K – 12 and small colleges)

Municipal school districts and small colleges seek to:

- Ensure reliable telephone service
- Coordinate information and services
- Communicate easily with the outside world
- Reduce costs but still serve student needs
- Plan for expansion and innovation.

Ensure reliable telephone service

The DEFINITY BCS can service up to 25,000 telephones. The size and efficiency of the system allows small colleges to generate revenue from student phone service, which offsets the cost of other services.

The reliability of the system is without equal. The system's automatic backup features, maintenance tests, and line monitoring functions work proactively to protect your investment. These and related features identify potential difficulties well before the system's operations might be compromised, further enhancing the high reliability inherent in the system architecture.

Coordinate information and services

Many colleges have large campuses or are composed of a network of scattered buildings and offices. Efficient connections among the many elements are essential to the integrity of the institution. A variety of options can help coordinate information and services from many locations:

- Wireless and cordless telephones allow librarians, technicians and clerks to easily search for things while talking to the person requesting the search.
- Voice messaging systems can be digitally networked using existing voice and data networks. This allows satellite campuses or offices to access common directories and handle messages as if they were all on the same campus.
- Audio conferencing equipment allows teachers and managers to easily participate in policy-making meetings, regardless of location.

- The security of all buildings can be coordinated and enhanced in the following ways:
 - The DEFINITY BCS efficiently routes emergency calls to security staff.
 - PassageWay Direct Connection logs incoming calls and pinpoints the location of the telephone making the call, using the system's name/number display capability.
 - Call management software logs the speed of the response so that response times can be measured and improved.

Communicate easily with the outside world

Most schools receive many incoming calls. The number of calls also fluctuates a great deal — going up just prior to the start of a semester, for example. Often the callers are unsure which department or individual they need to talk to. The communications system must, therefore, be able to handle fluctuating call volume while satisfying each caller's particular needs. Here is how the Basic Call Management System's tools meet these needs:

- Automatic Call Distribution routes incoming calls to hunt groups. As additional calls come in, they are placed in queue. When the queue gets too long, the overflow calls are automatically routed to standby operators during periods of high call volume. Display telephones alert the standby operators that they are handling overflow calls.
- Call management software keeps statistics on number of abandoned calls, average length of call, average wait time, and other activities so you can manage your hunt groups and track productivity.

Reduce costs while meeting student needs

Educators now have many options for making the most of their resources while providing a top quality education for many students. The system provides efficient, integrated access to both the school and to world-wide resources:

- Speakerphones allow distant experts to share knowledge with students in the classroom.
- Desktop Conferencing Systems enable students to see and speak with one another and to collaborate on documents. They can create and jointly edit documents that may reside on only one computer in one location. The students can work together as if they were all seated at the same table.
- TransTalk telephones help teachers and students solve software problems while talking with technical experts.

These tools allow schools to form partnerships with each other world-wide, enhancing the overall quality of education they offer while spawning new revenue-generating opportunities.

Plan for expansion and innovation

Schools must be at the forefront of communications innovation, so it is important to use a platform that can accommodate rapidly evolving requirements. The system is:

- Capable of handling multimedia calls
- Compatible with many different products from many different vendors so that it fully integrates all of your tools and options
- Designed to accommodate existing and emerging standards and protocols.

Retail

The retail industry is a fast-moving, high-pressure business that requires employees to produce at a high level. Retail industries want to:

- Improve sales while containing costs
- Provide a professional image to customers
- Expand resources as opportunities arise
- Stay in contact with corporate locations to keep up on current trends.

Improve sales while containing costs

More and more, sales employees must make long-distance calls to gather information when making sales. Least-cost routing (World Class Routing) means that your employees will save money while making important long distance calls.

With the wireless mobility solutions offered with the DEFINITY BCS, sales associates are not confined to their immediate locations, but can move easily from department to department to answer sales call questions. The system also provides loudspeaker paging so that employees can be contacted from any location in the building.

Provide a professional image to customers

Retailers are finding that customers are doing more shopping over the telephone than in the past. Businesses must provide an increased level of service through their communications system. Using features such as Call Vectoring and recorded announcements to route calls to specific departments or to a hunt group where orders are taken provides callers with quick access to what they need.

Since the employee base in the retail industry has a high turnover, the DEFINITY BCS provides video tape training for your employees. Your employees can quickly become proficient at using the telephone system.

The voice messaging system provides sales associates a professional way to keep up with all of their calls, both from customers and vendors. They can also use mailing lists to send out broadcast messages to associates notifying them of new sales procedures or events.

Should an emergency situation occur at your store, the Crisis Alert feature allows employees to contact local emergency agencies quickly. When this call is made, the attendant is also notified of the call so that when emergency personnel arrive, someone can assist them to find the exact location of the emergency. This is very critical in a large department store.

Expand resources as opportunities arise

With support for up to 25,000 stations, the DEFINITY BCS can be expanded as your business grows. You can add more telephones for your telephone orders department, or add new telephones for new sales departments.

Stay in contact with corporate locations

The DEFINITY BCS provides audio teleconferencing so that executives and sales associates can stay in contact with other corporate locations. This is a cost-effective way to quickly communicate new information to many locations.

Systems located in different geographical regions can be connected using the QSIG Networking services and the Uniform Dialing Plan.

Telephone features such as speed dialing give employees easy access to other stores. This is valuable when trying to locate merchandise for customers.

Healthcare

The healthcare industry may include providers, insurance companies, employers, patients, researchers, pharmaceutical companies, and the government.

Healthcare administrators worldwide seek to:

- Maximize resources to reduce or contain costs
- Improve response time in a busy urban environment
- Maximize productivity and efficiency of high-salaried professionals
- Provide highly efficient service, without losing the human touch
- Promote wellness and satisfaction with easy access to information within the community
- Improve accessibility to specialized medical care
- Maintain skills and collaborative relationships regardless of location.

Maximize resources to reduce costs

For individual healthcare providers, cost containment and reduction is the key to survival and growth. The rules of healthcare payment are changing, and providers must keep the costs of care down without sacrificing quality.

Beyond providing quality care — always an overriding concern — healthcare's primary goal is to maximize resources through efficient operation. Savings can be realized in reexamining everything from staff size and operations to the number and type of rooms provided.

The GuestWorks *server*, Lucent Technologies' hospitality offer, can provide a variety of options to fully use available resources. It can turn the telecommunications investment into a seamless network for managing and monitoring incoming calls and voice messaging.

Improve response in a busy environment

Hospitals deal with a high percentage of emergencies, both in the hospital and in the outside community. Hospitals can improve their patient services and emergency response by:

- Mobilizing staff during disasters or emergencies outside the hospital
- Improving response to emergencies inside the hospital
- Improving emergency room response for the critical cases arriving by ambulance

The GuestWorks *server* provides the following services to hospitals:

- Paging systems provide an effective way to broadcast emergency situations throughout an entire department or facility. Visual paging ensures that the hearing-impaired are also notified of emergencies.
- TransTalk mobile telephones help nurses stay in touch with doctors and technical experts while carrying out their duties.

The GuestWorks *server* helps hospitals improve emergency services without adding staff.

Maximize productivity and efficiency

Many healthcare facilities participate in an integrated health network consisting of numerous hospitals, clinics, doctors, offices, laboratories, and other medical facilities. Although they are often autonomously managed, these multiple sites have to function as a single organization to keep costs down and enable the facilities to be financially successful.

Staff of integrated health networks includes administrators, nurses, technicians, physicians, and support personnel. Many members of the staff are active multiple shifts, and are seldom confined to an office.

Healthcare facilities need to be able to:

- Maintain close communication links between distant facilities, and include related organizations such as suppliers and clinics
- Reduce unnecessary overhead paging
- Improve response to emergencies
- Provide an efficient way to communicate non-emergency information to busy mobile staff

The GuestWorks *server* can help healthcare facilities maintain productivity and efficiency with the following products and features:

- Standardized systems, networked for feature transparency with four-digit dialing between locations, can ensure that staff wastes no time adapting to the communications system as they go from location to location.
- Voice Messaging systems can reduce personal paging and eliminate telephone tag when staff must continuously leave messages and wait for returned calls.
- Basic call management system packages can support the facility's busiest offices such as the business office, hotline groups, clinics, and admissions offices.

- Lucent Technologies Call Accounting System for Windows* allows healthcare facilities to chargeback telephone equipment and usage to doctors, clinics, and offices.
- Lucent Technologies offers an array of wireless solutions that provide an effective way to communicate with nurses, doctors and others who must be mobile.
- Outside labs, pharmacies, physicians' practices, vendors, and other organizations who frequently deal with the healthcare facility can obtain guest mailboxes on the voice messaging system. The healthcare institutions can thus avoid toll charges that should be paid by others.

By using Lucent Technologies products, healthcare facilities can reap the following benefits:

- Improved communication between staff members
- Better response to true emergencies
- Improved staff efficiency and satisfaction.

Provide highly efficient phone service

Many healthcare facilities encounter problems responding to the large number of incoming calls. Callers are frequently put on hold for long periods of time before representatives are available to help them.

Healthcare facilities need to:

- Eliminate the frustration and negative perceptions of the facility that is experienced by callers
- Improve the quality of service, without increasing costs
- Optimize staffing by using the staff for that which they were trained.

The GuestWorks *server* can provide the following capabilities to the healthcare industry:

- Recorded announcements and the Call Vectoring feature give callers access to basic information 24 hours a day, seven days a week.
- PassageWay products allow a caller's record to appear on the hunt group member's screen as the call rings on the phone, based on caller input or Calling Line (or number) Identification. This eliminates the need for the hunt group member to ask identifying questions and enables him or her to locate the records more easily. It also improves service by enabling the member to greet the caller by name and begin to address the issues more quickly.

*. Registered trademark of Microsoft Corporation.

- Basic Call Management System allows the business office supervisor to assign the appropriate number of representatives and analyze call volume to identify opportunities for improvement. The system can also be used by the supervisor to determine if representatives are responding quickly to callers.

By using Lucent Technologies products, healthcare facilities can provide more efficient phone service and in return, reap the following benefits:

- Faster response to callers
- Accurate staffing
- More personal service
- Higher productivity
- Improved image of the healthcare facility

Promote wellness and satisfaction with easy access to information within the community

Healthcare facilities measure their success by the satisfaction level of their services from patients and community. Facilities need to provide the best “first impression” of the hospital. In most cases, it is in the best interest of the healthcare provider and insurer to promote wellness to keep hospitalization costs down.

Healthcare facilities need to:

- Provide easy access to wellness information
- Educate the public about preventative measures
- Encourage the public to take control of their health issues in a timely manner
- Provide referrals for healthcare professionals and specialists.

The GuestWorks *server* offers an easy way to help the healthcare industry. Voice messaging allows callers to leave non-emergency questions or messages for later callbacks, so that callers can get personal attention.

Lucent Technologies products help healthcare facilities to provide first-rate personal care in a cost-efficient manner.

Improve accessibility to specialists

Medical professionals often need to contact specialists in a particular field but are restricted because of time, distance, and expense. They provide better medical care by:

- Consulting with experts, sometimes during surgery
- Overcoming boundaries of distance — by consulting with any physician, no matter where they are located.

Desktop conferencing systems can be used in patients' homes by home health nurses to confer with physicians about patient conditions. This enables more patients to be cared for outside the hospital, and reduces the need for the very ill to travel to the hospital or physician's office.

Maintain skills and collaborative relationships regardless of location

In the healthcare industry, there is an urgent need for multiple sites to operate as one and for medical professionals to collaborate remotely, so they can provide top quality health care to patients in rural areas. Doctors and nurses must also stay abreast of technological innovations in the field and continue their educations.

The GuestWorks *server* can play a critical role in connecting remote and sparsely populated communities with the advanced centers in healthcare. This technology enables the same level of sophistication in the rural settings as that available in the urban medical centers by:

- Improving communications
- Improving staff satisfaction
- Increasing personnel skills
- Providing improved patient care
- Reducing time and expense of travel

The Lucent Technologies Desktop Conferencing System can help with:

- Continuing medical education

Doctors can learn at their desktops, without having to pay for expensive travel bills and time away from their office and home.

Medical students can be educated at remote sites. Distance learning can help medical students assigned to rural clinics learn from doctors in hub hospitals and medical centers.

- Remote consultations by non-physician medical staff, which are often difficult to arrange in rural areas

Nutritionists, for example, are particularly scarce in remote settings. A nutritionist can use video to communicate with a patient in a distant facility, showing food models of healthy portions and being face-to-face with the patient for better understanding.

Real estate

The real estate industry is a fast-moving and mobile business that requires snap decisions. The real estate industry wants to:

- Be flexible with locations and personnel
- Provide a professional image to clients
- Be available at a moments notice.

Be flexible with locations and personnel

Real estate agents often have two offices: one at their main corporate location and one at their home. Features such as the DEFINITY Extender and Call Forwarding allows agents to keep up with their phone calls. At the main office, paging is a key to locating an agent quickly to close a deal.

Provide a professional image to clients

An agent's telephone system is often their biggest ally. Agents are often on the phone when other calls come in. With voice messaging, calls are not missed; clients can leave messages for the agent and be guaranteed that the message is delivered.

When clients call in to an office, the Dial by Name feature can be offered to route calls to the correct agents. All the client has to do is enter the agent's name using their touch-tone keypad, and the call is routed immediately.

Be available at a moments notice

When conference rooms are unavailable for closing deals, you can use the terminal translation initialization feature to keep some telephone ports in reserve to serve as a temporary conference line. You plug in a telephone, enter a feature access code and security code, and the telephone is activated.

Hospitality

The hospitality industry is composed primarily of hotels, motels, and restaurants.

Hospitality facilities worldwide seek to:

- Control costs
- Improve operating efficiency and safety
- Enhance guest services.

Control costs

Hospitality providers must contain costs to maintain a profit and stay competitive in the industry.

Two ways to help control costs are as follows:

- Separate long-distance calling privileges
Hotel and motel guests frequently place long-distance phone calls from their rooms, while providers disallow staff members from accessing long-distance phone service.
- Charge guests more accurately for terminated calls
Hospitality providers need the ability to detect short duration calls (that is, calls that terminate before the specified answer detection time-out), enabling hotels to more accurately charge guests for these calls.

The GuestWorks *server* provides the following capabilities to the hospitality industry to help control costs:

- World Class Routing features that allow hotels to separate long-distance calling privileges for guests and administrative staff.
- An Answer Detection feature that enhances the DEFINITY system's ability to detect short duration calls.
- The Lucent INTUITY Lodging Call Accounting system (a co-resident application developed by Homisco for North America) that provides accurate and flexible call accounting for guest room billing.

Improve operating efficiency and safety

Hospitality service facilities continuously deal with fluctuating economies, and must maintain maximum efficiency to ensure smooth operations and productive employees.

Three ways hotels can improve operating efficiency and safety are as follows:

- Simplify guest billing for phone expenses
Hotels and motels need simplified guest billing, along with the ability to generate guest phone records.
- Powerful voice-messaging service
Guests and administrative staff need to be able to leave voice mail or FAXes for other guests and staff members. Guests can have callers leave messages or FAXes for them privately, without having to involve the front desk.
- If a guest makes an emergency call, the system automatically notifies the desk attendant, identifying the room that placed the call.

DEFINITY products can provide the following capabilities to the hospitality industry to maintain maximum operating efficiency:

- The Call Detail Recording feature works in combination with system adjuncts to generate guest records and call costs records.
- Lucent INTUITY Lodging allows guests and the administrative staff to create, store, send, and receive voice or FAX messages. Spoken prompts guide the user through each step of the procedure. The system can be administered for a variety of languages.

Enhance guest services

Hospitality providers must constantly find ways to enhance guest services. Staff must work hard to make guests feel comfortable and to maintain and uphold a reputation for outstanding service. Today's harried consumers want to get top-quality service for their hard-earned income.

Hotels can enhance guest services as follows:

- Review guest requests for services
Hotels and motels need a way to review guest requests and ensure that guest's needs and requests are met in an efficient manner by the staff.
- Connect to internal computer systems
Staff can provide better customer service by linking the telephone system to the hotel's internal computer system for registration information and voice messaging features.
- Provide phones with modem hookups and conference call capabilities
The 8411 digital voice terminal provides simultaneous voice and analog data capabilities over a single pair of wires.
- Provide voice and FAX messaging services
The Lucent INTUITY Lodging system allows guests to receive voice messages and FAX transmissions. Guests can retrieve the voice messages from any location and print FAX transmissions at a centralized FAX machine.

DEFINITY products can provide the following capabilities to the hospitality industry to enhance guest services:

- Guest activity reports containing information on items such as requests for wakeup calls and delivery of these calls can be printed in hard-copy form or can be viewed at the Administration terminal. These reports help the administrative staff to ensure that guest requests for services are not overlooked, and that guests get prompt and efficient service from the staff.
- Lucent INTUITY Lodging allows guests and the administrative staff to create, store, send, and receive voice or FAX messages. Spoken prompts guide the user through each step of the procedure. The system can be administered for a variety of languages.

Specialized solutions

The GuestWorks *server* can also provide the following features for hospitality services:

- Attendant Backup
- Attendant Crisis Alert
- Automatic Wakeup
- Controlled Restrictions
- Dial by Name
- Do Not Disturb
- Emergency Access to the Attendant
- Housekeeping Status
- Integration of voice/FAX messaging with property management systems
- Mixed Numbering
- Names Registration
- Room Change/Swap.

For more information about hospitality solutions, please see Chapter 6, "Hospitality Solutions."

Government

Government agencies must project a professional image to their constituents while controlling costs. Government agencies want to:

- Provide valuable service to the public
- Keep contact with various offices
- Provide flexible telephone services to employees.

Provide valuable service to the public

The Call Vectoring feature provides an auto-attendant to callers that need to connect directly to specific governmental agencies. The feature allows employees to spend time doing valuable work, not answering calls for other departments. Call Vectoring can also be used as a help line to provide information about services provided by the local agency.

Keep contact with various offices

Government offices tend to be spread about in various locations. With a DEFINITY BCS at each location, features such as uniform numbering allow easy access between locations. Speed dialing is another feature that is valuable to save time when calls are made regularly between groups.

With the wireless mobility solutions offered with the DEFINITY BCS, workers can move freely around their department, but still remain in contact with calls from the public or from associates.

Should an emergency situation occur at the office, the Crisis Alert feature allows employees to contact local emergency agencies quickly. When this call is made, the attendant is also notified of the call so that when emergency personnel arrive, someone can assist them to find the exact location of the emergency. This is very critical at government locations that tend to have several different buildings.

Provide flexible telephone services to employees

Since many government agencies are now requiring private industries to telecommute, government agencies can also participate by using features such as the DEFINITY Extender and call forwarding. Government employees can work from their home, saving energy and the cost of providing a permanent office. The call coverage feature also routes unanswered calls to either an assistant or to voice messaging, ensuring that calls are always answered.

Financial services

The financial services industry may include banking institutions, credit unions, insurance companies, mutual funds companies, and brokerage firms. These types of businesses are nearly indistinguishable from one another in some areas. Deregulation, technological advances and strong competition induce each to offer a broad range of financial services. Many of these services are automated in order to improve customer service and make the most of available resources.

Financial service providers worldwide seek to:

- Control costs
- Automate routine transactions
- Network regional and global offices
- Upgrade customer service.

Control costs

Cost savings are inherent in many DEFINITY BCS solutions. Using an automated attendant in place of an employee to answer routine calls reduces payroll expenses. Beyond the day-to-day savings that automation and networking provide, however, the system includes some capabilities that directly affect your operating costs.

Automate routine transactions

In many countries, as much as a quarter of all bank transactions are conducted by telephone. For related businesses such as brokerage houses, the percentage can be much higher. Typically, at least half of these calls are from callers requesting routine information. The Call Vectoring feature and recorded announcements allows you to set up an automated attendant that screens calls for your busy customer service representatives. For example, the attendant may handle incoming calls by offering the following options to the caller:

- For business hours, press 1.
- For interest rates, press 2.
- To receive a loan application, press 3.
- To speak to a customer service representative, press 0.
- Or simply enter the extension of the person you are trying to reach.

For the calls channeled to your customer service representatives, the system holds overflow calls in queue for the next available representative. It generates reports that identify peak calling periods, how much time representatives are spending on calls, and which lines are being used. This allows you to maintain high quality customer service while adjusting the size and working hours of your staff.

Network regional and global offices

If your company has offices scattered throughout different regions or countries, it is probably important to you that your procedures are the same everywhere. Your customers probably expect consistent service wherever they go and however they choose to interact with your firm. Networking the offices together is an obvious solution, because it also allows the offices to share information. To accommodate this, your system must be flexible enough to accommodate a variety of requirements and equipment.

QSIG global networking

Lucent Technologies has been a leader in providing equipment compatible with QSIG, a standard for vendor-independent networking. QSIG has been adopted by the International Standardization Organization, ensuring its acceptance worldwide. Lucent's QSIG Global Networking allows you to network different types of systems throughout the world. If, for example, you have acquired an office in another country that uses non-Lucent equipment, QSIG Global Networking allows you to incorporate that equipment into a DEFINITY network. The systems can work seamlessly together, through shared features, flexible numbering plans, and simplified network operations and management. This interface supports voice and data basic call setup, supplementary services, numbering plan information, name display, number display, call forwarding (call diversion), call transfer, and transit counter.

Here are some additional ways the DEFINITY BCS can help you serve your customers:

- The system's open architecture allows you to easily change and modify features to meet the changing needs of your customers. For example, setting up a small telemarketing group often requires making only minor modifications to your measured hunt group.
- Some organizations have calls received after business hours relayed to an office still open for business in another part of the world. This saves the cost of round-the-clock staff and keeps your customers in touch with your best people.

Manufacturing

Manufacturing is typically a no-nonsense business that requires an exact and accurate bottom line. Manufacturing industries want to:

- Keep in contact with vendors and suppliers
- Remain mobile within a factory location
- Provide a safe environment for employees
- Expand telephony services as the business grows.

Keep in contact with vendors and suppliers

As vendors and suppliers change, factories must stay in contact to keep costs of goods at the lowest level. Least-cost routing (World Class Routing) means that your employees will save money while making important long distance calls. Telephone features such as speed dialing allows employees to place calls quickly and efficiently.

DEFINITY AUDIX voice messaging ensures that calls from vendors and suppliers will not be missed, especially since critical components in the manufacturing process change so quickly. Voice messages can be retrieved from any telephone on the system, or from remote locations.

Provide a safe environment for employees

With the machinery used in the manufacturing industry, accidents do happen. Should an emergency situation occur in the factory, the Crisis Alert feature allows employees to contact local emergency agencies quickly. When this call is made, the attendant is also notified of the call so that when emergency personnel arrive, someone can assist them to find the exact location of the emergency. This is very critical in a large factory.

Expand telephony services

With support for up to 25,000 stations, the DEFINITY BCS can be expanded as your business grows. You can add more telephones for your engineering and purchasing departments as new opportunities arise.

Wholesale distribution

The wholesale distribution industry includes both merchants and agents. Merchants buy and sell merchandise, while agents limit themselves to presenting the merchandise and negotiating its sale. Some wholesale distribution companies serve both functions, depending on the circumstances. Most wholesale distribution companies are relatively small, and face increasing competition from larger firms and even from manufacturers themselves. Therefore, most wholesalers cannot easily raise the prices of their products. Continued success requires that they reduce costs and offer more services to both suppliers and customers.

Wholesale Distributors seek to:

- Provide convenient access to product information
- Automate or streamline ordering procedures.

Provide convenient access to product information

DEFINITY AUDIX allows retailers to get product information at the touch of a button. For example, when a clothing retailer calls the wholesaler's product information number, an auto-attendant procedure presents the caller with the following options:

- For information about women's clothing, press 1.
- For information about men's clothing, press 2.
- For information about children's and young adult's clothing, press 3.
- For information about shoes, press 4.
- To speak to a representative, press 5.
- Or simply enter the extension number of the person you are trying to reach.

The retailer has the option of listening to the product information or having it FAXed automatically. You can also have DEFINITY AUDIX call customer service representatives to notify them when they receive voice messages from special customers.

Automate or streamline ordering procedures

The DEFINITY BCS offers a wide range of features which allow customers to order with a phone call, via FAX, or via automated voice messaging.

Legal/Professional

In the legal and professional business (such as consultants and advisors), you must juggle a variety of client types while keeping track of time spent on projects. Professional businesses seek to:

- Keep track of client costs
- Stay in contact at different locations
- Provide a high level of service.

Keep track of client costs

Call detail records sent to Call Accounting systems keep track of client calls so that employees can keep track of time spent on cases or consultations. Long-distance calls made by lawyers or assistants can use authorization codes to track calls by account numbers.

Stay in contact at different locations

In many cases, lawyers and consultants have meetings at different locations where audio teleconferencing is valuable for resolving issues. Voice messaging allows users to get their message from any location so they can keep up on recent developments while away from the office.

Provide a high level of service

Many legal offices now provide free access to legal advice using recorded announcements via an auto-attendant procedure. This projects a professional image to potential clients. Clients can also use the Dial by Name feature to contact personnel directly if they know their name, but not their extension at the office.

Chapter overview

The communications needs of the people in your company may vary widely. Some may need only basic telephone service. Others may need effective messaging services to save valuable time. Still others may require data communications and access to a variety of host and personal computers.

The DEFINITY Business Communications System brings voice communications, data communications, visual communications, and messaging together on the desktop, and lets you customize types of service for various individuals.

⇒ NOTE:

Some features and solutions are unavailable in some countries. Please contact your local account manager or authorized Lucent Technologies representative for further information about which features and solutions are available to you.

Voice features

With the DEFINITY BCS, the employees in your company can easily place a simple telephone call while still having access to powerful features. These features range from the basics (such as Call Forwarding, Hold, Transfer, and Conference) to more sophisticated features intended for particular situations or users.

These features can be accessed in a variety of ways. For example, some can be accessed by pressing a fixed-feature button on the telephone. Many others can be accessed by dialing an access code or by pressing a programmed button on the telephone. The following sections show a few examples of how particular voice features can help your employees to handle calls more efficiently.

Abbreviated Dialing

Allows you to dial frequently called or emergency numbers with just a few button presses instead of dialing the entire number one digit at a time. You can use Abbreviated Dialing to dial both internal and external numbers of up to 36 digits. Many telephones also allow you to program abbreviated dialing buttons so you can dial frequently dialed numbers with just one button press.

Automated Attendant

Automated Attendant (formerly known as Direct Access Calling) uses call vectoring commands to allow a caller to enter the extension of the party they wish to reach. The call is routed to that extension by the vector.

Bridged Call Appearance

Allows you to assign one extension to more than one telephone. In this way you can handle someone else's calls from your own telephone. Primarily useful for secretaries and administrative assistants, this feature allows you to originate, answer, or bridge onto calls without transferring. The maximum number of telephones using the same extension has just been increased from 16 to 26.

Conference

Allows you to set up a conference call with up to six people. The Conference button on your telephone allows you to set up the conference call without the aid of an attendant.

Group Listen

Simultaneously activates your speakerphone in listen only mode and your handset or headset in listen and speak mode. This allows you to serve as spokesperson for a group. You can participate in a conversation while everyone else in the room is listening to what is said. This feature is offered only on the 6400-series telephone.

Integrated Announcements

The system allows you to store recorded announcements (messages) internally on a circuit pack. The system's integrated announcements are as follows:

- Easy to use. Announcements can be recorded and updated from any telephone. And all announcement configuration is performed from the management interface (usually a PC using the TERRANOVA ECS Administration terminal emulator).
- Reliable. Even a power failure will not affect the integrity of your announcements. Because the announcements are stored digitally, voice quality does not degrade over time. There are no external boxes, messy cabling, or separate power supplies. And there are no tapes to jam or break.
- Flexible. Since the announcements are integrated within the system, the applications are almost endless. Announcements can be played to callers waiting for connection. They can be inserted into coverage paths to give out your hours of business. Applications like Call Vectoring were designed to take advantage of the power of integrated announcements.
- Ideal for a global market. Since you record your own announcements, any language that you are able to speak can be provided — even multiple languages on the same system. For example, your hotel guests can receive wakeup greetings in their native language.

Integrated Directory

Either through voice messaging or a display telephone, the system allows you to access the names directory and retrieve an extension number. The directory contains an alphanumeric listing of all names and extension numbers connected to the system. The directory can be set up using several languages.

Last Number Dialed

Allows you to redial your last call, whether it is an internal or an external call. You can press a single button to redial a number having up to 20 digits.

Leave Word Calling

Allows you to, with the touch of a button, leave a standard message ("Call me back," for example) for others on the same system.

Whisper Page

Allows an assistant or colleague to bridge onto your telephone conversation and give you a message without being heard by the other party or parties you are talking to.

Call coverage

The Call Coverage feature ensures that your calls are always answered and that callers rarely, if ever, receive a busy signal. Call Coverage is so flexible that external calls can be routed to one group of attendants and internal calls to an entirely different group.

In some respects, Call Coverage serves as an assistant who screens your calls. It automatically redirects calls to other telephones and messaging services, allowing you to delegate or defer calls as needed.

You can redirect calls according to five status conditions: Active, Busy, Don't Answer, Cover All, and Send All Calls. If you are using one of your several call appearances, the system considers you "active." If you are using all your available call appearances, the system considers you "busy." If the call goes unanswered, the status is "don't answer." Sometimes you might need to assign a secretary or other colleague to "cover all calls," or you may "send all calls" to a permanent voice messaging system or an assistant.

Call Coverage lets you redirect calls to suit any or for all of these criteria. For each telephone, you can have up to four coverage paths. A path is a set of alternate extensions that a call can be sequentially transferred to. Each path can be composed of as many as three extensions, arranged in order of preference. A redirected call immediately goes to the first choice extension. If the first choice is not available, the system tries the second choice and then the third choice, if necessary.

Many people prefer to redirect all of their calls to the same answering points under all conditions, and need only one coverage path. If a secretary is available to cover all calls, even if you are available, the other criteria can be ignored. If you prefer to answer your own calls, however, you will probably require Busy, Don't Answer, and Send All Calls coverage. Send All Calls lets you redirect your calls by pressing a single button or dialing an access code.

Time-of-Day call coverage allows you to redirect calls to different lead-coverage paths at different times of the day and on different days of the week.

For example, you may want to be available in the evening hours during a special project. You might also want calls directed to the office during the day, and have all other calls directed to DEFINITY AUDIX. By specifying the appropriate lead-coverage paths, you can have the call redirection flexibility you need.

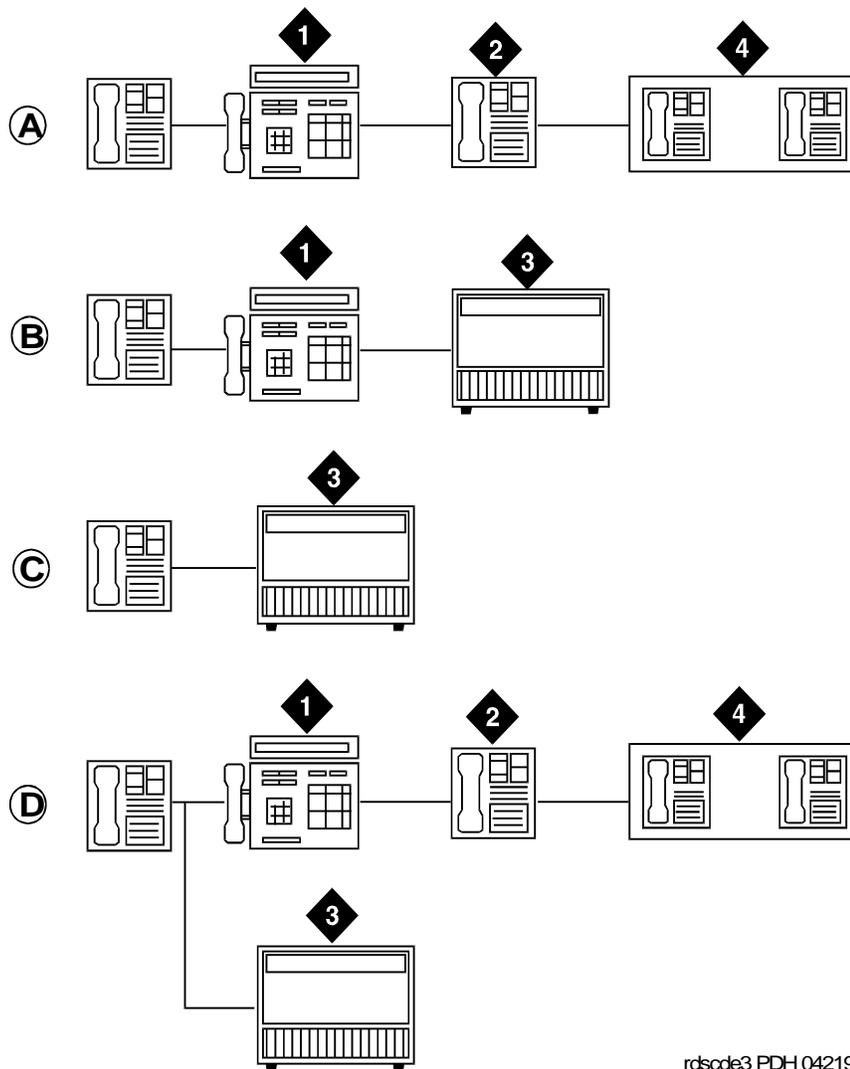
Telecommuting enhancements allow you to have call coverage redirected to a remote site. This is useful if you have a home office to which you want calls sent. For more information on remote call coverage/forwarding, see Chapter 12, "Telecommuting Solutions."

Coverage paths for a manager

Figure 10 shows four coverage paths you might need as a manager. The example assumes you:

- Receive many external calls
- Share an assistant with two other managers
- Prefer to answer your own calls when available
- Travel frequently.

External calls are important because they are usually from customers and require personal attention as they arrive. Internal calls are also important, but often need not be dealt with immediately by you or an assistant. In either case, Send All Calls is useful because it allows you to redirect all calls immediately when you are not available. This saves the caller the annoyance of waiting for several rings before being able to talk to someone or leave a message. The Call Coverage arrangement shown works well for many managers. Note that the same coverage path is used for all external calls because these calls need special attention even when you are unavailable.



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- | | |
|---|-----------------------------------|
| A) External Calls: Active, Busy, Don't Answer | 1) Assistant |
| B) Internal Calls: Cover All | 2) Clerk |
| C) Internal Calls: Active, Busy, Don't Answer | 3) DEFINITY AUDIX Voice Messaging |
| D) Internal Calls: Send All Calls | 4) Message Center Group |

Figure 10. Typical call coverage options

Messaging services

The DEFINITY BCS offers a variety of voice messaging services that allow you to leave, send, and receive messages quickly accurately, and conveniently. The messaging services include the following:

- DEFINITY AUDIX (used for non-hospitality applications)
- INTUITY AUDIX
- INTUITY Lodging (used for hospitality applications).

These messaging services can be purchased with the system and can be fully integrated with the Leave Word Calling and Call Coverage features. A message-waiting lamp on your telephone lets you know when messages are waiting from any of the messaging services.

The AUDIX system and call coverage

Often a DEFINITY AUDIX system is set up as the last point on a call-coverage path, as in Figure 10 above. A secretary or colleague who answers a redirected call intended for you can also transfer the caller to your DEFINITY AUDIX mailbox. The caller may prefer to leave voice mail for you if the message is personal, lengthy, or technical.

Many other options are available:

- A caller can redirect a call from the DEFINITY AUDIX system to an attendant.
- A caller can transfer to another extension instead of leaving a message.
- The DEFINITY AUDIX automated attendant can answer all calls to the company
- The DEFINITY AUDIX automated attendant can send calls to various extensions. In this case, callers are instructed to enter keypad commands to direct the call.

Message-Retrieval options

With the message-waiting lamp on their telephones, employees always know when they have messages. Messages can be retrieved using the Display Retrieval feature. This feature allows users having digital telephones with displays or a personal computer integrated with a telephone to display messages.

Telephones and workstations

A wide variety of telephones are available with the DEFINITY BCS, ranging from basic single-line telephones to sophisticated workstations that integrate voice data, image, and video communications. Your configuration might incorporate a mixture of terminal types based on the various users' job functions. The telephones and workstations are easy to use and attractive while giving you the ability to tap into the power of the system.

The telephones fall into three basic families — analog, Digital Communications Protocol, and ISDN-BRI. These terms describe how each type of telephone communicates with the system. These families of telephones are designed to accommodate the types of communications various users require. All telephones have touch-tone dialing and the message-waiting lamp for notification of messages.

Analog (single-line) telephones

Single-line telephones are an economical choice for users who do not handle many calls and do not use modems and FAX machines extensively.

All signals between analog telephones and the system are in analog form over a pair of wires. Only one incoming call can ring at a time, but the telephone can actually handle two calls — one active and one on hold. Depending on the particular telephone, you can alternate between two calls or set up a three-way conference using the switchhook or flash button. You can access voice features by either entering access codes from your touch-tone keypad or pressing feature buttons. Several models of analog telephones are available.

DCP telephones

Digital telephones using the Digital Communications Protocol (DCP) employ digital transmission for integrated voice and data signals and control signals. Transmission is over a connection consisting of one or two pairs of wires. Each connection supports one signaling channel and two information (voice and data) channels.

DCP telephones are used most effectively by those who have a high volume of calls, require access to multiple applications or databases, use system features heavily, or require messaging services. These telephones can be used with personal computers to expand their capabilities

These telephones provide the full range of features on your desktop. In addition to multiline and multifunction capabilities, they provide access to integrated voice and data applications and messaging services. Some models include displays. DCP telephones can actually save you money by reducing the number of lines, modems, and ports that would normally be needed for analog facilities.

ISDN BRI telephones

Like the digital DCP telephones, ISDN telephones transmit voice, data, and control signals digitally. With the ISDN telephones, however, the transmission employs the world-wide standard BRI protocol between the system and the telephone.

Also like the DCP telephones, these telephones can be used with personal computers to expand their digital capabilities. The DEFINITY BCS's family of ISDN telephones include several models which include unique features such as call logs and personal directories.

Telephones for the global marketplace

With help from our many global customers, Lucent Technologies has developed new telephones, the 6400-series, the 8400-series, the 9100-series, and the 9400-series, to meet the demand for two-wire telephones in the global marketplace.

⇒ NOTE:

The 9100-series and 9400-series telephones are not available in the United States.

6400-Series telephones

The 2-wire, DCP 6400 digital telephones are similar to the 8400 and 9400 telephones, and feature new styling and a pullout instruction card. The 6400 telephones also include the following additional features:

- Date and time display.
- A feature button which allows switchhook control of a headset.
- *Group Listen* capability, which allows you to use your handset or headset normally while others in the room listen in via speakerphone. This 2-way handset, 1-way speaker mode allows you to serve as a spokesperson for a group.
- *Telephone Self Administration* capability, which allows you to program feature buttons on the telephone yourself.

There are several models of the 6400-series telephones:

- 6402 – Automatic management of two call appearances, one-way speaker with group listen, and fixed features plus shifted dialpad for 12 additional features.
- 6408+ – Eight dual-indicator call appearances, speakerphone with group listen option, 3-way volume control, message waiting lamp, and fixed buttons for hold, conference, transfer, and redial.

- 6408D+ – All the features of 6408+, 2x24 display, and four softkeys (menu, exit, previous, and next).
- 6416D+ – Sixteen dual-indicator call appearances, jack for XM24 expansion module, and other features similar to the 8410D.
- 6424D+ – Twenty-four dual-indicator call appearances, jack for XM24 expansion module, and other features similar to the 8410D.
- XM24 – Expansion module that provides twenty-four dual-indicator call appearances; supports the 6416D+ and the 6424D+.

8400-Series telephones

The 8400-series digital telephones are versatile two-wire/four-wire DCP telephones with new styling that offer new flexibility and cost savings. They automatically detect whether they are plugged into a two-wire or four-wire digital line circuit card. This is a significant benefit because it provides an easier transition to either a two-line or a four-line environment, therefore reducing wiring expenses and installation adjustments. It also allows you to save space inside the cabinet by using 16-port or 24-port two-wire circuit packs in place of 8-port four-wire circuit packs.

In response to customers' requests, the handset has a larger mouthpiece, the telephone has raised buttons that provide improved tactile feel for easier use, and the finish is a scratch-resistant texture that preserves the telephone's appearance. Programmable speakers and microphones can be turned on or off by the system administrator.

There are several models of 8400-series telephones:

- 8403 – A 3-button telephone without a display that can be wall mounted. This entry-level telephone is designed for users with basic call handling requirements. It is ideal for areas where there is minimum use, such as reception areas, copy rooms, file rooms, or warehouse locations. It has a built-in one-way (listen-only) speakerphone that facilitates on-hook dialing and listening to voice mail or broadcast messages. You can add an S201A speakerphone and use the inexpensive 8403 in a conference room.
- 8405B – A 5-line telephone without a display that can be wall mounted. This telephone is for employees with call coverage responsibilities who need multiple line appearances and extensive features. It has a built-in speaker (standard models) or a two-way speakerphone (the "plus" models), and programmable keys so you can access more system features from the telephone.
- 8405D – A 5-line telephone with a two-line, 24-character display. This telephone has the same features as the 8405B and can also be wall mounted.

- 8410B – A 10-line telephone without a display that can be wall mounted. This telephone is for employees with call coverage responsibilities who need multiple line appearances and extensive features. It has a built-in two-way speakerphone and programmable keys so you can access more system features from the telephone.
- 8410D – A 10-line telephone with a two-line, 24-character display. This telephone has the same features as the 8410B and can also be wall mounted.
- 8411D – Enhanced version of the 8410D terminal that provides a built-in RJ11C jack as an interface to analog telephone devices (such as a telecopier or a modem in a laptop personal computer), and an RS232 data interface to a PassageWay Direct Connection. These sets cannot be wall mounted.

The analog port on the 8411D is an important feature for business people that use laptop computers with analog modems. The user can connect their laptop to the 8411D for data, and use the telephone for simultaneous voice, all through a single pair of wires.

- 8434DX – A 34-button set with a 2-line by 40-character display. This telephone is for the busy executive or executive assistant where extensive call handling and call coverage flexibility are vital. The 8434DX has a built-in two-way speakerphone and programmable keys. A 24-button expansion module can be added.

Here are some important features of the 8400-series telephones:

Administering Speakerphones. You can administer speakerphones either through the system or through the telephone. The 8405B, 8405D, 8410B, 8410D, 8411D, and 8434DX telephones can be administered as two-way speakerphones or one-way listen-only speakers, or you can disable the speakers. The 8403 can be administered as a one-way listen-only speaker or the speaker can be disabled.

Compatibility and Investment Protection. The 8400-series digital telephones are compatible with all two-wire DCP circuit packs, as well as with all earlier four-wire circuit packs. The backward and forward compatibility of these telephones protects the investment you made in your existing wiring and your existing older version four-wire systems.

International Icons and Languages. International icons are used on the telephones, and buttons are available in several languages, as are the messages on display sets. You can also use a user-defined table to customize the translations. Additional international portability is provided with downloadable handset transmission parameters.

Double and Triple Capacity. When the 8400-series telephones are coupled with the new two-wire 16-port or 24-port Digital Line circuit pack, you benefit by having more capacity in each carrier. Therefore, purchase of additional carriers or cabinets may not be necessary.

9100-Series telephones

The 9100-series analog voice terminals (not available in the United States) are cost-effective and combine improved features and greater flexibility in an up-to-date, more contemporary design. Available in three models (9101, 9103, and 9110), the 9100-series analog voice terminals are more practical, more economical, and the perfect choice for anyone or any location in your business. Table 10-1 lists the features available on the different 9100-series analog voice terminals.

Table 10-1. 9100-Series analog voice terminal features

Feature	Model 9101	Model 9103	Model 9110
Data Jack	No	Yes	Yes
Flash Button	Yes	Yes	Yes
Message Waiting Lamp	Yes	Yes	Yes
Mute Button	No	No	Yes
On-Hook Dialing	No	Yes	No
Pause Button	No	Yes	Yes
Positive Disconnect	Yes	Yes	Yes
Redial	No	Yes	Yes
Repertory Dialing	No	Yes (13)	Yes (20)
Ringer Volume Control	Yes	Yes	Yes
Speakerphone	No	No	Yes
Tone/Pulse Switch	Yes	Yes	Yes

9400-Series telephones

The 9400-series digital telephones (not available in the United States) provide inexpensive support for two-wire DCP installations, while still providing a European design. Three models of the 9400-series telephones are available in gray and cream white. The 9403, 9410B, 9410D, and 9434 telephones are similar in function to the 8400-series voice terminals.

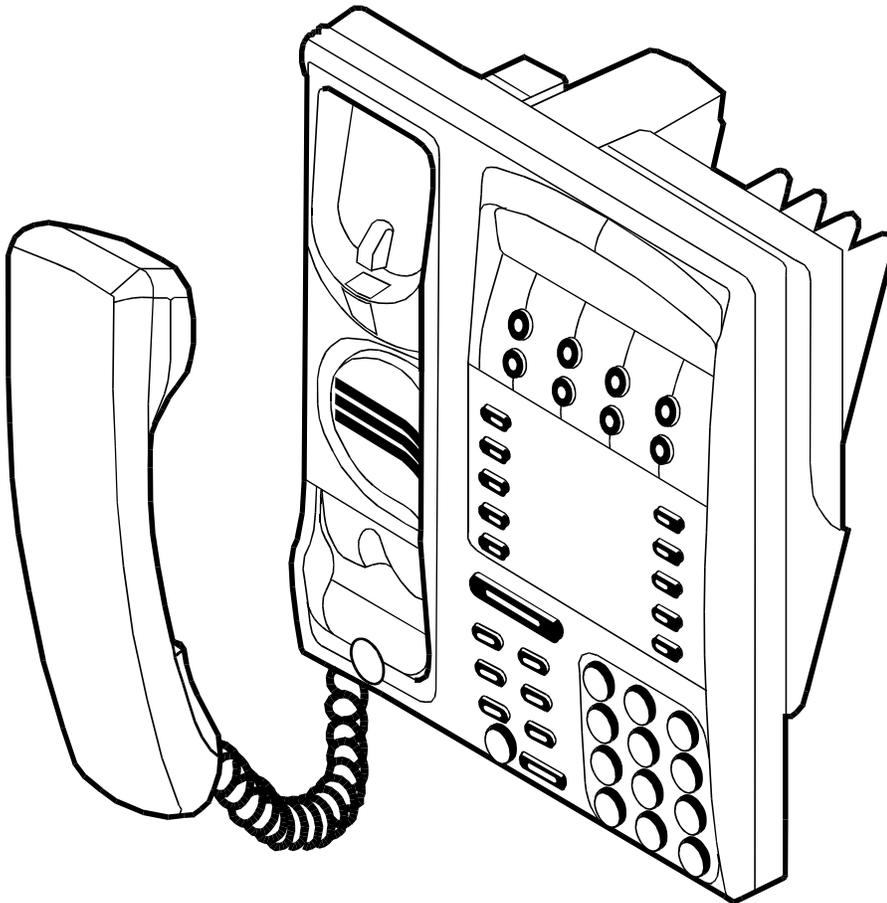


Figure 11. 9400-Series telephone

Here are some important features of the 9400-series telephones:

International Language Support. The 9400-series digital telephones are available with labels and user's guides in several languages. Because the European requirements for the lettering on the keypad are not identical, Lucent Technologies has created an overlay that holds the necessary lettering for each country. Two overlays are available: one blank and one with letters, complying with CCITT standards.

Compatibility. Like the 8400-series telephones, the 9400-series telephones are compatible with all 2-wire circuit packs. The connection is made via a two-wire, 16-port or 24-port DCP interface card.

Solid Engineering. Compliance with the most rigid emission and electromagnetic requirements ensures the integrity of your installation.

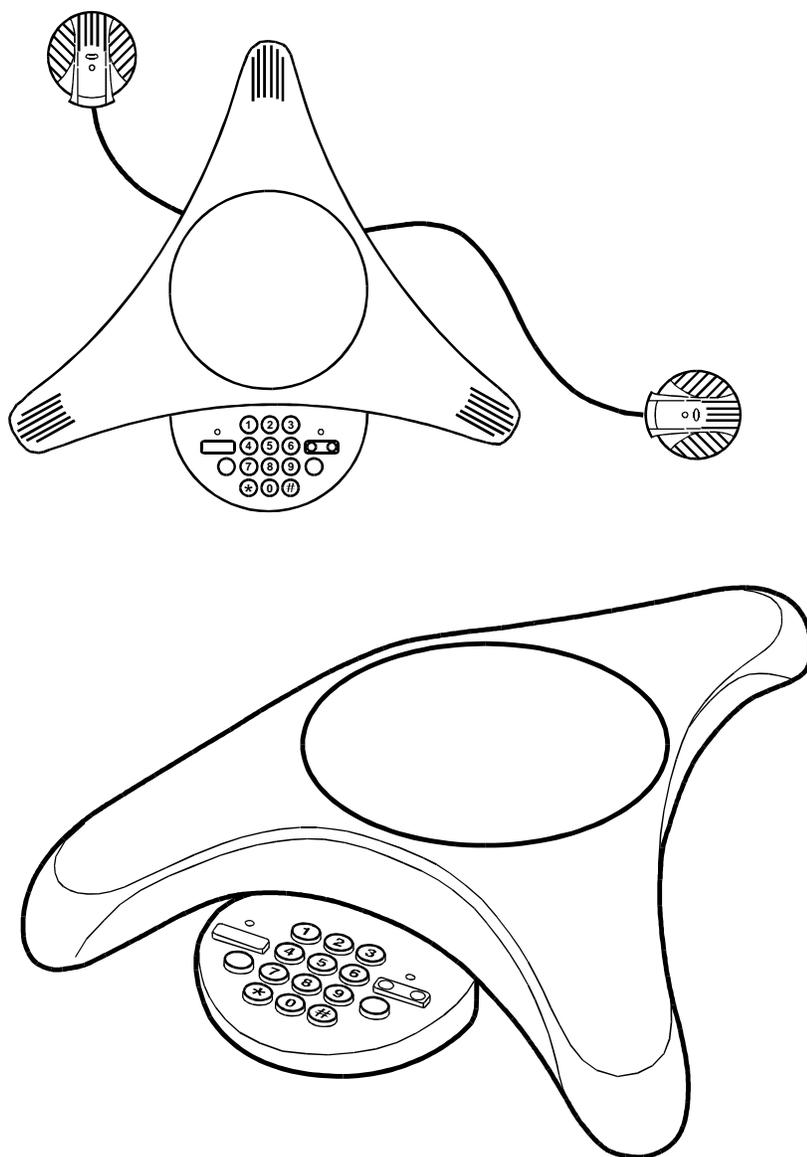
Teleconferencing products

How much of your time do you spend in meetings — or traveling across the building, across town, or across hundreds of miles to get to a meeting? How often was time lost because vital information was left in someone's office? Meeting by phone or teleconferencing offers an attractive alternative. Meetings are suddenly more convenient and easier to schedule, and travel expenses are greatly reduced. The Lucent Technologies SoundStation products provide you with all the benefits of voice conferencing.

⇒ NOTE:

Some features and solutions are unavailable in some countries. Please contact your local account manager or authorized Lucent Technologies representative for further information about which features and solutions are available to you.

Lucent Technologies' SoundStation and SoundStation EX Audioconferencing Systems enable a group of people in a conference room to share their conversation with others through a telephone connection. The SoundStation equipment permits natural conversation among many people— whether strong or soft, or from a standing or sitting position. Integrated components and a stylish tripod design make the console an attractive yet unobtrusive conference table centerpiece (Figure 12).



stealth1 C.JL 050696

Figure 12. SoundStation EX with external microphones

The equipment's full-duplex technology allows conferees to speak at the same time, thus eliminating the tendency conventional speakerphones have of *clipping* — failing to transmit the beginning or ending sounds made in conversation. The SoundStation systems adapt automatically to changing room and telephone line conditions to permit natural, two-way conversations without distortion. This allows you to be heard without straining to hear what others are saying.

SoundStation speakerphone

The Lucent Technologies SoundStation has three microphones and a digitally tuned speaker that provide 360-degree coverage whether you use the system in an office or a conference room. The built-in keypad includes a mute button and a flash key. An additional port allows you to connect the speakerphone to a tape recorder.

The speakerphone is available in an analog and digital model. The analog model connects directly to an analog telephone line. The digital model must be used with the 7400-series or 8400-series digital voice terminals.

The system is simple to install and use. You plug the phone line into a small wall module plugged into an outlet. A single cable from the wall module to the console reduces tabletop clutter. The console works like a regular telephone.

SoundStation EX speakerphone

The SoundStation EX includes all the features and functions of the SoundStation. It accommodates larger conferences by including two palm-size external microphones that can be positioned up to 6 feet on either side of the center console. An optional lapel microphone is available for stand-up presenters.

Chapter overview

Many businesses strive to improve customer service and increase profits by they controlling costs and staff size. That means employees have to be more productive, more responsive, and often more *mobile*. Wireless solutions allow you to control costs by reducing time and resources spent on paging employees, interrupting work to find a phone, rushing to answer calls, or being tethered to the desk waiting for an important call. Reliable wireless tools remove the fear of losing customers who could not wait to reach you directly.

Lucent Technologies is a major provider of wireless solutions for business. Lucent's FreeWorks™ Solutions offer a range of options from single-zone to multi-zone cellular business systems that greatly enhance the flexibility of wireless telephones.

⇒ NOTE:

Some features and solutions are unavailable in some countries. Please contact your local account manager or authorized Lucent Technologies representative for further information about which features and solutions are available to you.

Single-Zone mobility solution

The TransTalk 9030P (Figure 13) is a multiline, single-zone solution using the 900 MHz wireless technology. This allows you to roam up to 700 feet (230 meters) from the base station. It effectively covers up to 500,000 square feet (150,000 square meters) in most business environments. The hybrid line circuit pack (TN762B) provides the service for the TransTalk telephones.

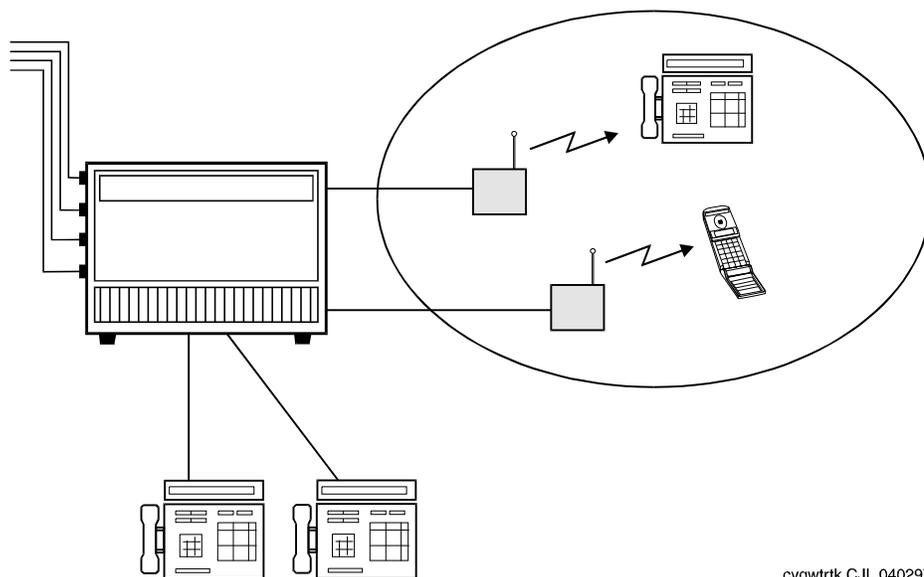


Figure 13. TransTalk 9030P

TransTalk 9030P is available in two configurations:

- Complete system, consisting of a carrier that holds up to six radio modules, MDW 9030P wireless telephones, and corresponding charging cradles, radio modules, and holsters.
- Stand-alone, consisting of a single radio module, MDW 9030P wireless telephone, charging cradle, and holster.

The 9030P telephones have the following features:

- Clear voice quality
- Consistent privacy and secure operation
- Intercom, conference, and transfer
- 12-line capacity
- 12 programmable buttons

- 18 handsets per zone
- Automatic registration
- Trouble lights
- Extended battery life
- Battery pack and optional battery backup
- Battery charger (2 1/2 hours)
- Dynamic power adjustment
- Mute button
- Mobility range test capabilities.

Multi-Zone mobility solutions

Lucent Technologies offers two robust systems that will keep you in touch with customers, coworkers, and suppliers wherever you go in your office complex—desk-to-desk, office-to-office, or office-to-warehouse. In both systems, overlapping zones allow you to move about freely without changing phones (Figure 14). The phone connection is “handed off” from one transmitter to another as necessary (within the influence of a single radio controller).

⇒ NOTE:

Some features and solutions are unavailable in some countries. Multi-Zone offers are not available in the U.S. at this time. Please contact your local account manager or authorized Lucent Technologies representative for further information about which features and solutions are available to you.

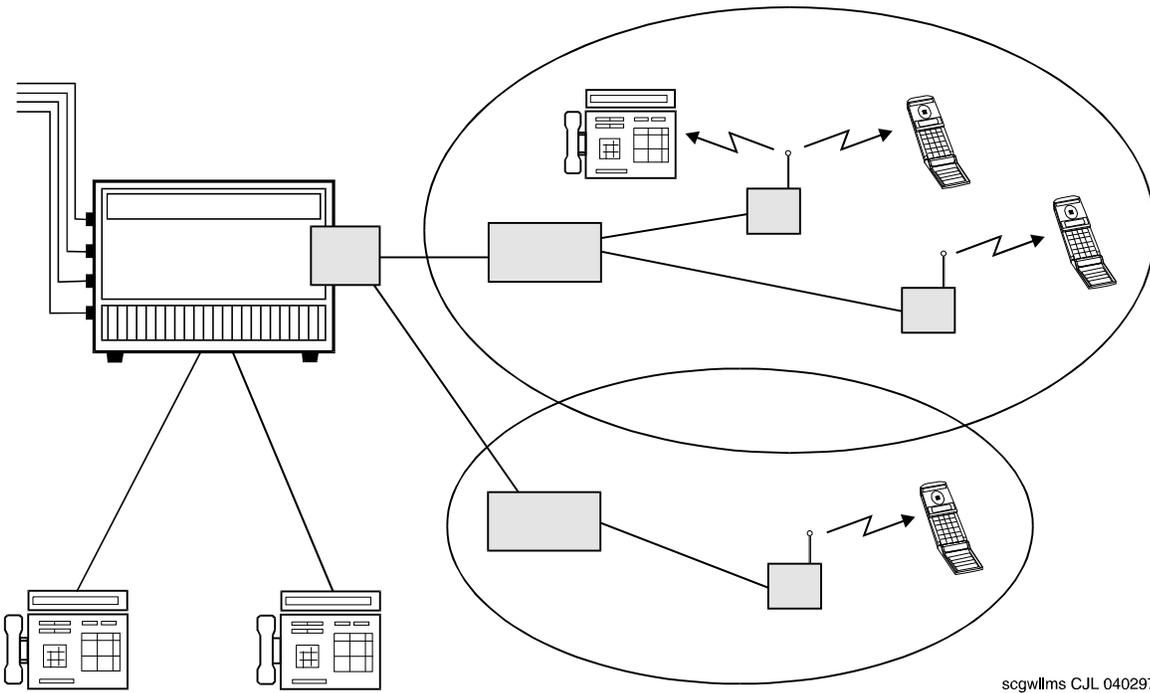


Figure 14. Multi-Zone mobility solutions

The DEFINITY Wireless Business System (DECT Release 1) and the DEFINITY Wireless PCM are similar in many respects. They both connect to the DEFINITY BCS as adjunct devices, thus providing flexibility in setting up applications. They also use an international industry standard that is more common in some parts of the world. These offers are not available in the United States.

Both systems feature Lucent's Wireless System Engineering Expert Design System. This patented software, which is unique in the wireless industry, analyzes the building or campus space and determines how the wireless system should be configured. It precisely locates base stations within the structure or structures. The software effectively eliminates the most difficult aspect of wireless implementation and ensures maximum efficiency and lower life cycle costs.

DEFINITY wireless business system (DECT Release 1)

The DEFINITY Wireless Business System uses the latest Digital Enhanced Cordless Telecommunications (DECT Release 1) technology — the leading European standard adopted in over 40 countries worldwide. It operates in the allocated 1880-1900 MHz spectrum. Since this is an unlicensed frequency range, there is no charge for air time when operating in this band.

The DEFINITY Pocketphone C9110 is used with this system. The phones have superb voice quality, alphanumeric display, and can access most every DEFINITY feature in a small, lightweight handset. The battery has 7 hours of talk time, with 72 hours of standby power.

The DEFINITY Wireless Business System has the following features:

- Telephone communications with on-site mobility
- No air time charges
- Multi-zone seamless handover between calls
- Up to 24 cells
- Secure encrypted speech
- Up to 360 users
- 60 base stations
- 7,000 to 40,000 calls per busy hour (depending on the system configuration)
- 4 million square foot (1.2 million square meter) coverage area.

DEFINITY wireless PCM

The DEFINITY Wireless PCM is a multi-zone mobility solution for medium to large enterprises. The system uses Cordless Telephone Generation 2 (CT2) technology, which is a global standard for wireless telephone service. This standard defines the radio interface between the personal communicators and the base stations in the system. This system can also be configured to operate between and inside multiple buildings of an office campus.

The DEFINITY Personal Communicator 2055 is used with this system. The 2055 has superb voice quality, supports two lines, and can access many DEFINITY features in a small, lightweight handset. The battery has 4 hours of talk time, with 37 hours of standby power.

The DEFINITY Wireless PCM System Manager provides superior system administration and mobility management capabilities. The DEFINITY Wireless PCM has the following features:

- Telephone communications with on-site mobility
- No air time charges
- Multi-zone seamless handover between calls
- Secure encrypted speech
- 500 wireless telephones
- 126 base stations
- Up to 252 simultaneous conversations
- 6 PRI interfaces
- 1 Sun workstation
- Up to 3,000 calls per busy hour (depending on the system configuration)
- 12 million square foot (3.5 million square meter) coverage area.

Computer-Telephone Integration Solutions

5

Chapter overview

Telecommunications and information systems are the fundamental building blocks of most businesses. Whether a sale is being made, a question being answered, or an order being placed, the telephone is the primary communications medium. And the information to make the sale, answer the question, or fulfill the order is stored in the computer.

If these two building blocks are closely integrated, your business will realize benefits that will redefine your standards for success and customer satisfaction. The DEFINITY BCS integrates data processing, data communications, and voice communications.

The following products work with the DEFINITY BCS to unite your computer and telephone in powerful ways:

- DEFINITY PC Console
- PassageWay Direct Connect.

⇒ NOTE:

Some features and solutions are unavailable in some countries. Please contact your local account manager or authorized Lucent Technologies representative for further information about which features and solutions are available to you.

DEFINITY PC console

Lucent Technologies' DEFINITY PC Console allows your call attendants to handle incoming calls efficiently by personal computer. Using the familiar Microsoft* Windows* graphical interface, the attendants can easily keep track of how long callers have been on hold and who they are waiting for. Attendants can monitor up to six calls at once. They need not fumble with pen and paper when handling calls, as they can make notes on their computers about what each caller needs. All this contributes to make a favorable first impression with your customers. Having the call processing software on the same computer with spreadsheet, word processing, or other software allows the attendants to stay productive between calls.

Your company directory is displayed on screen with busy extensions shaded. A variety of search functions are available, so attendants can find names and extensions easily. On-line photo identification allows attendants to quickly identify employees. Calls are transferred with the press of a button. On-line help makes it easy for attendants to remind themselves how to use the PC Console.

The PC Console is easily customized, so even if attendants from different shifts share the same computer, they can each preserve their preferences in the call processing environment. The PC Console is available in English, Dutch, Spanish, French, German, and Portuguese. It will be available in Italian in the fall of 1997. The system also accommodates any language that uses the Roman alphabet and ASCII 128 character set. For example, if a Spanish-speaking attendant takes over for a French-speaking attendant, a single press of a button converts all labels, error messages and online help to Spanish.

*. Registered trademark of Microsoft Corporation.

PassageWay

Lucent Technologies' PassageWay products bring the telephone and the personal computer together into an integrated voice and data workstation that can greatly enhance communications. With PassageWay, you can efficiently process calls while accessing powerful voice and data features. It also permits you to connect to a variety of host computers and other PCs through the networking strengths of the DEFINITY BCS. PassageWay provides error-free data transfer between your personal computers and other shared resources. You can even create your own applications to take advantage of the PassageWay connection.

PassageWay direct connection

PassageWay Direct Connection links your company's desktop personal computers with an easy-to-use Microsoft Windows interface to give you greater business communications capabilities than either the telephone or the personal computer offer alone.

PassageWay Direct Connection provides valuable computer-telephone integration benefits, plus it is a platform bridge to a wealth of other computer-telephone integration applications. Open Application Programming Interface support and Windows Dynamic Data Exchange support allows independent software vendors or internal software developers to create new computer telephone integration applications or to enable existing applications to be interfaced to the telephone. These independent software vendors' products utilize the PassageWay platform to expand the power and flexibility of computer telephone integration at the desktop.

The PassageWay Direct Connection software applications are for the individual desktop personal computer. However, using the Application Programming Interface, Dynamic Data Exchange, or independent software vendors' products, PassageWay Direct Connection can be linked to your Local Area Network.

PassageWay Direct Connection is well suited for those users who are constantly conducting business using both the desktop Windows personal computer and a telephone, and want to boost their productivity and efficiency.

Here is a list of the computer telephone integration software applications included with each PassageWay Direct Connection product:

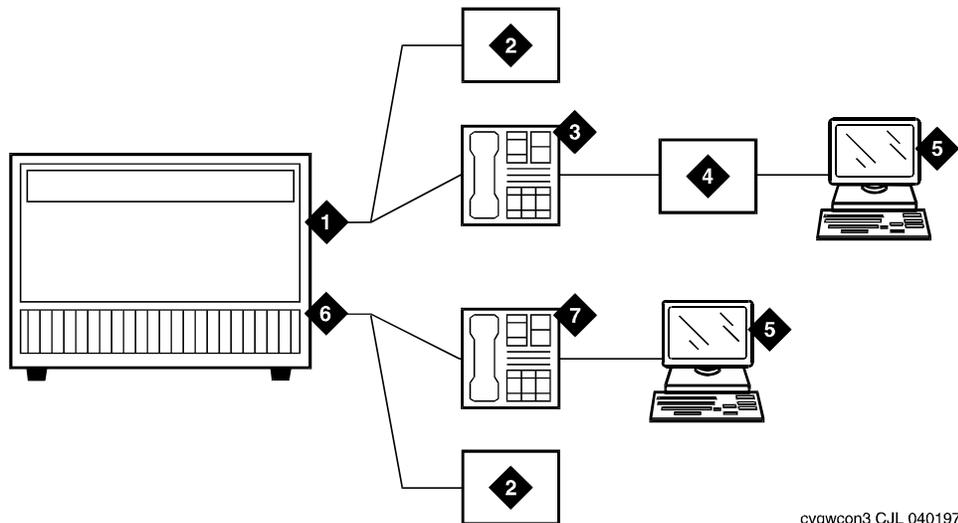
- Lucent Technologies Call is a software card-file database that allows a customer's record to be previewed, the appropriate telephone number to be autodialed and notes to be taken quickly all with a few mouse clicks.
- Lucent Technologies Buzz instantly retrieves and displays the Lucent Technologies Call record associated with an incoming call based on the Calling Party's Telephone Display Information (Automatic Number Identification, Call Prompting, Conversant). Lucent Technologies Buzz also allows users to answer incoming calls from their personal computer with a single mouse click.
- Log Viewer automatically maintains a record of every call either made from Lucent Technologies Call or received from Lucent Technologies Buzz.

Passageway Direct Connection supports those international companies who need A-law support and/or 8400-series telephones, which allow both two-wire and four-wire connections.

The following requirements must be met for PassageWay Direct Connection to function properly:

- An IBM Compatible personal computer with the following:
 - 386 or higher microprocessor
 - Two megabytes of RAM (4 MB recommended)
 - Two megabytes of hard disk space
 - 3.5" or 5/25" disk drive
 - An available serial port
 - Mouse or trackball
 - VGA (or higher resolution) monitor.
- Microsoft Windows 3.1 or higher (in standard or enhanced mode) or Windows for Work Groups 3.11 or higher
- A DEFINITY BCS and one of the following telephones:
 - 6400-series telephone
 - 7400-series telephone
 - 8400-series telephone
 - Callmaster 4-wire DCP telephone (with adjunct power)
 - 9400-series telephone (not available in the United States).
- Local adjunct power (or closet power) for the PassageWay Direct Connection device

The 8411D 2-wire DCP telephone can integrate PassageWay within the telephone itself. Figure 15 shows two typical PassageWay configurations.



cygwcon3 CJL 040197

- | | |
|--------------------------|--|
| 1) 2- or 4-wire DCP Port | 5) Personal Computer |
| 2) Auxiliary Power | 6) 2-wire DCP Port |
| 3) DCP Telephone | 7) 8411 DCP Telephone w/
PassageWay |
| 4) Passageway | |

Figure 15. PassageWay direct connect configurations

PassageWay FastCall for direct connection

PassageWay Fast Calling Feature for Direct Connection is a Windows-based application which was developed by Aurora Systems for a variety of Lucent Technologies computer telephone integration platforms including PassageWay Direct Connection, PassageWay Telephony Services, and PC/Switch. The Fast Calling Feature delivers multiple computer telephone integration capabilities for measured hunt group users and other computer users in your company. These capabilities include:

- Instant account information on screen (based on Calling/Called Party and/or Caller Input Identification)
- Coordinated Voice and Data Transfer
- Outbound Preview Dialing
- Inbound Call Handling Rules (user-defined call coverage)

- Personal computer-based telephony (activation of Conference, Transfer, Drop, and Hold from the personal computer).

The Fast Calling Feature resides between PassageWay and any Windows-based application on your Local Area Network, desktop personal computer, or mainframe. This approach allows existing applications to be simply and quickly “telephony enabled” without the need for low-level software development. The Fast Calling Feature takes advantage of simple keyboard recorded scripts and macros.

The primary users of the Fast Calling Feature would be employees who use a personal computer in their work. If these users want to automate their existing Windows application to perform one of the five tasks listed above, Fast Calling can enable them to do just that.

Chapter overview

The GuestWorks *server* (the hospitality offer of the DEFINITY BCS) offers an array of features that enhance guest services and keep guests happy. You can thus enjoy robust hospitality functions on a state-of-the-art communications system.

For example, the GuestWorks *server* can provide:

- Automatic wakeup for guest rooms. Assisted by voice prompts, guests can request their own wakeup call. The wakeup call can be as simple as silence, or as elaborate as a custom sales message in the native language of the guest, tailored to the time of day and day of the week.
- Auto Wake-Up via confirmation tones allows a user to enter the wake-up call using the telephone dial pad.
- Dual Wake-up allows two wakeup times to be entered.
- PMS Insert/Delete digit streamlines dialing within a hotel that has multiple extensions sharing an extra leading digit in front of the room number.
- A check-in and check-out button on the attendant console. When a guest is checked in, the desk clerk presses the check-in button; the server prompts for an extension number, marks the room as occupied, and turns the telephone on. At check-out, the reverse happens.
- Feature access codes to signify certain conditions. For example, maids can use the telephones in the rooms to change the room status from “dirty” to “clean and ready for occupancy.”
- A Do Not Disturb feature that turns off ringing in a room, except for designated priority calls and automatic wakeup calls.
- Guest voice messaging, which unburdens attendants and provides guests with an important convenience.
- Controlled Toll Restriction, which allows you to restrict some telephones from making toll calls. In this way hotels can provide free local calls, while still restricting toll calls.

For more information about the GuestWorks features, see the Hospitality section of *DEFINITY ECS Administration and Feature Description, 555-230-522, Issue 3*.

⇒ NOTE:

Some features and solutions are unavailable in some countries. Please contact your local account manager or authorized Lucent Technologies representative for further information about which features and solutions are available to you.

Lodging establishments often use the following systems together:

- GuestWorks *server*
- A property management system
- Lucent INTUITY Lodging Voice Messaging
- Lucent INTUITY Lodging Call Accounting.

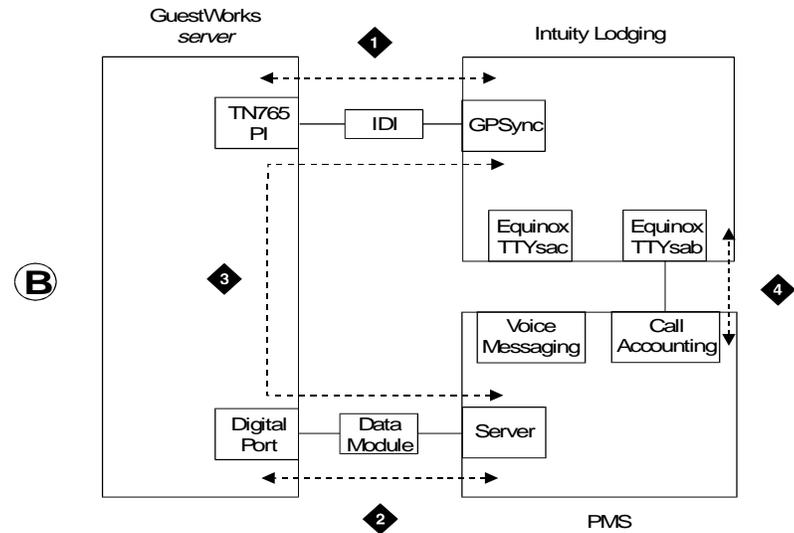
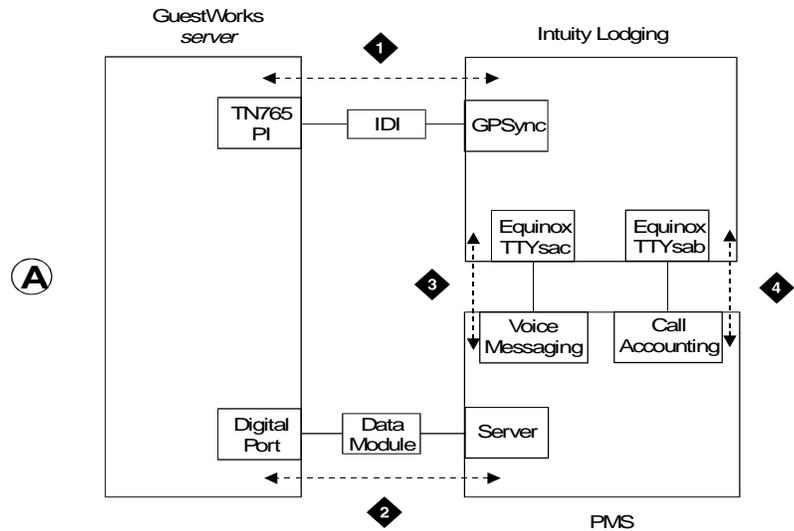
Property management systems are used for making guest reservations, checking guests in and out, printing guest bills, and other accounting functions. Lucent INTUITY Lodging provides a variety of voice messaging and FAX functions for guests and administrative staff, and includes flexible administration capabilities that simplify moves and changes. The Lucent INTUITY Lodging Call Accounting system takes call records from the server and applies cost structures used for billing guests.

As the centerpiece of the hospitality communications network, the GuestWorks *server* continues to refine its integrating capabilities. For example, recent message tandeming enhancements make it unnecessary for the Lucent INTUITY Lodging voice messaging and the property management system to be directly connected to support the voice messaging application (See Figure 16). With this integrated link, guest room updates for voice messaging are “tandemed” through the GuestWorks server between the Lucent INTUITY Lodging voice messaging system and the property management system. These systems are constantly exchanging and updating information to provide a seamless integration between the systems.

⇒ NOTE:

This integration feature does not affect the link between the Lucent INTUITY Lodging Call Accounting and the property management system. This link must remain intact so that the call accounting information is exchanged between the Lucent INTUITY and the property management system.

The general advantages of using the DEFINITY BCS in the Hospitality industry are presented in Chapter 2, "Industry Applications". The following sections provide a closer look at Lucent INTUITY Lodging, the GuestWorks *server*, and the system's communications with property management systems.



- | | |
|---|---|
| A) Without Link Integration | B) With Link Integration |
| 1) Server-to-INTUITY Lodging Link (administrative voice messaging link) | 2) Server-to-PMS Link (control messages link) |
| 3) INTUITY Lodging-to-PMS Link (mailbox control link) | 4) INTUITY Lodging Call Accounting-to-PMS Link (call accounting records link) |

Figure 16. Server/INTUITY/PMS link integration

Hospitality enhancements

Recent enhancements to the GuestWorks *server* provide additional hospitality features. The primary enhancements are the following:

- Server/INTUITY/PMS Link Integration
- Attendant Backup
- Attendant Crisis Alert
- Dial by Name
- Dual Wakeup
- Wakeup Activation via Tones.

Server/INTUITY/PMS link integration

The GuestWorks *server* can tandem messages between the property management system and Lucent INTUITY Lodging voice messaging so the systems need not be connected to each other. The following property management system messages are tandemed through the GuestWorks *server*:

- Check-In
- Check-Out
- Room Data Image (Database Synchronization)
- Modify (Guest Information)
- Add/Remove Text/FAX Notification Message (Message Waiting)
- Transfer/Merge Mailbox (Room Change/Swap).

⇒ NOTE:

This integration feature does not affect the link between the Lucent INTUITY Lodging Call Accounting and the property management system. This link must remain intact so that the call accounting information is exchanged between the Lucent INTUITY and the property management system.

Attendant Backup

The Attendant Backup feature allows you to access most attendant console features from one or more specially-administered backup telephones. This allows you to answer calls more promptly, thus providing better service to your guests and prospective clients.

When the attendant console is busy, you can answer overflow calls from the backup telephones by pressing a button or dialing a feature access code. You can then process the calls as if you are at the attendant console. The recommended backup telephones are the Lucent Technologies Models: 6408, 6426, 8410, 8434.

Attendant Crisis Alert

The Attendant Crisis Alert feature provides a visual, audible, and printed record when guests or staff place a call to the local emergency service agency. This gives hotel personnel the ability to assist emergency personnel when they arrive at the hotel by identifying where the call came from and when the call was made. This feature uses the Automatic Route Selection feature to allow routing of any emergency service access code to the appropriate emergency service agency, while also identifying the call for crisis alerting.

After the emergency call is placed and successfully routed to the local emergency service agency, the attendant console is notified immediately by a special emergency alerting tone and a special emergency display (the emergency call itself cannot be answered at the attendant console, but the call information is displayed). The attendant can then note the room number and contact the appropriate personnel at the hotel to assist with the emergency.

Communication with a property management system

The GuestWorks *server* exchanges guest status information (room number, call coverage path, and other data) with the property management system. There are two ways that the guest data can be encoded:

- Using a combination of Binary Coded Decimal encoding and the ASCII character set
- Using only the ASCII character set.

The GuestWorks *server* can now use the ASCII message set in addition to the mixed BCD/ASCII message set. In this way, the GuestWorks *server* is compatible with a wide range of property management systems: established systems that use a combination message set, and new systems that exclusively use the ASCII message set.

Dial by Name

The Dial by Name feature allows callers to the GuestWorks *server* to access guest rooms simply by dialing the name of the guest they are trying to contact. This feature uses recorded announcements and the Call Vectoring feature to set up an automatic attendant procedure. This automatic attendant procedure gives callers the ability to enter a guest's last name and the call is redirected to the guest's telephone.

Dual Wakeup

As an enhancement to the Automatic Wakeup feature, guests can now request two different wakeup calls within one 24-hour period. This can be done either by the guest from the guest's room or by front desk personnel. If the system has a speech synthesizer circuit pack, guests cannot create two different wakeup calls; the two wakeup calls must be done from the attendant console or backup console.

Wakeup Activation via Confirmation Tones

If a speech synthesizer circuit pack is not installed, guests can still enter their own wakeup calls (two if the Dual Wakeup feature is active). The guests do not receive voice prompts as they would using the speech synthesizer circuit pack; guests will receive call progress tones (recall dial tone and confirmation tone) to set up their wakeup calls.

INTUITY Lodging

Lucent Technologies INTUITY Lodging is a messaging system designed especially for lodging establishments such as hotels or other lodging providers such as hospitals or colleges. The system supplies guests with electronic mailboxes that store voice or FAX messages. INTUITY Lodging serves as a private answering machine for each extension.

Users are greeted with spoken prompts that guide them in pressing keypad buttons to make choices. Because touch tones are not needed to leave a message for a guest, outside callers may use rotary phones.

Hotel guests can leave messages for each other without going through the attendant. For incoming calls, an attendant transfers the call to the appropriate room. If the guest does not answer the call or if the line is busy, the call is automatically transferred to the guest's voice mailbox, where the caller can leave a voice message.

A message-waiting indicator on the guest's phone notifies the guest that the voice mailbox contains messages. Guests are assigned a password for accessing messages remotely. They can retrieve and save messages from any telephone, on or off premises.

Calls are transferred to an attendant when any caller:

- Presses at any time (for assistance)
- Leaves a maximum-length message
- Stays on the line after leaving a message
- Is silent when prompted to leave a message.

FAX messaging

With the FAX Messaging option, the caller can leave a FAX by simply pressing a key when prompted and starting the FAX transmission. The FAX is stored until the guest, instructed by the system's voice prompts, does one of the following:

- Sends it to the Guest Services FAX machine
- Prints it on an in-room FAX machine
- Retrieves it into a portable computer
- Forwards it to another location.

FAXes can also be stored in the administrator's mailbox for later delivery to a guest. This occurs when someone sends a FAX to the hotel, but not directly to a guest's mailbox. The administrator can either print the FAX or send it to the guest's mailbox. Guests or administrators can also send FAXes to multiple locations simultaneously.

Language options

Guests can hear voice mail prompts and menus in one of several languages. The current set of available languages include the following:

- American English
- Brazilian Portuguese
- British English
- Canadian French
- German
- Greek
- Japanese
- Latin American Spanish
- Mandarin
- Parisian French



NOTE:

Contact your Lucent Technologies representative for more information about language support.

Any of these languages may be installed and used at the same time. The attendant enters the guest's desired language at check-in time. The guests will hear menus and prompts in their chosen languages after logging in to retrieve messages. Contact your account representative for language options.

Call accounting

Call Accounting takes call records supplied by the server, puts the records into a standard bill format, and sends the billing information to the property management system. When guests check out, their long distance calling charges are printed automatically on their bill. This gives you better control over telephone usage revenue.

Additional features

INTUITY Lodging includes many features similar to those of DEFINITY AUDIX and Lucent INTUITY AUDIX. (For more information, see Chapter 9, "Voice Messaging Solutions.") Guests may record their own personal greetings, for example, and administrators can send broadcast messages to many recipients simultaneously. Mailing lists can be created for specific groups staying at a hotel (for example, a convention) so that special messages can be sent to only that group of guests.

When guests change rooms, their voice mailboxes can move with them. Attendants can change room A with room B, transfer room A to room B, or merge room

A with room B so messages are not missed. Passwords and backup features protect privacy and ensure that information is not lost.

System administrators have many options for controlling the operation of Lucent INTUITY Lodging. For example, they can:

- Set FAX options
- Customize the voice prompts
- Designate call coverage paths
- Define conditions under which callers are automatically sent to an attendant.

Chapter overview

The DEFINITY Business Communications System is designed for fast, efficient, and reliable movement and management of data. All information transmitted through the digital system is carried in a digital format. Analog signals — both voice and data — are converted to digital form before being switched. Analog data compatible with data modules and FAX machines can be transmitted through the system at speeds up to 28.8 Kbps. Digital data can be transmitted at speeds up to 64 Kbps per channel.

Data communications capabilities

Whether your data environment is asynchronous, synchronous, or a combination of both, the system's data-switching capabilities can greatly enhance your company's data communications. Using the DEFINITY BCS to switch your company's data has many possible benefits:

- It can greatly reduce the number of terminals and amount of cabling required.
- It enables employees to gain needed access to host computers, applications, and databases.
- It provides connectivity between different data environments that your company may have — asynchronous, synchronous, and personal computer environments.
- Voice and data are integrated and transmitted over the same wires; employees can exchange data and discuss it over the phone at the same time.
- Your data communications system will benefit from many of the system's capabilities. For example, voice features such as Abbreviated Dialing, Queuing, and Automatic Route Selection can also be applied to data communications. The system's networking strengths can expand data connectivity to wider areas. And the system's management capabilities can monitor and control your data communications.

The DEFINITY BCS can be used in a variety of data applications. The applications listed below are just a few examples of the many ways in which you can use the system to improve your data communications:

- Switched asynchronous host-computer access
- Switched synchronous host-computer access
- Personal computer networking
- Switched video conferencing
- FAX networking.

See your local distributor for information on how you can make the system's data communications capabilities work for you.

⇒ NOTE:

Some features and solutions are unavailable in some countries. Please contact your local account manager or authorized Lucent Technologies representative for further information about which features and solutions are available to you.

Data management features

The DEFINITY BCS offers a number of data management features to help control your data environment and allow users quick and convenient access to data. Appendix A, "Features" contains a list of these data management features. The following list introduces a few of these features:

- Administered Connections automatically establish an end-to-end connection between two data endpoints. An administered connection can be either permanent or scheduled. The feature supports Auto Restoration (preserving the active session) for connections routed over Software-Defined Data Network trunks and an administrable retry interval (from 1 to 60 minutes) to reestablish a connection. The resulting benefits are increased reliability of your data networks and improved disaster recovery.
- Alphanumeric Dialing enhances computer dialing by allowing you to place a data call by entering an alphanumeric name, making dialing both convenient and user-friendly. When an alphanumeric name is entered from your terminal, the system converts the name to a sequence of digits by searching through an administered alphanumeric dialing table. The system then dials those digits just as if you had entered the digits.
- Default Dialing enhances computer dialing by allowing you to place a data call to a preadministered destination by simply entering a carriage return at the "DIAL:" prompt. This gives you a simple method of dialing that number.
- Data Call Setup enables you to set up data calls (at any of the industry-standard rates) using a telephone or a computer keyboard.

- Data Hotline enables you to administer a data module so that when the module goes off-hook the data call is immediately placed to the preassigned number. This feature may also be used to restrict a data module to the assigned number only.
- Data Protection prevents disruption of data transmissions by the system's other features or tones. Both the originating and terminating ends of the call are protected.
- Data Communications Access allows you to communicate with a computer via analog trunks.
- Host-Computer Access allows data endpoints with data modules to access a computer directly.

Digital interfaces

The DEFINITY BCS offers powerful digital interfaces for voice, data, and integrated voice/data transmission. Digital Communications Protocol, a key part of the system's digital architecture, provides integrated voice and data communications between terminals and the system.

The system supports a wide variety of bit-oriented signaling formats on Digital Signal Level 1 (1.544-Mbps) facilities, compatible with local CO services, nodal network services (such as AT&T MEGACOM* services), and services conforming to European Conference of Postal and Telecommunications standards in the international marketplace.

The system also implements both standard ISDN interfaces: ISDN Consultative Committee for International Telephone and Telegraph Primary Rate Interface and Basic Rate Interface. With both interfaces, the system delivers the advantages of full end-to-end ISDN connectivity to every desktop.

*. Registered trademark of AT&T.

Digital communications protocol

Digital Communications Protocol (DCP), similar to ISDN-Basic Rate Interface, has been the architectural foundation for both Lucent Technologies digital systems and has for many years provided advanced ISDN-like functions to Lucent Technologies systems by integrating voice and high-speed data. DCP continues to serve as a key digital interface for the system.

Like ISDN-Basic Rate Interface, DCP defines the communications interface between a terminal and the system. It consists of two 64-kbps information (or bearer) channels and a separate 8-kbps channel for signaling and control information (or data channel). Out-of-band signaling via the data channel allows the information channels to be used for clear-channel transmission.

DCP's framing structure allows voice, data, and signaling information to be transmitted with low overhead and be virtually free of errors. DCP transmits at a rate of 8,000 frames per second or 160 kbps. DCP allows data and digitized voice to be multiplexed on two twisted pairs, terminating in a standard telephone jack.

The 8411D DCP telephone is of special interest for data management. The 8411D uses DCP to provide the full capabilities of digital voice and data, but also provides an analog port for data connectivity. This is important for the business person who uses laptop computers with analog modems. The user can connect their laptop to the 8411D for data, and use the telephone for simultaneous voice calls, all through a single pair of wires.

ISDN-PRI

ISDN-PRI delivers ISDN service to the system for high-speed connectivity to the public switched telephone network and to other systems in a private or public network. It can also be used to connect to host computers that support the interface. PRI provides 24 64-kbps channels arranged in the North American ISDN standard of 23B plus D. That is, the 24 channels are divided into 23 bearer (B) channels at 64 kbps for information transmission and one signaling (D) channel at 64 kbps for control and signaling. Outside the United States, the system supports ISDN-PRI using the international E1 format, which provides 30B plus D.

The system offers applications that use the ISDN-PRI. See the Network Solutions section for information on these applications.

World-Class Basic Rate Interface (BRI)

World-Class BRI provides an international BRI platform that offers multiple protocol options to meet specific country and application requirements. It provides access to Video Conferencing, Desktop Video Conferencing, Data Transmission, and other nonvoice-based applications that use BRI as a communication interface. Voice access is not supported though voice features are not blocked for World Class BRI terminals.

World class BRI devices must be administered as the new type "wcbri." You select a country protocol for each terminal that will use the feature. This selection determines both the code set modifications required to meet the national standards as well as the terminal initialization procedures if required.

World class BRI supports the following country protocols:

- Bellcore National ISDN-1 protocol in the United States (TR268)
- National protocols in Australia (AUSTEL TS013, Telecom Australia TPH 1962), Japan (NTT BRI) and Singapore (FETEX 150 TIF 218)
- ETSI NET 3 protocol (ETS 300 102) for use in most of Europe.

World class BRI supports multipoint (up to two devices per port) only for the Bellcore National ISDN-1 Country Protocol option.

Data modules

Data modules connect the system with other communications equipment, changing protocol, connections, and timing as necessary.

The system supports the following types of data module:

- High Speed Links (7400C data module)
- 7000-series data modules
- 8400B Plus data module
- Asynchronous data unit
- Asynchronous data module (for ISDN-Basic Rate Interface telephones).

All of these data modules support industry standards and include options for setting the operating profile to match that of the data equipment. The data modules that are currently available with the system are described below.

High Speed Links (7400C)

The High Speed Link, the 7400C DCP-based data module, lets you transmit data through your system at faster speeds, allowing you to take advantage of emerging technologies such as video conferencing and Local Area Network bridging.

More and more companies are realizing that technologies and applications, such as Local Area Network-to-Local Area Network communication, video conferencing, file transfer, and Group 4 FAX transmissions are necessary to compete effectively in a global market. The High Speed Link offers you a cost-effective way to manage these applications.

Used when integrated voice and data is not required, the High Speed Link has an internally timed V.35 interface for synchronous data transmissions at 56 kbps (half and full duplex) and 64 kbps (full duplex) in both switched and permanent connections.

It offers access to low-cost, dial-up communications and provides a link to high-speed network services such as AT&T's ACCUNET Switched Digital Services and Software Defined Data Network Services. When accessing these network services, the High Speed Link can communicate with applications terminating on either a digital service unit or another High Speed Link.

Its numerous testing features make fault isolation easy. For example, the High Speed Link offers a variety of client-or network-initiated loop-back tests that increase reliability, such as the capability to isolate problems remotely.

There is an interface that can be configured as an RS-366 Automatic Calling Unit or an RS-232 asynchronous data interface that supports a limited AT command set for call control.

All options are software-definable and stored in nonvolatile memory. The reset options feature makes it easy to load default options. Designed to be easily upgraded, the High Speed Link has a memory cartridge interface for firmer upgrades to support new features.

The unit is externally powered, and it can be rack mounted with up to eight units and located up to 5000 feet from the system.

Other 7000-Series data modules

The 7000-series data modules are designed to give you simultaneous voice and data access in a single, low-cost data module. The single DCP connection means you will never miss a voice call when you are on a data call.

The 7400B Plus and 7400A dual-function data modules provide full-duplex, asynchronous connectivity for DCP applications. They emulate the industry-standard Hayes[†] modems and work with host-connection software packages that use the Hayes command set. Priced competitively with Hayes-compatible modems (that operate at 1200-2400 bps), the modules give you a choice of transmission speeds ranging from 300 bps to 19.2 kbps.

The 7400B Plus provides integrated, simultaneous, voice/data communications over twisted-pair wiring. It is easy to install and operate and plugs into any modu-

†. Registered trademark of Hayes Microcomputer, Inc.

lar DCP telephone outlet. It features two ports: a modular DCP port for a digital telephone and an RS-232 port for a personal computer or computer.

In desktop configuration, the 7400B Plus provides twisted-pair connectivity for personal computers and asynchronous computers at transmission speeds ranging from 300 bps to 19.2 kbps. It operates with all 7400-series digital telephones. On the trunk side of the system, the 7400B Plus can provide connectivity to asynchronous host computers at speeds as high as 19.2 kbps.

The 7500B data module gives you synchronous or asynchronous connectivity for ISDN-Basic Rate Interface applications such as video conferencing, FAX, and personal computers at speeds up to 64 kbps. The 7500B features three connections: one to the Basic Rate Interface line to the system, one to a 7500-series telephone, and one (RS-232) to the computer. The module may be used stand-alone or in conjunction with a 7500-series telephone.

8400B Plus data module

The 8400B Plus data module is a 2-wire version of the 7400B Plus data module described in the previous section. The 8400B Plus dual-function data module provides full-duplex, asynchronous connectivity for DCP applications. The 8400B Plus emulates the industry-standard Hayes modems and work with host-connection software packages that use the Hayes command set. Priced competitively with Hayes-compatible modems (that operate at 1200-2400 bps), the data modules give you a choice of transmission speeds ranging from 300 bps to 19.2 kbps.

Asynchronous data unit

The asynchronous data unit offers an economic alternative to data modules for connecting Electronic Industries Association RS-232 data endpoints to the system. The Asynchronous Data Unit extends the 50-foot limitation of an RS-232 interface cable up to 40,000 feet, depending on the data speed and wire gauge of the distribution system. For example, a 19.2-kbps data rate can be supported to 2,000 feet. This allows RS-232 devices (such as terminals, host computers, multiplexers, printers, and personal computers) to be located up to 40,000 feet apart for private network applications. The Asynchronous Data Unit handles standard data rates from 300 bps to 19.2 kbps and nonstandard asynchronous data rates below 1,800 bps. It provides asynchronous full-duplex operation.

The multiple asynchronous data unit is a circuit board that contains eight asynchronous data unit circuits housed in one unit. These are typically used in computer-room applications where several RS-232 connections are carried in a common cable from the host computer.

The Asynchronous Data Module is used in conjunction with the 7505, 7506, or 7507 ISDN-Basic Rate Interface telephone to support integrated voice and data. With the Asynchronous Data Module, computers or personal computers attached to the telephone can send and receive data through the system. The Asynchronous Data Module mounts in the base of a 7500-series ISDN-Basic Rate Interface telephone and provides asynchronous full-duplex operation at data rates up to 19.2 kbps.

Chapter overview

The DEFINITY BCS provides not only powerful voice and data capabilities, but connections to a variety of voice and data networks as well. Lucent Technologies has long been a leader in networking. The DEFINITY BCS continues to build on those established networking strengths to offer you network management features, network interfaces, a variety of private network configurations, and end-to-end ISDN capabilities. Lucent Technologies' leadership in developing and supporting open international networking standards is also apparent in the system's compatibility with the QSIG global standard.

⇒ NOTE:

Some features and solutions are unavailable in some countries. Please contact your local account manager or authorized Lucent Technologies representative for further information about which features and solutions are available to you.

QSIG global networking

Lucent Technologies is the first vendor to provide compatibility with the QSIG global networking protocol. This means you can connect the system with other systems throughout the world. QSIG Global Networking was developed to comply with the QSIG standards developed by the European Computer Manufacturer's Association and the International Standardization Organization. It supports the ISDN-Primary Rate Interface connection from system-to-system as long as both systems support the same protocol.

QSIG is the generic name for a family of signaling protocols. The Q-reference point or interface is the logical point where signaling is passed between two peer entities in a private network. QSIG signaling can provide feature transparency over a multi-site network.

The DEFINITY BCS supports the following QSIG features:

- Voice and data basic call setup
- Supplementary services
- Numbering plan information
- Number identification
- Name identification
- Call forwarding (call diversion)
- Call transfer
- Transit counter.

QSIG Name and Number Identification allows a switch to send and receive the calling number, calling name, connected number, and connected name. QSIG Name and Number Identification displays up to 15 characters for the calling and connected name and up to 15 digits for the calling and connected number across ISDN-PRI interfaces.

World Class Routing

The DEFINITY BCS has been designed to be a world-class system that meets the needs of all customers. One capability essential in meeting those needs is the ability to dial any location in the world, regardless of the dial plan used at that location. In recognition of this requirement, the DEFINITY BCS has been designed with World Class Routing.

World Class Routing is a powerful enhancement to the system's call-routing capabilities, linking several call-routing features to build a communications network capable of providing flexible call routing for any type of dialing plan while accommodating changes in both international and local dialing plans.

The following are key components of World Class Routing:

- Digit Conversion converts a dialed public network number into a private network number and vice versa. Dialed numbers matching entries in the digit conversion tables are treated and converted. Converted calls can be routed via the most optimum route, resulting in reduced network charges and appropriate use of the private network.
- Toll Analysis compares a dialed number to entries in the system's list. Based on the results, calls may be restricted from completion.

- Automatic Route Selection digit analysis compares a dialed public network number with entries in the system's tables, mapping the number to a selected public network routing pattern.
- Automatic Alternate Routing digit analysis compares a dialed private network number with entries in the system's tables, mapping the number to a selected private network routing pattern.

World Class Routing supports the Automatic Route Selection and Automatic Alternate Routing as separate features, but through generalized administration applicable to both features, provides both the same routing abilities. In addition, there are a number of capabilities that enhance the flexibility of routing in supporting your local and/or global calling requirements.

For example, 18-digit routing allows the system to determine call routing by analyzing up to 18 digits with no restriction on the grouping or format of the digits, eliminating any assumptions about the use of a particular dialing plan.

International Direct Distance Dialed calls generally consist of an international access code, a country code, and a national number. Both codes may vary in length. Support for International Direct Distance Dialed calls eliminates any restriction on the grouping and format of digits on Automatic Route Selection numbers. Call routing is determined by the digits and the length of the dialed number.

Multinational World Class Automatic Alternate Routing allows the Automatic Alternate Routing number (Electronic Tandem Network number) to be any number of digits in length.

Digit conversion can be used to reroute numbers, initially dialed to use Automatic Route Selection, to be converted to use Automatic Alternate Routing and vice versa. This utility can analyze a maximum of 18 digits. In this way, destinations in a customer's network can be called using the public network number. This feature can also be used to reroute certain Direct Distance Dialed destinations to specified alternate destinations (such as intercept, attendant, or another Direct Distance Dialed number).

Network management features

The DEFINITY BCS has a variety of features that enable you to manage your network resources effectively. Here are just a few examples of features that can be used to manage your network — Time-of-Day Routing, Automatic Route Selection, Automatic Alternate Routing, Subnetwork Trunking, Generalized Route Selection, Facility Restriction Level, Bearer-Capability Class, and Authorization Codes.

Time-of-Day Routing

Time-of-Day Routing allows you to select the most economical routing of Automatic Route Selection and Automatic Alternate Routing calls based on the time of day and the day of the week a call is made.

With Time-of-Day Routing, your company can take advantage of lower calling rates during specific times. If your company has locations in different time zones, you can maximize the use of your public or private network facilities by utilizing those in the location that has the lowest calling rates at the particular time a call is made. You can also use this feature to change the routing patterns when an office is closed and to eliminate unauthorized calls. You can set up eight separate time-of-day charts to control routing at different times of the day.

Automatic Route Selection

Automatic Route Selection routes public network calls on the most desirable (usually the most economical) trunking facilities available on your system when the call destinations are accessible through your public network.

The system supports up to 40 routing patterns. Each routing pattern consists of up to 16 routing preferences (types of facilities) set up in the order in which you want them checked when a call is placed. Typically, the least expensive facility will be first on the list; the most expensive will be last.

If Generalized Route Selection is not being used when a call is made, the system selects a routing pattern based on the digits dialed. The routing preferences in that pattern are checked in the order in which they were listed, and the first available facility is used to place the call. If no facility is available, the call can be queued until a facility becomes available.

Automatic Alternate Routing

Automatic Alternate Routing enables you to ensure that private network calls will be routed over the various trunking facilities available in your private network in the most effective manner possible. As with Automatic Route Selection, you set up various patterns for routing calls — in this case, with the private network. You can have up to 40 routing patterns. Each pattern includes a primary preference — the most preferred and direct route — and 15 alternate preferences. If the primary preference in a pattern is unavailable, the system searches the alternate preferences in the specified order until it finds one available.

Subnetwork Trunking

Subnetwork trunking is an Automatic Alternate Routing/Automatic Route Selection function that typically converts an on-network (private network) number to a public network number (based on patterns and preferences) for off-network routing. It can also convert a public network number to a private network number. Subnetwork trunking provides digit insertion, deletion, pauses, and/or wait for dial tone in digit outpulsing, as required, to permit calls to route to or through a remote system, over tie trunks to a private network system, or over central office trunks to the serving central office.

Generalized Route Selection

Generalized Route Selection gives you the capability to not only select the optimal call routing based on the dialed number, but also select the appropriate facility based on the type of call. Generalized Route Selection enhances Automatic Route Selection and Automatic Alternate Routing by incorporating additional parameters such as the type of call to be used in the decision of how a call is routed.

Different types of calls require the use of different types of facilities. For example, high-speed data calls must use digital facilities, whereas voice and voice-grade data calls can use either analog or digital facilities. The system uses Generalized Route Selection to differentiate between these and other types of calls and route them on the appropriate trunks. Based on the call types and available trunk facilities, voice and data calls may be routed over different trunk types or integrated on the same trunk group. The DEFINITY BCS also provides the capability to route calls based on the data format and the need for restricted or unrestricted facilities.

To select the appropriate trunking facility for a call, the system must know the type of call being made. To do this, each originating facility such as a telephone or data module has a bearer-capability class assigned. Some originating facilities, such as data modules, may have multiple bearer-capability classes. Each trunk group in the routing pattern is assigned a list of allowed bearer-capability classes. When a user makes a call, the system queries the originating facility for its bearer-capability class and then tries to route the call on a trunk group with a bearer-capability class that matches the bearer-capability class of the originating facility. If an exact match is not found, the system then tries to find a trunk group with a compatible bearer-capability class.

Since the system automatically chooses the right trunk based on the administration, the system's dial plan can be independent of the type of call being dialed. This makes life easier for your users who do not have to worry about dialing a different access number for different call types.

Facility Restriction Level

Facility Restriction Levels are used to limit user calling privileges for incoming and outgoing calls. The Facility Restriction Level determines if a call attempt is permitted and which routes can be used or denied in the routing process. Using the system management tools, eight Facility Restriction Levels can be assigned to telephones, computers, and trunk groups. The system does not require the Facility Restriction Level to be in ascending order when administered in the patterns or preferences through system management.

When a call is attempted, the system compares the Facility Restriction Level of the telephone with the Facility Restriction Level of the trunk routes available to complete the call. If the Facility Restriction Level of the telephone is equal to or higher than the Facility Restriction Level of trunks, the call is completed; if it is lower, the call is blocked on that preference and compared to the Facility Restriction Level of the next route available. If the call fails to match the Facility Restriction Level on the available preferences, the call may queue for the first available and compatible trunk group.

The system also provides a feature called Alternate Facility Restriction Levels that allows the attendant to temporarily change the Facility Restriction Levels on originating facilities to a different set of Facility Restriction Levels. It is used to grant users greater access to trunking facilities than is normally provided, such as when charges are lower during evening hours.

Bearer-Capability Class

Bearer-capability class uses information available in the system to match the calling requirements of a specific call with the best available resources to support that call. Bearer capability applies to all calls and support facilities, but is of primary significance for data calls. Each call has a bearer requirement — that is, a set or range of requirements needed to support that call. For data calls, these requirements include data rate, synchronization, and channel type.

Authorization Codes

Authorization codes are used on particular calls to temporarily raise a telephone's Facility Restriction Level. This is useful for those who make calls from telephones other than their own or from outside the network. If a call you dial is blocked because the telephone's Facility Restriction Level is too low, you can enter your authorization code. If the Facility Restriction Level associated with the authorization code is equal to or higher than the Facility Restriction Level of the trunk facilities required to place the call, the call is then completed. Up to 1,500 different authorization codes can be provided for your system at any one time. Using the system's management tools, you can assign authorization codes and change their associated Facility Restriction Level and network access permissions.

Network interfaces and equipment

The DEFINITY BCS supports a variety of interfaces to voice and data networks. Trunks supply links between the system, the public network, and other systems. Digital Signal Level 1 interfaces offer high-speed digital connectivity between systems.

Trunk group circuits

Trunks provide the communications links between systems, including central office switches and other premises switches. Trunks that perform the same function are grouped together and administered as trunk groups. Trunks interface with the system via port circuit packs. Trunk group circuit types include the following:

Local exchange trunks

Local exchange trunks connect the system to a central office. The following are some of the types available:

- Central office trunks which connect the system to the local central office for incoming and outgoing calls
- Foreign exchange trunks which connect the system to a central office other than the local one
- Wide Area Telecommunications Service trunks which allow you to place long-distance outgoing voice-grade calls to telephones in defined service areas; these are priced according to distance in the service area, length of the call, time of day, and the day of the week
- 800- and 888-service trunks which let your business pay the charges for inbound long-distance calls so that callers can reach you toll-free
- Direct Inward Dialing trunks which connect the system to the local central office for incoming calls dialed directly to stations without attendant assistance
- Digital Service 1 trunks which can be used to provide T1 or ISDN Primary Rate Interface service.

Tie trunks

Tie trunks carry communications between the systems in a private network. Several types of trunks can be used, depending on the type of private network you establish. Tie trunks use a variety of signaling types such as ear and mouth (E&M), A-law companding, Mu-law companding, Type 1, and Type 5.

Auxiliary trunks

Auxiliary trunks connect devices in auxiliary cabinets with the system. Some of the features that are supported with this type of trunk are recorded announcements, telephone dictation service, malicious call trace, and loudspeaker paging.

Digital interfaces

The system supports both E1 and Digital Signal Level 1 facilities. As industry standards around the world, E1 and Digital Signal Level 1 provide the latest alternative to analog trunking.

E1 interface

The system also supports E1 connections. T1/E1 access and conversion allows simultaneous connection to both T1 (1.544 Mbps) and E1 (2.048 Mbps) facilities (using separate circuit packs).

T1 interfaces

When planning your networking requirements, one of the options you should consider is multiplexing over Digital Services 1 (DS1) facilities. As the industry standard for interconnecting digital systems, DS1 is an economic alternative to analog trunking arrangements. Multiplexing up to 24 digitized voice/data communications paths onto a single T1 carrier or other high-speed digital facility (such as fibre or microwave) can reduce your network trunking and equipment costs.

Used to connect systems to the public network or to other systems in a private network, Digital Signal Level 1 also delivers high-speed, end-to-end digital connectivity. Voice and data calls are completed at transmission speeds of up to 64 kbps.

The DEFINITY BCS offers several options in supporting the Digital Signal Level 1 interface. The options include support for voice-grade Digital Signal Level 1 and alternate voice/data. The voice-grade Digital Signal Level 1 interface is a T1 D4 channel-bank-compatible interface that does the following:

- Uses in-band bit-robbed signaling to provide 24 voice-grade-only tie trunks consisting of 56-kbps channels for voice and voice-grade data transmission
- Interconnects the system with other systems with an external D4 channel bank or with other systems (analog or digital) having the appropriate interfaces
- Interconnects the system with central offices such as AT&T's 4ESS switch (where services such as MEGACOM and Software Defined Network can be accessed) and 5ESS[®]-2000 switches

- Interconnects the system with private networks by connection with DS1 facilities
- Can be used with the same Automatic Alternate Routing capabilities as normal analog E&M lead tie trunks.

Configuring your system with an alternate voice/data DS1 interface does the following:

- Uses out-of-band signaling in which signaling information is multiplexed onto one of the 64-kbps digital channels
- Permits end-to-end voice and digital data connections between systems
- Delivers 23 clear 64-kbps digital channels plus one signaling channel multiplexed onto a 1.544-Mbps Digital Signal Level 1 line with provisions for framing, maintenance, and signaling
- Delivers 8-kbps timing and slip information for synchronization subsystem
- Supports ground-start and loop-start switch-central office, foreign exchange, and Wide Area Telecommunications Service (inbound/outbound) trunks, as well as direct inward dial trunks, off-premise stations, and dedicated voice/data system connections.

To achieve even greater benefits than those just listed, you can combine the DS1 interfaces and ISDN-Primary Rate Interface to give you additional capabilities. ISDN-Primary Rate Interface is a DS1-compatible direct-connect access service that links the intelligence inherent in the network with the intelligence provided by your system.

For example, with ISDN-Primary Rate Interface, the Software Defined Data Network service may be accessed. Software Defined Data Network provides virtual private-line connectivity, via a switched network, for voice, data, and video applications. Software Defined Data Network services compliment the Software Defined Network voice services.

The DEFINITY BCS delivers Automatic Restoration capability with Software Defined Data Network, which restores disrupted connections between access endpoints (non-signaling trunk) and data endpoints (devices that connect the system to computers and data communications equipment). This restoration is achieved within seconds of a service disruption so that critical data applications can remain operational.

ISDN

The DEFINITY BCS provides a complete set of ISDN features. Demonstrating its role as a leader in making ISDN a universal reality, Lucent Technologies makes it possible for anyone connected to the system to benefit from ISDN capabilities and features.

ISDN eliminates the need for multiple, separate access arrangements for voice, data, facsimile, and video services and networks. Using the same pair of wires that now carry simple telephone calls, ISDN can deliver voice, data, and video services in digital format.

ISDN is a global access standard established by the Consultative Committee for International Telephone and Telegraph designed to help you move and manage information with unprecedented ease and productivity — anywhere in the world. ISDN uses a layered protocol that conforms to layers one, two, and three (physical, link, and network layers) of the seven-layer Open Systems Interconnect Reference Model of the International Standards Organization.

The system supports the two major interfaces specified in the ISDN standards — Primary Rate Interface and Basic Rate Interface.

- Primary Rate Interface is used for connecting premises equipment to the network, and acts as a powerful interface between intelligent equipment such as systems and computers.
- Basic Rate Interface is used for connecting telephones, computers, personal computers, and other desktop devices to higher-order equipment such as a system.

The DEFINITY BCS also supports an optional adjunct that converts ISDN Primary Rate Interface lines to a trunk-side ISDN Basic Rate Interface. A single Primary Rate Interface is converted to up to eight Basic Rate Interfaces plus a proprietary 2Mbps expansion interface. See your Lucent Technologies representative for more information about this adjunct.

Both Primary Rate Interface and Basic Rate Interface are based on the same common building blocks — the use of a common interface to a transmission path that is divided into channels. Both Primary Rate Interface and Basic Rate Interface use two types of channels for communication:

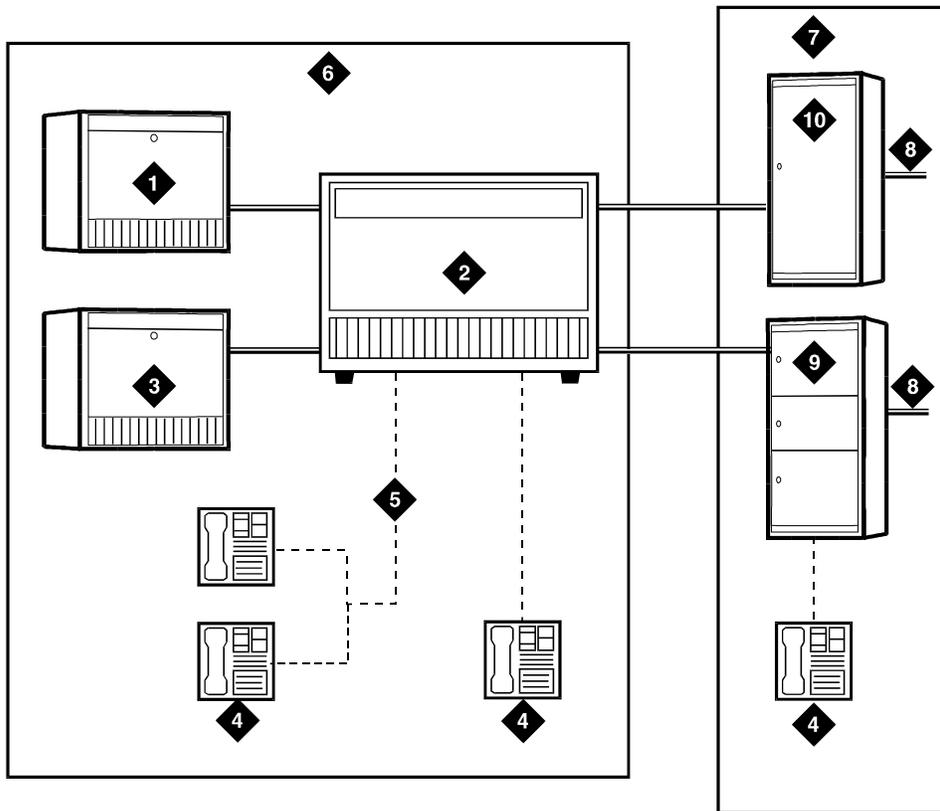
- Bearer channels are the communications links in ISDN. They provide 64-kbps digital communications service for voice, data, video, and other information transmission.
- Delta channels, sometimes known as data channels, are the signaling links in ISDN. They carry call-control and call-related information, such as caller ID, between ISDN endpoints.

Primary Rate Interface, referred to as 23B + D or 30B + D on an E1 interface, uses 23 or 30 64-kbps B channels and one 64-kbps D channel. The 23 or 30 B channels can be used for 23 or 30 individual voice or data calls. Basic Rate Interface, referred to as 2B + D, uses two 64-kbps B channels and one 16-kbps D channel. The B channels give the user simultaneous voice and data transmission over the same connection. This channel architecture allows full and complete use of the 64-kbps B channels from endpoint to endpoint for information movement managed by signaling messages, called Q.931 messages, in the D channel.

To help your business achieve maximum benefits from ISDN and the public network, the following features reside within the ISDN service nodes:

- Call-by-Call Service Selection lets you reach multiple services via the same ISDN B channel. Therefore, a channel can be allocated among MEGACOM Wide Area Telecommunications Service, MEGACOM 800/888 Service, and other services on a dynamic basis, eliminating the need for dedicating each truck or channel to a specific service.
- Automatic Number Identification, marketed as Information Forwarding-2 (INFO-2), is available on MEGACOM 800/888 Service. INFO-2 delivers the originating calling party's billing number to your system.
- Station Identification Number, similar to INFO-2, identifies the calling party number behind the system. Station Identification delivers the originating caller's telephone number to the network where it is sent to the terminating location.
- User-to-User Information sends user information from one endpoint to another using the D channel. Three forms are available: message associated data, sent within Q.931 call control messages during call establishment and call clearing; call-associated data, sent during call setup on a B channel; and noncall-associated data, sent with no related call-setup activity on the B channel. Applications for this feature include display of calling party name and number.

The DEFINITY BCS's support of ISDN-Primary Rate Interface, ISDN-Basic Rate Interface, and available public network services means that you can achieve full end-to-end ISDN connectivity and take advantage of ISDN services and features. For example, two systems connected by Primary Rate Interface can exchange calling party name and/or number information. The information is displayed on the called party's telephone. In addition, the called party's ID is also displayed at the calling party's telephone. This lets users identify the source of an incoming call before answering. Computer telephone integration interfaces can also use the information provided by the network to integrate your communications and data-processing systems.



- | | |
|-----------------------------------|--------------------------------|
| 1) DEFINITY BCS | 6) Private ISDN |
| 2) DEFINITY BCS | 7) Public ISDN |
| 3) DEFINITY BCS | 8) Public and Private Networks |
| 4) Basic Rate Interface Telephone | 9) Central Office Switch |
| 5) Passive Bus | 10) Tandem Switch |

Figure 17. DEFINITY BCS and ISDN

The DEFINITY BCS also adds the following capabilities to the basic ISDN services, depending on local availability of support.

- Call-by-Call Service Selection, in addition to the services provided by this feature on the network, allows each trunk in a Primary Rate Interface link from your system to the local central office to be designated on a per-call basis as Direct Inward Dial, incoming Wide Area Telecommunications Service, outgoing Wide Area Telecommunications Service, and so forth. This eliminates the need for dedicating each trunk or channel to a specific service, although they can still be dedicated, if desired.
- ISDN flow control monitors message activity on the Primary Rate Interface D channel.
- Non-Facility-Associated Signaling allows a Primary Rate Interface D channel to supply signaling for B channels (voice and data) located on Primary Rate Interface interfaces other than the one where the D channel is found. As a result, one D channel can support call control and signaling for up to 20 Primary Rate Interfaces.
- D Channel backup, when administered, improves reliability in the event of a signaling link failure on a Non-Facility-Associated Signaling D channel group. A primary D channel provides signaling for the Non-Facility-Associated Signaling D channel group (two or more Primary Rate Interface facilities). A second D channel, located on a separate Primary Rate Interface facility of the same Non-Facility-Associated Signaling D Channel group, is designated as a backup. If the primary D channel fails, call-control signaling automatically transfers to the backup D channel.

By combining public network services and ISDN features with the system's ISDN and other features, you can differentiate your business from your competitors', both in improved customer satisfaction and in greater operating efficiency. The result is improved profits and reduced costs. Here is a brief glance at a few of the possible ISDN applications:

- Dealer locator
- Sourcing
- Consumer-to-business and business-to-business data retrieval
- Logging for callback.

Electronic Tandem Network

If your company requires a medium to large network spanning a large geographic area, nationwide or even worldwide, Electronic Tandem Network is the answer. An Electronic Tandem Network is a wide-area private network that tandems calls through one or more systems to route the calls to their destinations.

An Electronic Tandem Network consists of tandem systems, inter-tandem tie trunks that interconnect them, access or bypass trunks from tandem systems to main systems, and the software and equipment to support call routing over the trunking facilities. Different Electronic Tandem Network locations are connected via analog or digital tie trunks. For example, a DS1 interface can act as a high-speed (1.544 Mbps) digital backbone for voice and data communications between Electronic Tandem Network locations.

An Electronic Tandem Network can be configured hierarchically. An Electronic Tandem Network can connect individual systems; it can also connect other private networks together.

Within an Electronic Tandem Network, each location is identified by a unique private network location code, similar to the public network office codes that exist within an area code. When accessing the Electronic Tandem Network, a user simply dials the network office code plus the desired extension number, for a total of seven digits.

In an Electronic Tandem Network, the system provides a variety of features on a network-wide basis. Here are a few examples:

- **Uniform Dial Plan** — A unique four- or five-digit number assigned to each station on the network. Uniform numbering gives each station a unique number (location code plus extension) that can be used at any location in the Electronic Tandem Network. To access that station, the system enhances the standard uniform dial play with the unrestricted five-digit uniform dial plan, which allows up to five digits to be parsed for call routing.
- **Automatic Alternate Conditional Routing** — A feature used to control the routing of particular calls using conditional routing. For example, you can limit the number of communications satellite hops (communications satellite links used as trunks) in any end-to-end private network routing pattern. Limiting the number of satellite hops may be desirable for controlling transmission quality or call delay in both voice and data calls.
- **Automatic Transmission Measurement System** — A feature used to perform routine and on-demand maintenance tests on facilities in the Electronic Tandem Network.
- **Enhanced Trunk Signaling and Error Recovery** — A feature that improves the reliability of Electronic Tandem Network calls by allowing a trunk call to be retried on another circuit when signaling failures occur.

Chapter overview

Less than 30 percent of person-to-person business calls reach the intended party on the first attempt. Integration with Lucent Technologies' voice-messaging products can help ensure that important calls are not lost.

For nearly a decade, Lucent Technologies' voice messaging systems have provided businesses with the voice processing tools to communicate more efficiently and make time spent on the job more productive. Whether companies have ten employees or hundreds, the dilemma of how to do more with less is driving them toward innovative multimedia processing solutions.

Within an organization, voice messaging, which is much more than just an answering machine, bypasses idle chatter to promote a communications mode that can be much more efficient than two-way calling. Lucent Technologies studies show that voice messages average 30 seconds whereas two-way calls run much longer and are devoted to business only 50 percent of the time.

The Lucent Technologies voice messaging solutions include the following:

- DEFINITY AUDIX (for non-hospitality offers)
- Lucent INTUITY AUDIX
- Lucent INTUITY Lodging (for hospitality offers).

⇒ NOTE:

Some features and solutions are unavailable in some countries. Please contact your local account manager or authorized Lucent Technologies representative for further information about which features and solutions are available to you.

DEFINITY AUDIX messaging system

While many voice messaging systems require separate equipment and connections, the DEFINITY AUDIX system easily installs directly into a DEFINITY BCS cabinet to support advanced multimedia messaging capabilities without the need for an adjunct processor.

The DEFINITY AUDIX system gives small- to medium-sized businesses full voice messaging performance in a streamlined, cost-effective package. The result is high-performance voice messaging no matter what your business size.

Each DEFINITY AUDIX system supports up to 2000 mailboxes and stores up to a maximum of 100 hours of recorded messages using a maximum of 16 ports (in two-port increments). With each DEFINITY AUDIX package, you also receive a complete set of end-user and product-support documentation.

The system includes such features as multiple personal greetings, full-functioned automated attendants, outcalling for message notification, and multiple language support. The DEFINITY AUDIX system includes both analog and proprietary digital networking software, which allows it to exchange voice messages, subscriber profiles, and message status information with other voice messaging systems.

By embedding the voice messaging system within the system, the DEFINITY AUDIX system provides the following advantages:

- Because it is integrated within the system, separate review and approval by government agencies for compliance with electrical requirements and other technical specifications often are not required.
- Connecting to the backplane provides direct access to interfaces such as time slots, signaling mechanisms, and power feeds.
- Bypassing analog ports and digital conversions provides a more efficient, higher quality call storage process.
- Using the same terminal with look-alike screens to administer both the system and the DEFINITY AUDIX allows faster training and better performance.
- You can use the system's maintenance strategy with DEFINITY AUDIX to allow remote maintenance by the same team that maintains the system.

The entire system is contained on circuit cards, occupying five consecutive slots in a carrier on the system. All the major components are economically mounted onto the multifunction circuit pack using the latest technology in large scale integration circuit chips and in surface mount fabrication. The components mounted on the circuit pack include the central processing unit, the small computer system interface unit that supports the tape drive and hard disk, the digital signal processor complexes that do speech processing, and the time slot interfaces for the system.

In addition, an alarm circuit pack monitors the system power and environmental conditions, holds the disk drive, and includes a built-in modem for remote maintenance.

Reliability and security

In keeping with its commitment to assist clients in combating toll fraud, Lucent Technologies also designed the DEFINITY AUDIX system with security precautions against fraudulent access attempts. For example, with Control Link integration, the system allows a transfer of calls to only other voice mail subscribers. When a caller reaches the system and requests a transfer out, the system first checks the requested extension number against its subscriber database. If the extension number is not in the database, the transfer attempt is denied. Additionally, mailbox passwords can contain as many as 15 digits.

The alarm circuit pack on the DEFINITY AUDIX system has its own processor that allows maintenance and diagnostic access if the main processor fails. A liquid crystal display on the unit lets on-site technicians check system status. There also is a robust set of built-in diagnostics that technicians can access either on-site or remotely through a built-in modem. A special alarm-originating feature helps speed problem diagnosing and correction.

The system routinely performs self diagnostics. If it detects a problem, it automatically dials a remote maintenance center and produces a detailed alarm message with diagnostic specifics. The remote maintenance center staff responds quickly via the built-in modem to perform further diagnostics, isolate the problem, and take corrective action. As a back-up, the DEFINITY AUDIX system can send an alarm message to the switch.

Easy installation and expansion

Lucent Technologies specifically designed the DEFINITY AUDIX system for easy installation. There are no special power or cabling adjustments required. In fact, the system is as easy to install as a circuit pack.

System expansion is simple. All the hardware required for the full 16 ports is included in the initial DEFINITY AUDIX system. If you start with fewer than 16 ports initially, Lucent Technologies can then activate additional ports through a simple software change that technicians download remotely. There is no need to modify the basic hardware, and the system still occupies only five slots.

Improved clarity

A speech processing algorithm developed at Bell Laboratories encodes at 16 kbps, giving the DEFINITY AUDIX system a major advantage over its competitors in that it can store more messages in a smaller space.

The algorithm also improves the speech quality in system prompts, users' personalized greetings, and the voice messages themselves. Bell Laboratories listening studies show that the message playback clarity is unsurpassed in the voice messaging industry.

Enhanced speed-up/slow-down of message playback is now offered because of this new algorithm. DEFINITY AUDIX system users can play back messages twice as fast or at half speed with no distortion in pitch.

The best solution worldwide

Lucent Technologies offers the DEFINITY AUDIX system in the same countries as the DEFINITY BCS. Prompts are available in several languages. (Contact your local representative for information on available languages). Lucent Technologies will continue to develop a wide variety of languages and bilingual capabilities. Contact your account representative for the latest options.

Summary of DEFINITY AUDIX features

DEFINITY AUDIX is a powerful voice mail system that enables you to create, store, send, and receive spoken messages electronically. Spoken prompts guide you as you enter simple one- or two-key commands at a touch-tone telephone. Subscribers can use the system 24 hours a day, sending and retrieving messages from any touch-tone telephone. And the DEFINITY AUDIX system helps to protect sensitive information by requiring users to enter a combination of subscriber login codes and passwords to access the system.

Whenever you call the DEFINITY AUDIX system, you interact with it by entering commands through your telephone's touch-tone keypad. You simply specify the desired activity, and follow the voice prompts for the desired task.

Special multimedia-processing features include Voice Mail, Call Answering, Out-calling, Multilevel Automated Attendant, and Bulletin Board. The following is a summary of DEFINITY AUDIX capabilities:

- *Shared Extensions* provide personal mailboxes for persons sharing a phone.
- *Multiple Personal Greetings* allow subscribers to prepare a pool of up to nine personal greetings to save time and provide more personal customer service. Separate messages can indicate the subscriber is on the phone, away from the desk, on vacation, etc. Different messages also can apply to internal, external, or after-hours calls.
- *Message Manager* is an advanced desktop application that runs on a Windows personal computer, providing powerful and intuitive access to DEFINITY AUDIX messaging features through a customer-provided TCP/IP Local Area Network. The application's graphical user interface allows easy access to voice mail on a DEFINITY AUDIX system. The Message Manager interface is often faster and more efficient than

accessing messages through the telephone. Message Manager is an optional feature that must be purchased separately. For more information, see Page 114.

- *Priority Messaging* places important messages ahead of others.
- *Outcalling* automatically dials a prearranged phone number or pager when messages are received in a user's mailbox.
- *Priority Outcalling* provides outcalling notification of priority messages only.
- *Broadcasting* allows the same message to be sent to multiple recipients or to all users on the system.
- *System Broadcast* capabilities are available in two forms: Broadcast Voice Mail and Login Announcement.
- *AUDIX Directory* allows users to 'look-up' the extension number of any other user by simply entering their name on the telephone keypad.
- *Personal Directory* shortens the time required to locate correct names by accessing a user-customized list in the Names Directory.
- *Call Answering for Nonresident Subscribers* provides DEFINITY AUDIX system mailboxes for users who do not have an extension number on the system.
- *Full Mailbox Answer Mode* informs callers whenever messages cannot be left because there is no room in a subscriber's mailbox.
- *Name Record by Subscriber* lets users record their own names on the system.
- *Automatic Message Scan* plays all new messages in part or in their entirety without requiring the subscriber to press additional buttons — a feature particularly beneficial to users of car phones.
- *Sending Restrictions by Community* provides the capability to limit the communities of callers who can communicate via DEFINITY AUDIX Voice Messaging.
- *Group Lists* allows users to create mailing lists of up to 250 people to use for broadcasting messages.
- *Message Forwarding* lets users forward messages they have received, with or without attached comments.
- *Name Addressing* allows users to enter the name of the caller if the extension number is not known.
- *Private Messaging* is a special coding feature that prevents recipients from forwarding messages.
- *Leave Word Calling* allows users to simply press a button on their telephones in order to leave a standard *call me* message on any extension.
- *On-Line Help* provides users with instant access to voiced instructions at any point in the process.

INTUITY AUDIX voice messaging

The Lucent INTUITY AUDIX system allows you to record, distribute, and receive messages in various mediums. Lucent INTUITY AUDIX is the product-of-choice with the GuestWorks offer. The system runs on a dedicated computer connected to the switch and allows the transfer of voice and FAX communications to and from the switch via analog voice ports and data communications to and from the switch via a data link.

The Lucent INTUITY AUDIX system offers the same user features as the DEFINITY AUDIX System.

FAX messaging

Lucent INTUITY FAX Messaging works with the Lucent INTUITY Lodging application to allow subscribers to use their Lucent INTUITY Lodging mailboxes for FAX messaging. With Lucent INTUITY FAX Messaging, subscribers may receive, create, send, and forward FAX messages. You may also use the Lucent INTUITY FAX Messaging application to create special mailboxes for each of your FAX machines. These mailboxes (guaranteed mailboxes) accept FAX telephone calls when the FAX machine is busy and then deliver the FAX to the FAX machine when the FAX machine is available.

Message manager

The Lucent INTUITY Message Manager provides access to Lucent INTUITY AUDIX voice processing features on a personal computer connected to a local area network (LAN). It also works with DEFINITY AUDIX. This feature requires three distinct components to operate:

- The *AUDIX server software* is purchasable with the Lucent INTUITY AUDIX System as a Lucent INTUITY Message Manager Right-to-Use. Also, this feature has Lucent INTUITY AUDIX hardware requirements (see *Requirements*).
- The *Message Manager software* diskettes are separately purchasable and are installed either on each user's PC or on a LAN server.
- The *local area network* is wholly owned and maintained by the customer and must meet certain requirements for the Lucent INTUITY Message Manager feature to work.

Message processing features available at a subscriber's PC with Lucent INTUITY Message Manager include:

- Looking at up to sixteen message headers at a time and listening to messages in the order you choose. For subscribers who get many messages, this provides an easy way to view and prioritize the messages.
- Ability to send and receive FAX-only or voice-FAX messages, to view FAXes on your PC, and optionally to print FAXes.

- Recording, addressing, and scheduling messages.
- Replying to messages and forwarding messages.
- Annotating messages with a short subject line.
- Setting up mailing lists on-line with easy text entry and editing. You can see the lists on-line and print lists on any local or network printer.
- Setting up personal greetings, multiple personal greetings, or multilingual greetings on-line makes it easier for you to manage and maintain your greetings, and annotating your greetings helps jog your memory.
- Browsing the subscriber directory.
- Administering Outcalling notification on-line with easy text entry and editing.
- Storing (archiving) voice messages on your PC for a permanent record of voice mail when needed.



NOTE:

Message Manager does not operate with Lucent INTUITY Lodging, only Lucent INTUITY AUDIX.

INTUITY Lodging (GuestWorks Only)

Lucent INTUITY Lodging is a separate application from Lucent INTUITY AUDIX and is used to support voice messaging for guest mailboxes. Lucent INTUITY Lodging was designed specifically for the hospitality industry. The system is described in Chapter 6, "Hospitality Solutions."

Voice messaging systems and call coverage

The DEFINITY AUDIX and Lucent INTUITY AUDIX systems can be set up as the last points on a coverage path. Calls are then redirected to AUDIX if they are not answered by a previous station on the path. In addition, a secretary or messaging agent who answers a call can transfer a caller to the AUDIX system "mailbox" of the original called party upon request. The caller may prefer to leave a voice mail message if the message is personal, lengthy, or highly technical.

Many other options are available for maximum flexibility:

- A caller can choose to transfer from the system to an attendant or operator.
- A caller can transfer to another extension instead of leaving a message.
- Your company can choose to have an automated attendant answer calls to the company and direct calls to the right department quickly, so callers do not have to wait on hold.

- With automated attendant, callers can be instructed to enter keypad commands to direct the call to the appropriate point. This gives customers choice and control. It also allows you to make the most effective use of your personnel, while still providing your customers with the service they expect.

Mode Code Interface

DEFINITY BCS supports an analog Mode Code interface for communications with INTUITY AUDIX and other voice mail systems using the same interface. This interface employs DTMF tones, line signals, and feature access codes, and allows INTUITY AUDIX to exchange data with the DEFINITY BCS without using a data link. Other adjunct vendors can engineer their products to use this interface.

 **NOTE:**

This interface is primarily used with CMC hardware, but can also be used with ESCC and MCC hardware.

Chapter overview

Consider the following business scenario. Your colleagues have asked to meet with you as soon as possible to discuss the latest project. The project team needs to discuss how to meet the timetable and satisfy your customer's expectations. The team also needs to view the prototype that the engineering department has just finished.

Standard business procedure would dictate that you get on the next airplane — briefcase full of needed files and the prototype packed carefully for shipment. Hopefully, the prototype will arrive intact. And hopefully, the time away from the office will not set you too far back in your already hectic schedule.

But, now the DEFINITY BCS provides an alternative to business as usual — revolutionary visual communication solutions. Through the use of Lucent Technologies' video products and services, you can meet with your colleagues — across the country or around the world — via visual communications. So, instead of heading to the airport, you take the prototype to the video conferencing room, feeling glad this face-to-face meeting does not involve luggage or jet-lag. And once your meeting is done, you are back at your office in a matter of minutes, ready to start implementing the decisions just made.

Besides the obvious advantage of reduced travel expenses, video conferencing allows you to make quicker decisions, provides ready access to essential information, allows you to consult with specialists on an as-needed basis, and ultimately allows you to bring products to market faster.

Visual communications provides other advantages for your normal day-to-day operations. Business meetings can benefit from the nuances a facial expression can convey sometimes more directly than the words being spoken. Employees can be trained on the latest products and procedures on a regular basis. You can meet with your suppliers without ever travelling to see the other.

This section will introduce you to the visual communication products that you can connect to your system to create a premier communications solution that satisfies all your needs — voice, data and video — just by dialing a telephone number.

The DEFINITY BCS does not support wideband (broadband) signaling, so all video connections will be made at the DS1 or ISDN speeds of 56 or 64 Kbps. This may limit some video applications.

⇒ NOTE:

Some features and solutions are unavailable in some countries. Please contact your local account manager or authorized Lucent Technologies representative for further information about which features and solutions are available to you.

Group Video System

The Group Video System turns a telephone call into a face-to-face meeting for conducting business with people across the country or around the world. The line of Group Video Systems, based on the PictureTel Group Video Line (System 1000, 4000, Venue 2000 and Concorde 4500), is designed to assure that your video conferences are the most effective possible.

A Group Video System can connect directly to your system or to the network. When connected to your system via either Digital Communication Protocol ports or a DS1 interface, video calls are placed as easily as voice calls. And you can benefit by using your system's World Class Routing capabilities and the shared use of network facilities such as ACCUNET Switched Digital Services or Software-Defined Digital Network.

Group Video Systems are totally self-contained and include a pan/tilt/zoom camera, a monitor, the control unit, communications equipment, and the equipment electronics. You can easily add peripheral equipment such as video cassette recorders to record the conference, document scanners to review hard-copy material with distant participants, and personal computers to supply spreadsheets or other computer-based conveniences.

You can equip any office or conference room with a Group Video System. Conferees can speak and act naturally without thinking about audio and video pickup. The system adapts automatically to room acoustics, and a unique, audio-compression algorithm yields distortion-free, full-duplex, interactive video without echo. A highly-sensitive microphone is built into the control unit, and if necessary, conferees can use up to four auxiliary desktop and/or lapel microphones.

You control the conference via a desktop keypad that easily turns the system on or off, dials the call, adjusts the audio volume, selects the video source, and positions the camera. The camera in most models has an auto-focus lens, plus zoom, pan, and tilt capabilities that let users move the camera to follow conferees as they move around the room. Optional capabilities include remote control of the far-end camera and camera presets that let conferees set up to eight camera positions — four local and four remote — each accessible at the touch of a button.

An automatic feature of most Group Video System models is the use of a window (picture in a picture) for previewing, so you can see what your camera sees as

well as what the far-end camera sees. The window also permits simultaneous viewing of far-end video and still-image graphics.

Group Video Systems are available in a variety of models that can accommodate an office, small meeting room, or even a spacious boardroom. All models have colour monitors, with dual monitors available on most for simultaneous viewing of video and high-resolution still images. The systems available are as follows:

- The System 1000 — Quality, inexpensive group video products:
 - Model 30 — For small group or individual meetings.
 - Model 50 — For medium to large group meetings.
- The Venue 2000 — A relatively inexpensive system with an enhanced user interface.
- The System 4000EX — The industry's most popular high performance systems:
 - Model 200 — The office system: modular, portable, and well-suited for small offices and conference rooms.
 - Model 200 — The cart system: a larger, portable system on wheels.
- The Concorde 4500 — A highly advanced system offering superior transmission quality and unparalleled ease-of-use.

Telephone add-on is an option on all models. This enables you to add a voice conference to the video conference. Other options include security encryption, freeze-frame graphics, and VCR recording — each providing additional benefits to your video conference.

The monitors can accommodate both the U.S. National Television System Committee standard and PAL, the European 625-line standard, providing global compatibility for your visual communication needs.

Desktop conferencing systems

Many meetings involve just two or three individuals who need to share information — whether it be text, data, graphics, or some other form of information. And with larger teams of people, these individuals may be separated in locations around the country or the world. They have the same need to meet strategic objectives, shorten project cycle time, and improve working relationships with project partners. These needs can also be satisfied through visual communications.

To satisfy these requirements, integrated telephone and PC visual communications systems are available. These desktop conferencing systems use ISDN-BRI or two switched-56 line network facilities.

Monitors and cameras create a unique desktop environment that provides you and your business with the following benefits:

- Software application screens and data can be called up, shared, changed, and annotated by video conferees while they hold a video conference.
- Geographically separated people are brought together along with the data and information they need to share at the desktop.
- Major obstacles to creative collaboration and situations that are information-intensive are overcome.
- Desktop workers can communicate with others who are using desktop conferencing or the Group Video System.
- Desktop workers can communicate with other systems supporting the ITU-T H.320 standard.
- Your system is converted into a solution for all your communication requirements — voice, data, and video.

MultiPoint Conferencing Unit

When connecting more than two video endpoints, you can use the MultiPoint Conferencing Unit to set up and conduct multipoint video conferences. This is a stand-alone unit that provides easy-to-use multilocation video conferencing.

The MultiPoint Conferencing Unit can operate behind the DEFINITY BCS or can be directly connected to the network. The MultiPoint Conferencing Unit can support from 4 to 64 ports in four-port increments. Those ports can then be used to connect multiple video endpoints, either Group Video System or Desktop Conferencing Systems, in a multipoint conference. Group Video System can be linked at speeds from 56 kbps to full T-1, while Desktop Conferencing Systems can be linked at speeds from 56 kbps to 384 kbps.

⇒ NOTE:

The DEFINITY BCS does not support wideband (broadband) signaling, so all video connections controlled through the system will be made at the DS1 or ISDN speeds of 56 or 64 Kbps. This may limit some video applications. The higher speeds mentioned above can be attained when connected directly to a network.

The MultiPoint Conferencing Unit uses the ITU-T H.320 video conferencing standard to connect the video endpoints, assuring compatibility with other video endpoints that conform to the standard. In addition to compatibility, the H.320 standard ensures a common level of visual, graphics, and audio quality that will satisfy your visual communication requirements.

The MultiPoint Conferencing Unit is built on the architecture of the DEFINITY BCS. The MultiPoint Conferencing Unit sits in its own carrier and takes up approximately the same space as a single-carrier cabinet. Designed for growth, the MultiPoint Conferencing Unit's architecture allows you to add additional circuit packs and carriers as needed.

Arranging conferences

With the MultiPoint Conferencing Unit, multipoint video conferences are easy to set up, operate, and manage. You can use the reservation software provided with the MultiPoint Conferencing Unit, available through the management terminal or through the optional Conference Reservation and Control System.

You can assign a number to each conference participant and set up the MultiPoint Conferencing Unit to link the video endpoints at the designated time. Calls can also be initiated through the Meet-Me function, allowing participants to dial into their call using a preassigned telephone number. The MultiPoint Conferencing Unit can also be programmed to out-dial to the video endpoints at a designated time.

The MultiPoint Conferencing Unit also supports dedicated multipoint conferencing. Your video conference users that require regular and frequent access to multipoint video conferences can be assured of system access as required.

Chapter overview

DEFINITY Hunt Group applications are designed to efficiently connect each caller with the representative best suited to serve that caller. The DEFINITY BCS begins the process by capturing information about the caller even before the call is routed. That information is integrated with existing databases (see Chapter 5, "Computer-Telephone Integration Solutions") and the combined data is used to assist the hunt group member in call handling. Additional DEFINITY features politely keep callers who are waiting in queue (a holding place for incoming calls) informed about how long it will probably take to process the call. Detailed call statistics are constantly available to hunt group members and supervisors.

Calls coming into your hunt groups are queued up and routed based on information that the system continually acquires. Each of your customers can be presented with a variety of options for leaving a voice message, leaving a FAX, or monitoring the status of his or her call.

This section describes the hunt group capabilities:

- *Automatic Call Distribution*, which manages call traffic and work flow.
- *Basic Call Management System*, which provides measured hunt groups.
- *Call Vectoring*, which allows managers to create controlled routing scenarios that give each caller the best possible service at the least cost.
- *Call Prompting*, which allows you to handle incoming calls based on digits entered by the calling party.

The DEFINITY BCS provides an applications platform that consists of several elements. When these elements are integrated to meet your business requirements, you will have the advanced call distribution and management capabilities that will deliver the performance and growth necessary for your business success.

⇒ NOTE:

Some applications and products are unavailable in some countries. Please check with your local distributor for further information about which features and applications are available to you.

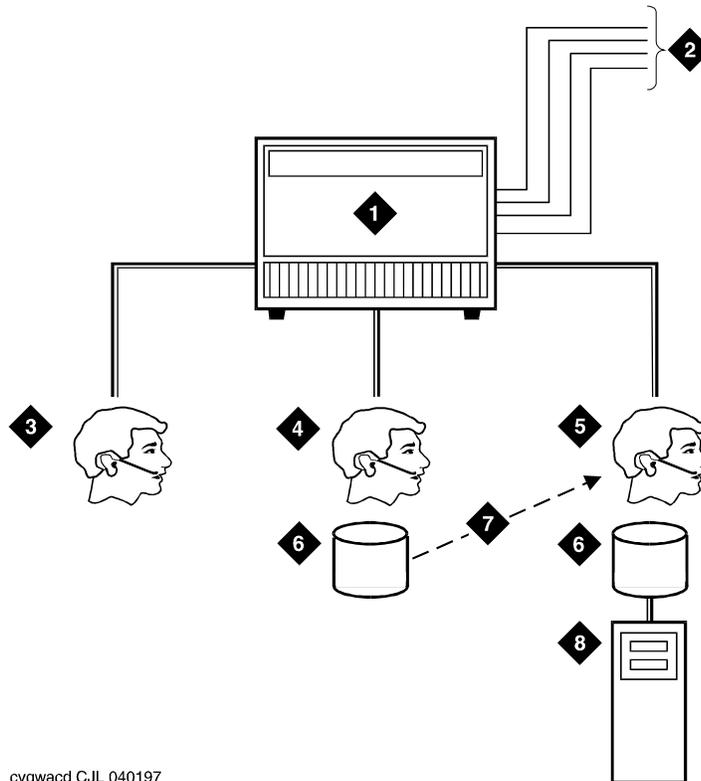
Automatic Call Distribution (ACD)

If your company has groups (such as sales, billing, or customer service) that handle incoming calls, you can benefit by using the system's ACD capabilities. ACD is the basic building block for hunt group applications.

ACD offers you a method for distributing incoming calls efficiently and equitably among available hunt group members. With ACD, incoming calls can be directed to the first idle or most idle member within a hunt group. With most idle distribution, an incoming call is routed to the member who has been available for the longest time, resulting in balanced workloads for hunt group members.

Hunt group members in an ACD environment are assigned to a group of people handling the same types of calls. Each system can support and measure up to 20 members, with members being part of one hunt group or several different hunt groups. Each hunt group has associated trunks, stations, recordings, and queues. You can assign many ACD features on a per-hunt group basis to meet the different needs of diverse hunt groups. You can link a telephone number to an ACD hunt group by associating a published number (often an 800 or 888 toll-free number) with the hunt group extension number.

In Figure 18, Hunt Group A receives calls only when members are available, since it has no queue. Calls to Hunt Group B can be queued while members are unavailable, and redirected to Hunt Group C if not answered within an administrable time. Calls to Hunt Group C are redirected to voice mail if they are not answered within an administrable time.



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- | | |
|-----------------------------|---------------------------------|
| 1) DEFINITY BCS | 5) Group C: General Information |
| 2) Incoming Lines | 6) Queues |
| 3) Group A: Business Travel | 7) Call Coverage to Group C |
| 4) Group B: Personal Travel | 8) Voice Mail |

Figure 18. A basic example of Automatic Call Distribution

The DEFINITY BCS places all Automatic Call Distribution calls into a queue. Each call stays in the queue until a member becomes available, until an optional timed interval expires, or until the caller hangs up. If the call has not been answered after an administrable period of time, an announcement can be played for queued callers. The call can then be connected to music to let the caller know that the call has not been dropped, it can be sent to a coverage path, or it can be connected to another announcement.

You can set a maximum queue length in a group to anywhere from 0 to 200 calls, and you can establish a queue warning level. If the preset maximum queue length is reached, additional incoming calls are redirected to a call-coverage path (if administered), ensuring that calls are routed to an extension that will answer the call or are given a busy signal. A priority-queuing feature allows you to designate which calls should receive priority; these calls override the standard first-in-first-out queuing pattern.

Two features provide for redirection of ACD hunt group calls:

- Intraflow allows an ACD call to be redirected from one hunt group to another through coverage paths that are assigned to determine call redirection criteria.
- Interflow allows new calls in a hunt group's queue to overflow and be sent to another ACD hunt group on another system using the Call Forwarding All Calls feature. Interflow can be useful during the evening, during peak operation times, or at other times when members are unavailable.

ACD members can use any DEFINITY BCS telephone. A number of special ACD features can be assigned to their telephones to enable them to perform their jobs effectively.

Additional features give your company even more options when using ACD:

- Queue-Status uses button lamps and telephone displays to indicate call status for calls waiting in an ACD queue on telephones with a digital display. It can also display how long the oldest call has been waiting.
- Dialed-Number Identification Service allows members to identify (via display telephones) the purpose of each incoming call and greet the caller appropriately.
- Each member can be logged into as many as four hunt groups at a time.
- Malicious Call Trace allows you to designate stations that can trace emergency or threatening calls. When a hunt group member receives a malicious call, the member presses the Malicious Call Trace button. The system gathers trace information and connects a customer-provided voice recorder to the call (via an auxiliary trunk circuit). All equipment used to complete the call is held up (the call cannot be disconnected) until the feature is deactivated.
- Redirection on No Answer allows an unanswered, ringing call to be redirected to an ACD queue or to a vector directory number (see below) after an administered interval. The member position will also be taken out of service.

Basic Call Management System

The Basic Call Management System, an integrated, internal capability, is a cost-effective solution for a small hunt group. The Basic Call Management System helps you fine tune your hunt group operation by providing reports with the data necessary to measure the performance of your hunt group members.

This feature offers call management control and reporting at a low cost for hunt groups of up to 20 members. The Basic Call Management System is ideal for companies that need call management features but do not require the same capacities available with the larger DEFINITY ECS Call Center applications.

The Basic Call Management System collects and processes the system's ACD call data (up to seven days) within the system; an adjunct processor is not required to produce call management reports.

The Basic Call Management System provides various measurements for monitoring the operations of an ACD application. Basic Call Management System software organizes ACD calls and hunt group measurements into functionally different reports that supply information useful for managing ACD facilities and personnel. The reports can be displayed on the system administration terminal, printed while viewing the report, or scheduled for printing at a later time via the Report Scheduler feature.

The following are the types of reports that can be generated:

- Real-time reports
 - Hunt Group (Split) Status
 - System Status
 - Vector Directory Number Status
- Historical reports
 - Member (Agent)
 - Member (Agent) Summary
 - Hunt Group (Split)
 - Hunt Group (Split) Summary
 - Trunk Group
 - Trunk Group Summary
 - Vector Directory Number
 - Vector Directory Number Summary

The following list summarizes the call management features available with the DEFINITY BCS.

- Automatic Call Distribution
 - Redirect On No Answer
 - Auto Available Hunt Group
- Service Observing Basic
- Basic Call Management System
- Multiple Call Handling on request
- Service Level
- Login IDs
- Call Vectoring
- Call Prompting
 - Administrable Inter-digit
 - Time-outs
- Directory Number Real Time Report
- Enhanced Procedure Administration
- Route To With/Without Coverage

Call Vectoring

Call Vectoring is a versatile method of routing incoming calls that can be combined with Automatic Call Distribution for maximum benefit and hunt group efficiency. A call vector is a series of call-processing steps (such as providing ringing tones, busy tones, music, announcements, and queuing the call to an Automatic Call Distribution hunt group) that define how calls are handled and routed. The steps, called vector commands, determine the type of processing that specific calls will receive.

Vector commands may direct calls to on-premises or off-premises destinations, to any hunt group, or to a specific call treatment such as an announcement, forced disconnect, forced busy, or music.

With combinations of different vector commands, incoming callers can be treated differently depending on the time or day of the call, the expected wait time, the importance of the call, or other criteria. DEFINITY BCS can route incoming callers to up to four different vectors. Each vector can have up to 32 commands. DEFINITY BCS also allows vectors to be linked via the "Go to Vector" command.

Vector Directory Numbers and Vectors

Calls access DEFINITY BCS vectors using vector directory numbers (VDNs). A Vector Directory Number is a “soft” extension number that is not assigned to a physical equipment location. A Vector Directory Number has several properties that are administered by the system manager and that include the extension number, Vector Directory Number name, class of restriction, display override, and the vector number associated with the Vector Directory Number.

Access to a Vector Directory Number may occur in many ways. Since a Vector Directory Number is an extension, it can be accessed in almost any way that an extension can be accessed.

Each Vector Directory Number maps to one vector. However, several Vector Directory Numbers may map to the same vector.

When answering a call, the answering hunt group member will see the information (such as the name) associated with the Vector Directory Number on their display and can respond to the call with knowledge of the dialed number. This operation provides Dialed-Number Identification Service, allowing the hunt group member to identify the purpose of the incoming call.

Applications

There are many different applications for Call Vectoring. However, Call Vectoring is used primarily to handle the call activity of Automatic Call Distribution hunt groups. Call Vectoring can also manage a queue by keeping calls queued in up to three hunt groups (with four different priority levels) while also providing a series of other processing options. Descriptions of other common applications follow.

Special Treatment for Selected Callers

For example, calls from preferred credit card customers may receive priority treatment, but they do not have to be handled by a separate hunt group. Members in the same hunt group can handle both preferred customers and all other customers. Calls to different Vector Directory Numbers (and vectors) can queue to different priority levels, with preferred customers having top priority. This means that when all members are busy in this hunt group, calls from preferred customers would go to the top of the queue ahead of other callers already in the queue.

Night Treatment

During non-business hours, the call vector could route calls to a specified destination such as an announcement and then disconnect the call. During business hours, the vector could queue calls to hunt groups for connections with members. All of this can be accomplished automatically without any intervention by the hunt group supervisor.

Off-loading of Periodic Excess Calls

A vector can check conditions in the targeted hunt group, such as the number of calls already in queue. If the number is above a certain threshold, the vector bypasses that hunt group and routes the call to another hunt group or the vector can return a busy signal. However, if the number is below the threshold, the vector queues the call to that hunt group.

Information Announcements for the Calling Party

The human intervention needed to distribute common messages can be minimized with information announcements. People with a common interest can be instructed to call a specific number (a Vector Directory Number) that connects to a specific announcement vector, which routes callers to a voice messaging system or to an integrated announcement circuit pack in the system.

Call Prompting

Call Prompting, an integrated subset of Call Vectoring, may be used in various applications to enhance call handling based on information collected from the calling party. Call Prompting uses Call Vectoring commands to route calls based on the information collected. It allows you to solicit and provide information to incoming callers who are in queue without causing them to lose their place in queue. Four applications are described below.

- Automated attendant — Allows the calling party to enter the number of any extension on the system. The call is then routed to the extension. This allows you to reduce cost by reducing the need for live attendants.
- DIVA (data in/voice answer) — Allows the calling party to hear selected announcements based on the digits that he or she enters. This may be used for applications such as an audio bulletin board.
- Data collection — Allows the calling party to enter data that can then be used by a host computer application to assist in call handling. For example, this data may be the calling party's account number, which could be used to support an inquiry/response application.
- Hunt group messaging — Gives the calling party the option of leaving a message or waiting in queue for a hunt group member. This may be used for an on-line order entry system or to further automate an incoming-hunt group operation.

DEFINITY Extender

The DEFINITY Extender allows your hunt group members to work from home. With DEFINITY Extender, members can use display telephones from home and work exactly as they would in an office. See Chapter 12, "Telecommuting Solutions," for more information about the DEFINITY Extender.

Chapter overview

Lucent Technologies research, supported by industry studies, shows that telecommuters are generally 15 to 30 percent more productive when they work at home. They convert travel time into productive work time, are less likely to be distracted by normal office routines, and frequently end up working longer hours with greater output. During severe weather, they can continue working when others cannot.

Special DEFINITY system modules are available for telecommuting. In addition, many standard system and voice messaging features work well for telecommuters.

⇒ NOTE:

Some features and solutions are unavailable in some countries. Please contact your local account manager or authorized Lucent Technologies representative for further information about which features and solutions are available to you.

DEFINITY Extender

DEFINITY Extender allows you to use a fully functional DCP telephone at a remote location. The telephone looks and performs exactly as if it were directly connected to your office system.

The system uses a module at the DEFINITY system and a module at the remote location to provide full service. The Extender works with the 8410D, 8411D (no analog data support), 8434D, and 603E DCP telephones. Since these DCP phones have displays, the system works well for hunt group members working from home. A dial-in number and password makes the system reasonably secure from unauthorized use.

Lucent Technologies Telecommuter Module

Lucent Technologies Telecommuter Module is a lower-end telecommuting solution that is ideal for telecommuters who are not necessarily hunt group members. Incoming calls are redirected to the telecommuter's home number and redirected back to call coverage (voice messaging or an attendant) if the telecommuter is busy or unavailable. The seamless connections give the caller the impression that the telecommuter is actually in the office.

The module makes the power of the system available to telecommuters from any touch-tone phone. They can:

- Transfer a call
- Set up a conference call
- Use abbreviated dialing
- Place long-distance calls
- Receive, leave and retrieve voice messages.

Telecommuters need not always be at a fixed location, as the target telephone number is easily changed. The modules can be reprogrammed to accommodate different users as well. The module can be set up in two modes:

- Per Session Mode (intensive calling requirements), in which a continuous link is maintained between the telecommuter's phone and the office system. It eliminates the need to log in and log out when making calls. The telecommuter's phone is continuously off-hook, and incoming calls indicated by a distinctive tone.
- Per Call Mode (moderate calling requirements), in which the employee must log in to make calls or use DEFINITY features. The module rings the telecommuter's phone when incoming calls arrive, using a distinctive tone. This allows the employee to distinguish between business and personal calls so he or she can answer appropriately.

Each module can be shared by as many as 25 users (though only one may be logged in at any one time). Several security features make it difficult for the system to be abused by hackers.

Personal Station Access

Personal Station Access allows you to transfer your telephone station preferences and permissions to any other compatible telephone. This includes the definition of terminal buttons, abbreviated dial lists, and Class of Service and Class of Restrictions permissions. It can be used on-site or off-site (with DEFINITY Extender). This has several telecommuting applications. For example, several telecommuting employees can share the same office on different days of the week. The employees can easily and remotely make the shared telephone "theirs" for the day. Remote use requires DEFINITY Extender (described on page 131).

Station Security Codes

Station Security Codes protect access to telephone stations. Now these codes can be changed by the telephone users. This allows you to easily ensure protection of your telephone features.

All of these features are described in detail in the *DEFINITY ECS R6.2 Administration and Feature Description*, 555-230-522, Issue 3 under the following feature names:

- Call Coverage
- Call Forwarding
- Extended User Administration of Redirected Calls
- Personal Station Access
- Station Security Codes

AUDIX features for telecommuting

The following DEFINITY AUDIX (and Lucent INTUITY AUDIX) features are useful for telecommuting:

- *Multiple Personal Greetings* allow subscribers to prepare a pool of up to nine personal greetings to save time and provide more personal customer service. Separate messages can indicate that the subscriber is on the phone, away from the desk, on vacation, or otherwise unavailable to talk. Different messages also can apply to internal, external, or after-hours calls.
- *Outcalling* automatically dials a prearranged phone number or pager when messages are received in a user's mailbox. The system tells whoever answers that messages have been received.
- *Priority Outcalling* provides outcalling notification of priority messages only. This allows the telecommuter to be relatively undisturbed by notifications of messages that do not require immediate attention.
- *Call Answering for Nonresident Subscribers* provides AUDIX System mailboxes for users who do not have an extension number on the DEFINITY BCS.

For example, when working at home, you set up Priority Outcalling so the system will call you when you have important messages. Then you activate a personal greeting that says something like, "Thanks for calling. I'm working away from the office today. I'll be checking voice mail periodically, so please leave a message. If your message is urgent, press 2 after recording it. This will give your message priority status. The system will notify me of your priority message almost immediately."

Chapter overview

The DEFINITY BCS is a digital communications system that can meet your most demanding voice and data requirements. But what about managing this powerful system? Managing a system was once a formidable task, requiring specially trained administrators who could operate complex programming tools. But, as the capabilities of systems become more sophisticated, so too have the demands placed upon the tools that administer them.

The DEFINITY BCS offers a variety of easy-to-use modular tools for managing your system. Whether your system is small or large, stand-alone or networked, the DEFINITY BCS has the tools to efficiently manage the system.

Why? Because no matter how excellent a communications system is, you must be able to manage it effectively and easily for the system to really work for you. The system gives you that capability by offering easy-to-use tools for managing your system. Whether your system is small or large, straightforward or sophisticated, or somewhere in-between, the DEFINITY BCS has the tool to effectively and efficiently manage that system. This section takes a look at the capabilities for system management.

This section also briefly describes the main areas or functions of system management. Terminal and facility administration features allow you to administer telephones, computers, facilities, and features throughout your system or network. Traffic management features allow you to measure, manage, and report on the voice and data communications traffic throughout your system or network. Maintenance features allow you to view the health of your system and perform maintenance procedures on your own system, if you choose to do so.

This broad system management philosophy extends the system's power and flexibility into the tools for managing the system. These tools are based on the user-friendly architecture which is the hallmark of DEFINITY products. The system management capabilities of the DEFINITY BCS have been enhanced to accommodate all configurations.

We think this system management view of the DEFINITY BCS will convince you that the system gives you not only power and flexibility in a communications system but also the power and flexibility to manage that system.

⇒ NOTE:

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The DEFINITY BCS supports the following system management features:

- Local access via TERRANOVA ECS Administration terminal emulator (standard)
- Local access via the System Management Terminal (optional)
- Multiple concurrent administration/maintenance sessions
- Terminal administration, using administration without hardware and terminal translation initialization
- Performance measurements
- Call Detail Recording
- Other miscellaneous capabilities.

TERRANOVA ECS administration

The DEFINITY BCS uses the TERRANOVA ECS Communications terminal emulator installed on a PC for the default system management tool. This gives you access to all possible administration, maintenance, traffic, and performance information on the system.

Advanced capabilities allow you to retrieve configuration and traffic information and generate reports. The software includes the following modules:

- ECS Communications emulates several common terminal types, allowing you to access multiple systems from a single personal computer.
- ECS Reports Generator provides graphic displays of system configuration data and produces a variety of system administration reports. Besides printing the reports, you can save the reported data and export it to other data management applications.
- ECS Station Administration (an add-on module) allows you to add, change, remove, and duplicate stations, coverage paths, and pickup groups. Using graphical representations of stations and global change tools, you can create custom labels and schedule downloads of adds, moves, and changes.
- ECS Trunk Group Analyzer (an add-on module) gathers usage information and provides tools for conducting what-if and grade-of-service analysis for traffic performance across the system.

- ECS AutoXfer (an add-on module) automatically extracts call accounting data for station and trunks at a pre-set time and presents the information in a formatted file on the local server or shared network drive. It provides an open interface that allows accounting vendors to integrate the data into their call accounting products.

DEFINITY Management Terminal

The DEFINITY Management Terminal is an optional integrated management tool available with every system. The Management Terminal provides an intuitive interface with forms-based selections, help keys, and a language-based interface (several languages are available).

The system administrator uses the Management Terminal to access the system to perform "task-oriented" administration and maintenance procedures. Several types of asynchronous terminals can be used as the Management Terminal. One such terminal is the Model 715 Multitasking Terminal.

Using the DEFINITY Management Terminal, the system manager can do the following:

- Manage system, voice-terminal, and data-terminal features on a day-to-day basis
- Perform system backups
- Monitor system performance
- Perform selected maintenance procedures
- Maintain system security.

Concurrent user sessions

To increase the efficiency of administration and maintenance functions, the system accommodates multiple concurrent administration and maintenance user sessions. Up to three users can be connected to the system to perform administration and/or maintenance tasks simultaneously (this limit drops to two concurrent users if the DEFINITY Management Terminal is one of those users). The concurrent sessions can be in any combination of local and remote connections.

This feature increases the volume of administrative activity that can be performed in a given time period, allowing administrators to handle peak demand more effectively.

Terminal administration

The system includes two features that ease, simplify, and accelerate the administration process.

Administration without hardware

Administration without hardware gives you the ability to administer station forms without specifying a port location. Administered stations will not cause alarms or errors to be generated when the station is translated but not yet installed. These station types are referred to as “phantom” stations. Phantom extensions can be used for Automatic Call Distribution Dialed Number Identification Service. This allows a phantom extension to be administered on the system for each call type that needs to be identified to hunt group members. The phantom Automatic Call Distribution extension either is “call forwarded” (via an attendant console) to an Automatic Call Distribution hunt group or has its coverage path defined to include the Automatic Call Distribution hunt group. The name field administered for the phantom extension will identify to the Automatic Call Distribution member which service the caller is attempting to reach, allowing the member to properly address the caller.

Administration Without Hardware also supports the ability to store station templates (models). These can later be used with the “duplicate station” command to implement many station forms of the same type in the system.

Administration Without Hardware can be used to streamline system initializations, major additions, and rearrangement/changes by allowing telephone translations to be entered before the actual ports are assigned.

Administration Without Hardware can be used on the following equipment:

- Analog telephones
- Digital Communications Protocol telephones
- Hybrid telephones
- Attendant consoles
- Voice/computers (such as Digital Communications Protocol terminals with voice and data capabilities)
- Data modules
- ISDN Basic Rate Interface telephones and computers
- Analog queue warning ports
- Recorded announcement ports.

Terminal Translation Initialization (TTI)

The system provides terminal translation initialization, a feature that works with Administration Without Hardware. Terminal translation initialization associates the terminal translation data with a specific port location through the entry of a special feature access code, a terminal translation initialization security code, and an extension number from a terminal that is connected to a wired, but untranslated jack.

Once a terminal is connected to an appropriate jack, the terminal user can dial the appropriate codes followed by a pretranslated extension number of an Administration Without Hardware terminal. The system will complete the administration of the terminal by associating the translation data with the port location and performing appropriate checks.

Terminal translation initialization reduces the labor associated with system initializations, major additions, rearrangement and changes, and building wiring. Translation data entry can be performed without knowledge of the physical layout of circuit packs. End-users can move their own station equipment if a building is wired to support it, reducing costs for station moves. Individual lines need only be wired to the correct type of port, rather than a specific port.

Administrators maintain control over the use of terminal translation initialization through security codes. By activating and deactivating security codes, administrators can control who uses terminal translation initialization — and when.

Performance measurements

A number of performance measurements are available on the system. These measurements are available in the form of system-based reports for local or remote access, and can be collected for subsequent analysis and reporting by adjuncts and operation support systems using the operation support system interface protocol. These reports include the following:

- Call Coverage reports display measurements of the distribution of traffic offered to call-coverage groups. Separate reports for all calls and external calls are supplied. Each report has sections that define group attributes, provide a summary of coverage-group call dispositions, and show the disposition of traffic at each coverage point. You can select which coverage groups are monitored via administration. The fields are as follows:
 - Group Attributes report the group number, number of principals, number and type of station at each coverage point, and the number of ring cycles before the call is advanced to the next coverage point.
 - Summary reports the number of calls offered, advanced to coverage, answered, and abandoned before being answered for all calls offered to the group and for external calls offered to the group.

- Coverage Points differs based on whether “All Calls” or “External Calls” is selected. The “All Calls” report shows detail data for all calls to the group; the “External Calls” report shows detail data for only the external calls offered to the group. For each coverage point in the group, the number of calls offered, abandoned while at that coverage point, and overflowing to the next coverage point are listed.

These measurements can be used to engineer group sizes at coverage points and to detect station user abuse of the call-coverage feature.

- Processor Occupancy report provides summary information on how heavily the processor is loaded. It includes fields giving peg counts of the number of various call types and total calling rates for the measurement period. The data fields of this report are as follows:
 - Processor occupancy for call processing (including the link subsystem) plus system management processes
 - Call processing (including the link subsystem), system management, and packet interface processor occupancy
 - Total calls, number of station-to-station calls, number of incoming trunk calls, number of outgoing trunk calls, and number of tandem calls

These measurements are listed for the last hour, today’s peak hour, and yesterday’s peak hour.

Large systems offer additional measurements that help configure the system, determine the system’s capacity for growth, and report unauthorized access attempts. These measurements include the following:

- Traffic Summary report provides a performance summary of the system with the following information:
 - Processor occupancy for call processing and system management
 - Attendant speed of service
 - Total system-network blocking probability, as well as blocking probability of the highest port network and highest center-stage link.
 - Total number of security violations as defined in the security violations report
 - A list of the trunk groups that experienced blocking higher than an administered design grade of service
 - Total trunks that are out of service

- Total number of Call Detail Recording record buffer high-water-mark violations and buffer overflows
- Time stamps for when the following events last occurred:
 - Major alarm
 - The list of trunk groups to be studied with the detailed report were last changed
 - The list of coverage groups to be studied were last changed
 - The list of Automatic Alternate Routing/Automatic Route Selection routing patterns to be studied was last changed.

These can be used to verify that your system and its users are not experiencing performance degradation due to overloaded system resources.

- Attendant Position report lists the following:
 - Attendant usage
 - Number of calls answered
 - Total time the attendant was available to answer a new call
 - Average holding time on calls answered
 - Security Violations report collects the following measurements:
 - System Management** includes the number of successful and unsuccessful logins, the number of valid and invalid passwords, and the number of times a login name was valid but three successive invalid passwords were entered.
 - Call Processing** lists the number of valid and invalid authorization codes entered for the system, the stations on the system, all tie trunks, and the attendant consoles. In addition, the time and dial access code/extension from which the last ten violations occurred are recorded.
 - Maintenance Board** lists the number of valid and invalid attempts to access the maintenance circuit pack.
- Tandem Traffic report provides information on facilities that serve tandem traffic.

The following measurements are useful in helping you evaluate the network engineering design for possible reconfiguration. They can help you decide how to reconfigure networks for lower-cost operation.

- Hunt Group Measurements lists various information including the number of calls that overflowed the group queue.
- Automatic Route Selection Pattern Measurements collects information on Automatic Route Selection patterns from when the report was administered into the measured pattern list until it is removed from the measured pattern list.

- Trunk Group Detailed Measurements reports on the traffic on a selected subset of trunk groups for a sequence of 24 measurement intervals whose length is customer-selectable between the options of 15 minutes, 30 minutes, or one hour. The report is divided into two sections:
 - Group Identification includes the trunk group number, size, type, direction, and size.
 - Measurements lists total usage, maintenance usage, total calls, incoming calls, tandem calls, group overflow, calls queued, queue overflow, percentage of all trunks busy, and percentage of outgoing blocking.
- The Blockage Study report shows the blockages that occur for Time Division Multiplexing attempts.

All of these measurements are accessible to an external host via the operation support system interface.

Call-Charge Information

DEFINITY BCS provides two ways to know the approximate charge for outgoing calls:

- Advice of Charge — For ISDN trunks
Advice of Charge collects charge information from the public network for each outgoing call. Charge advice is a number representing the cost of a call; it is recorded as either a charging or currency unit.
- Periodic Pulse Metering — For non-ISDN trunks
Periodic Pulse Metering accumulates pulses transmitted from the public network at periodic intervals during an outgoing call. At the end of the call, the number of pulses collected is the basis for determining charges.

Call-charge information helps you to account for the cost of outgoing calls without waiting for the next bill from your network provider. This is especially important in countries where telephone bills are not itemized. You can also use this information to let employees know the cost of their phone calls, encouraging them to save money on toll calls.

Call Detail Recording

Also included in the timely and efficient management of your communications system is the management and control of call costs. Call Detail Recording allows you to monitor and analyze call patterns and usage in your system. The DEFINITY BCS has enhanced the Call Detail Recording capabilities available to you.

Call Detail Recording

The Call Detail Recording feature has the following new capabilities:

- Distinguish voice from data on trunk calls
- Choose whether to record the Call Vectoring number in the “Dialed Number” field of the Call Detail Recording record, or record the hunt group member extension in the same field
- Allow Call Detail Recording records to be generated for internal calls (calls to and from a set of extensions, including data endpoints) so administered (a maximum of 100 extensions in large configurations)
- With Call Privacy, allow up to seven digits of the dialed number to be blanked from the Call Detail Recording record
- Use a second Call Detail Recording port for sending Call Detail Recording data to a second source

The DEFINITY BCS includes the Variable Format Records feature, which provides a flexible means of incorporating new fields in the call detail record as new switch features and new Call Detail Recording devices become available. The variable format allows you to define a record in terms of its content (from a set of available data elements), the position of its fields, and the spacing between the fields. This method can be used to construct the 15-, 18-, and 24-word standard formats and custom formats.

If calls come in while the Call Detail Recording link is down and the buffer is filled to maximum, the system gives you the following administrable call-record handling options:

- Block the calls with reorder
- Allow the calls to overwrite records
- Route the calls to an attendant with the option to proceed as a non-Call Detail Recording call.

As you can see, the DEFINITY BCS call-record handling capabilities are designed to be flexible, adapting to meet your present and future business needs.

Call Detail Recording devices

The following output devices are supported by the system:

- Local storage devices (such as the Call Detail Recording Unit/SE) and any customer-provided storage device with an RS-232C interface
- Processing devices (such as the Lucent Technologies Call Accounting System Plus for Windows, Cost Allocator, or host processors) that are supported over an RS-232C interface with XON/XOFF flow control
- Asynchronous ASCII printers with RS-232C interface.

The enhanced variable format records feature supports any customer-defined data presentation, and therefore can support any devices over an RS-232C interface.

Call Accounting System for Windows

The Call Accounting System for Windows allows you to generate comprehensive and accurate accounting reports using the familiar Microsoft* Windows environment, which allows you to run several tasks at once. Detailed or summary reports can be expressed in two or three dimensional, color charts and graphs, or in text files suitable for downloading to other applications. The optional toll fraud detection module allows you to detect fraudulent use of your long-distance services.

⇒ NOTE:

Some features and solutions are unavailable in some countries. Please contact your local account manager or authorized Lucent Technologies representative for further information about which features and solutions are available to you.

You can generate reports that identify:

- Most frequently dialed numbers
- Most expensive calls
- Longest duration calls.

In addition, you can search the accounting data for a great variety of information, including dialed numbers, partial numbers, dates, times, call types, departments, and calling extensions.

This enables you to reduce telephone expenses, optimize resources, assign costs, and identify abuse. The Call Accounting System for Windows helps you to clearly understand your telephone expenses and convey that understanding to others.

You can define up to five levels of reporting hierarchy to which you can assign costs. The system archives your data for one accounting period. A flexible markup capability allows service businesses to adjust call pricing for each client.

Call Accounting System for Windows can generate twenty standard historical or real-time reports from as many as 100 locations. An individual system is capable of polling different types of call detail storage units or other Call Accounting System for Windows systems. The remote systems forward call records and alarms as they are generated.

*. Registered trademark of Microsoft Corporation.

A traffic engineering option allows you to monitor trunk usage, calling patterns, incoming traffic, and outgoing calls by area code. This allows you to analyze trends summarizing how your equipment is being used.

Call Accounting System for windows is widely compatible and requires little maintenance, even while collecting data, generating reports, and managing remote data collection sites.

Call Accounting System Terminal

Lucent Technologies Call Accounting System Terminal is an easy-to-install hardware and software package that allows you to assign expenses to as many as three organizational levels. For example, you might assign costs at the department, cost center, or extension level.

The system makes it easy for you to generate a wide variety of accounting and system reports. For example, the Facility Grade of Service Report helps identify the number of trunk lines needed to respond efficiently to incoming calls. You can also generate toll fraud reports and alarms that identify excessive personal calls, unauthorized calls, and calls to expensive dial-up recordings.

⇒ NOTE:

Some features and solutions are unavailable in some countries. Please contact your local account manager or authorized Lucent Technologies representative for further information about which features and solutions are available to you.

INTUITY Lodging Call Accounting System

If you are using the Lucent INTUITY Lodging voice messaging product in a hospitality environment, the Lucent INTUITY Lodging Call Accounting System is the best call accounting solution for you. The system works exclusively with Lucent INTUITY products, which reside on a dedicated computer co-resident with the Lucent INTUITY Lodging system. (For more information on Lucent INTUITY products, see Chapter 9, "Voice Messaging Solutions.") Offering many of same features as the Call Accounting System for Windows (described in the previous section), the system also serves to help integrate your Lucent INTUITY Lodging applications.

Call Detail Recording Unit/SE

The Call Detail Recording Unit/SE (Call Detail Recording Unit/SE) can be used when call detail record storage is more than 7,000 records.

⇒ NOTE:

Some features and solutions are unavailable in some countries. Please contact your local account manager or authorized Lucent Technologies representative for further information about which features and solutions are available to you.

The Call Detail Recording Unit/SE is a special-purpose processor containing a built-in modem and permanently installed Call Detail Recording Unit software. It is a local Call Detail Recording storage device that collects, optionally filters, and stores Call Detail Recordings from a variety of systems including the DEFINITY BCS.

Upon request from a Lucent Technologies polling system, the Call Detail Recording Unit/SE transmits all Call Detail Recordings received since the last poll. The same Call Detail Recordings can be retrieved by up to two polling systems. The polled Call Detail Recordings are then available for processing via the Lucent Technologies Cost Allocator Call Processing Accounting Management Solution.

Following are some of the Call Detail Recording Unit/SE highlights:

- Stores 77,000 Call Detail Recordings for a 24-word record
- Stores 127,000 Call Detail Recordings for an 18-word record
- Supports 15-, 18-, and 24-word Call Detail Recordings including ISDN
- Supports fixed and variable length Call Detail Recordings
- Supports non-Lucent Technologies record formats up to 132 ASCII characters plus end-of-record characters
- Collects up to 3,600 Call Detail Recordings per hour
- Can be remotely administered
- Provides 72 hours of Call Detail Recording retention via 9-volt battery backup
- Uses three filtering options based on input from the system to reduce the number of useless Call Detail Recordings
- Monitors/displays Call Detail Recordings as they are collected
- Offers automatic initialization and power failure recovery
- Supports polling or remote maintenance via a built-in, 1200- or 2400-bps modem
- Uses a password for security protection for polling and administration
- Has alarm relay contacts for wiring to an alarm reporting device
- Performs on-line diagnostic tests (ROM, RAM, internal clock)
- Provides an on-line, real-time system status report.

Other management capabilities

Several other management features that enhance your investment in the DEFINITY BCS are described below:

Security violation notification

Security violation notification identifies potential hackers' attempts to access the system. It notifies you when the number of invalid login attempts is greater than the administered threshold. A monitor report displays the last 16 invalid login attempts. This report is automatically updated every 30 seconds.

Call restrictions

By dialing an access code, administrators and attendants have the ability to restrict users from making or receiving certain types of calls. There are five restrictions:

- Outward — User cannot place external calls.
- Station-to-station — User cannot place or receive internal calls.
- Termination — User cannot receive any calls (except priority calls).
- Toll — User can place local call, but cannot place toll calls.
- Total — User can neither place nor receive calls.

Reporting capabilities

Ongoing management of your systems can be enhanced by data made available through reports. The system gives you several options for obtaining reports on your system.

System-Based reports

The system has built-in capabilities for generating reports required for all systems. These reports are available without special hardware or software.

System Measurements reports supply information on the status of all communication facilities. These reports help determine the efficiency of resources, including but not limited to trunk groups, hunt groups, and the attendant group.

System Status reports supply information associated with the attendant group, major and minor alarms, and traffic measurements.

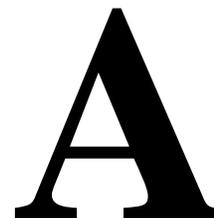
- The Recent Change History feature reports on the most recent administration and maintenance commands entered. The system also supplies:
 - New site data on the station form. New fields include the set color, building, floor, and headset. In addition, user-defined validation checks are provided for a subset of the site data items.

- Scaling enhancements, as well as a ranging and filtering capability, for large systems. These allow your administrator to restrict data reporting to only the desired amount of parameters.

The system also includes the following reports:

- Class-of-Restriction report lists the extensions that have a particular Class-of-Restriction value or that fall within a range of Class-of-Restriction values.
- Class-of-Service report lists the extensions that have a particular Class-of-Service value or that fall within a range of Class-of-Service values.
- Site Data report lists, by extension, the site data associated with stations in the system. Ranging and filtering capabilities are provided for selected site fields.

Features



Appendix overview

This appendix provides a description of each feature of DEFINITY Business Communications System arranged in the following categories:

- "Automatic Routing Features" on page 150
- "Basic Features" on page 153
- "Hospitality Features" on page 181
- "Hunt Group Features" on page 184
- "Private Networking Features" on page 187
- "Trunk Group Features" on page 191

Not all features are available with each model of DEFINITY BCS. Please see Appendix D, "System Capacity Limits" for information on feature availability by model. In addition, not all system applications or adjunct applications may be available in your country.

Each feature is described briefly, though most DEFINITY BCS features have many complex capabilities and options. The *DEFINITY Business Communications System Release 6 Administration and Feature Description*, 555-230-522, Issue 3 describes each feature in detail and provides complete implementation and administration information. Some features are systems of their own and have their own documentation, such as Call Detail Recording, AUDIX, and Call Management System. See your local distributor for more information on each of these features.

Please check with your local Lucent Technologies representative for further information about what is available in your country. Information about these country differences can be found in *DEFINITY Enterprise Communications Server Application Notes for Type Approval*. These documents are currently available from your Lucent Technologies Center of Excellence (COE), but may become orderable from the Publications Center at a future date.

Automatic Routing Features

DEFINITY BCS provides a variety of automatic-routing features for public and private networks. Automatic Alternate Routing (AAR) and Automatic Route Selection (ARS) are the foundation for these automatic-routing features. They route calls based on the preferred (normally the least expensive) route available at the time the call is placed. Generally, AAR routes calls over a private network and ARS routes calls using the public network numbering plan. However, both AAR and ARS support public and private networks. You can use the other features listed in this section when you use AAR and ARS.

Automatic Alternate Routing (AAR)

Allows private network calls to originate and terminate at one or many locations without accessing the public network. When you dial an access code and phone number, AAR selects the most desirable route for the call and performs digit conversion as necessary. If the first choice route is unavailable, another route is chosen automatically.

The numbers you call using AAR are normally private-network numbers. However, you can call a public-network number, a service code, an international number, operator access code, or an operator-assisted dialing number. With AAR and Subnet Trunking, you have a convenient way to place international calls to frequently-called foreign cities. Such calls route as far as possible over the private network, and then access the public network. This saves toll charges and allows you to use your private network as much as possible.

Automatic Route Selection (ARS)

ARS selects carriers automatically and routes calls inexpensively over the public network. When there are one or more long-distance carriers and wide-area telecommunications services (WATS) provided, DEFINITY BCS selects the most preferred route for the call. Long-distance carrier-code dialing is not required on routes selected by the system. You assign long-distance carrier-codes and DEFINITY BCS translates them. The system inserts codes as needed to guarantee automatic-carrier selection. ARS can route calls to a variety of types-of-numbers and access a variety of types of trunk groups.

AAR/ARS Overlap Sending

DEFINITY BCS supports overlap sending for AAR and ARS calls that are routed over ISDN-PRI trunk groups. ISDN-PRI call-address information is sent one digit at a time instead of in one block. In countries with complex public-network numbering plans, this allows for a significant decrease in call setup time. When overlap receiving is enabled, this is especially significant for tandemed calls.

AAR/ARS Partitioning

Allows AAR and ARS to be partitioned into 8 user groups within a single DEFINITY BCS and provides individual routing treatment for each of these user groups.

User groups share the same Partition Group Number, which indicates the choice of routing tables that are used on a particular call. Each Class of Restriction is assigned a specific Partition Group Number or Time of Day specification. Different classes of restriction may be assigned the same Partition Group Number.

Alternate Facility Restriction Levels

Allows DEFINITY BCS to adjust facility restriction levels or authorization codes for lines or trunks. Each line or trunk is normally assigned a facility restriction level. With this feature, alternate facility restriction levels are also assigned. Attendants can change to the alternates, thus changing access to lines and trunks. You might want to use this feature to disable most long-distance calling at night, for example, to prevent unauthorized staff from making long-distance calls.

CAUTION:

This feature may change the AAR and ARS routing preferences. Using it on tandem and tie-trunk applications affects entire networks. Calls that are part of a cross-country private network may be blocked.

Facility Restriction Levels

Allows certain calls to specific users, while denying the same calls to other users. For example, certain users may be allowed to use central office trunks to other corporate locations while other users may be restricted to less expensive private-network lines. You can administer up to eight levels of restriction for users of AAR and ARS.

Generalized Route Selection

Provides voice and data call-routing capabilities. You use it to select not only the least-cost routing, but also optimal routing over the appropriate facilities. It enhances AAR and ARS by providing additional parameters in the routing decision and maximizing the chance of using the right facility to route the call. Also, if an endpoint incompatibility exists, it provides a conversion resource (such as a modem from a modem pool) to attempt to match the right facility with the right endpoint.

Look Ahead Routing

Provides an efficient way to use trunking facilities. It allows you to continue to try to reroute an outgoing ISDN-PRI call that is not completing. When DEFINITY BCS receives a cause value that indicates congestion, Look Ahead Routing tells the

system what to do next. For each routing preference, you can indicate if the next routing-preference should be attempted or if the current routing-preference should be attempted again.

Subnet Trunking

Modifies the number you dial so an AAR or ARS call can route over different trunk groups that may terminate in switches with different dial plans. Subnet Trunking inserts digits, deletes digits, pauses, and/or waits for dial tone in digit outpulsing, as required, so calls route:

- To or through a remote switch
- Over Tie trunks to a private network switch
- Over CO trunks to the serving CO

Subnet Trunking is required on calls routing to or through a remote switch, regardless of the call's destination.

Time of Day Routing

Provides the most economical routing of ARS and AAR calls. This routing is based on the time of day and day of the week that each call is made. Up to 8 TOD routing plans may be administered, each scheduled to change up to 6 times a day for each day in the week.

This allows you to take advantage of lower calling rates during specific times of the day and week. In addition, companies with locations in different time zones can use different locations that have lower rates at different times of the day or week. This feature is also used to change patterns during the times an office is closed in order to reduce or eliminate unauthorized calls.

Basic Features

The following features come standard with DEFINITY BCS.

Abbreviated Dialing

Provides lists of stored numbers you can use to:

- Place local, long-distance, and international calls
- Activate features
- Access remote computer equipment

You dial the list number and the one-, two-, or three-digit number associated with the phone number you want. The number is then automatically dialed by the system. A frequently called number can be stored on an abbreviated dialing button that you need only press once to make the call.

Administered Connections

Automatically establishes an end-to-end connection between two access or data endpoints based on administered attributes. This feature provides capabilities such as alarm notification, including an administrable alarm type and threshold; automatic restoration of connections established over a Software-Defined Data Network; ISDN-PRI trunk group [service may be referred to as ISDN-PRI (AC/AE) Service]; scheduled as well as continuous connections; and administrable-retry interval for failed connection attempts.

Administrable Language Displays

Allows the messages that appear on telephone display units to be shown in the language spoken by the user. These messages are available in English (the default), French, Italian, Spanish, or one other user-defined language. The language for display messages is selected by each user. The feature requires 40-character display telephones.

Administration Without Hardware

Allows you to administer telephones that are not yet physically present on the system. This feature works the same as administration with hardware: when stations are moved, user-activated features such as call forwarding and send all calls are preserved and functional. This greatly facilitates the speed of setting up and making changes to the telephones on the system.

Alphanumeric Dialing

Allows you to place data calls by entering an alphanumeric name rather than a long string of numbers.

Alternate Operations Support System Alarm Number

Allows you to establish a second number for the system to call when an alarmable event occurs. This feature is useful for alerting a second support organization, such as INADS or OneVision.

Answer Detection

For purposes of call-detail recording, it is important to know when the called party answers a call. DEFINITY BCS provides three ways to determine whether the far end has answered an outgoing call.

- **Answer Detection** — A call-classifier board detects tones and voice-frequency signals on the line and determines whether a call has been answered. This method is fairly accurate.
- **Network Answer Supervision** — The central office (CO) sends back a signal to indicate that the far end has answered. If a call has traveled over a private network before reaching the CO, the signal is transmitted back over the private network to the originating system. This method is extremely accurate, but is not available in the United States over CO, FX, or WATS trunks.
- **Answer Supervision by Timeout** — You set a timer for each trunk group. If the caller is off-hook when the timer expires, the system assumes that the call has been answered. This is the least accurate method. Calls that are shorter than the timer duration do not generate call records, and calls that ring for a long time produce call records whether they are answered or not.

Attendant Auto-Manual Splitting

Allows an attendant to announce a call or consult privately with the called party without being heard by the calling party on the call. It splits the calling party away so the attendant can confidentially determine if the called party can accept the call.

Attendant Backup Alerting

Notifies backup attendants that the primary attendant cannot pick up a call. It provides both audible and visual alerting to backup stations when the attendant queue reaches its queue warning level. When the queue drops below the queue warning level, alerting stops. Audible alerting also occurs when the attendant console is in night mode, regardless of the attendant queue size.

Attendant Call Waiting

Allows an attendant to let a single-line telephone user who is on the phone know that a call is waiting. The attendant is then free to answer other calls. The attendant hears a call waiting ringback tone and the busy telephone user hears a call waiting tone. This tone is heard only by the called telephone user.

Attendant Calling of Inward Restricted Stations

A telephone with a Class of Restriction that is inward restricted cannot receive public network, attendant-originated, or attendant-extended calls. This feature allows you to override this restriction.

Attendant Console

A digital call-handling station with push-button control used not only to answer and place calls, but also to manage and monitor some system operations.

Attendant Control of Trunk Group Access

Allows an attendant to control trunk groups and prevents telephone users from directly accessing a controlled trunk group. This allows the attendant to monitor the use of these trunk groups. By watching the lamps associated with the trunk groups, the attendant can determine if the number of busy trunks in a specific trunk group has reached a preset warning level and if all trunks in a specific trunk group are busy. The attendant can then handle other calls to these trunk groups accordingly.

Attendant Crisis Alert

Visibly and audibly alerts attendants when an emergency call is placed. The feature indicates from where an emergency call is made, which allows the attendant to direct emergency-service response to the caller. Though often used in the hospitality industry, it can be set up to work with any standard attendant console.

Audible alerting sounds like an ambulance siren. Visual alerting consists of flashing of the crisis-alert button lamp and display of the caller name and extension. When crisis alerting is active, the console is placed in position-busy mode so that no other incoming calls interfere with the emergency call. The console can still originate calls. The attendant must press the position-busy button to unbusy the console and the crisis-alert button to deactivate audible and visual alerting.

Attendant Direct Extension Selection With Busy Lamp Field

Allows the attendant to keep track of extension status — whether the extension is idle or busy — and to place or extend calls to extension numbers without having to dial the extension number. The attendant can use this feature in two ways: using standard Direct Extension Selection access, or using enhanced Direct Extension Selection access.

Attendant Direct Trunk Group Selection

Allows the attendant direct access to an idle outgoing trunk by pressing the button assigned to the trunk group. This feature eliminates the need for the attendant to memorize, or look up, and dial the trunk access codes associated with frequently used trunk groups. Pressing a labelled button selects an idle trunk in the desired group.

Attendant Display

Shows call-related information that helps the attendant to operate the console. Also shows personal service and message information. Information is shown on the alphanumeric display on the attendant console. Attendants may select one of several available display message languages: English, French, Italian, or Spanish. In addition, your company may define one additional language for use by users and attendants on their display.

Attendant Intrusion (Call Offer)

Allows an attendant to enter an existing call to inform the person being called about a message or another call. Upon intrusion, tone may be applied if administered.

Attendant Override of Diversion Features

Allows an attendant to bypass diversion features such as Send All Calls and Call Coverage by putting a call through to an extension even when these diversion features are on. This feature, together with Attendant Intrusion, can be used to get an emergency or urgent call through to a telephone user.

Attendant Priority Queue

Places incoming calls to the attendant in an orderly queue when these calls cannot go immediately to the attendant. This feature allows you to define twelve different categories of incoming attendant calls, including emergency calls, which are given the highest priority.

Attendant Recall

Allows users to recall the attendant when they are on a two-party call or on an Attendant Conference call held on the console. Single-line users press the Recall button or flash the switchhook to recall the attendant. Multiappearance users press the Conference or Transfer button to recall the attendant and remain on the connection when either button is used.

Attendant Release Loop Operation

Allows the attendant to hold a call off the console if the call cannot immediately go through to the person being called. A timed reminder begins once the call is on hold. If the call is not answered within the allotted time, the call returns to the queue for the attendant. Timed reminders attempt to return the call to the attendant who previously handled it. Only when the original attendant is unavailable are calls returned to the queue.

Attendant Serial Calling

Enables an attendant to transfer trunk calls that return to the same attendant after the called party hangs up. The returned call can then transfer to another station within the switch. This feature is useful if trunks are scarce and Direct Inward Dialing services are unavailable. An outside caller may have to redial often to get through because trunks are so busy. Once callers get through to an attendant they can use the same line into the switch for multiple calls. The attendant's display shows if an incoming call is a serial call.

Attendant Split Swap

Allows the attendant to alternate between active and split calls. This operation may be useful when the attendant may need to transfer a call, but first must talk with each party before completing the transfer.

The Attendant Split Swap feature is described in greater detail in "Attendant Split Swap" on page 195.

Audible Message Waiting

Places a stutter at the beginning of the dial tone when a telephone user picks up the phone. The stutter dial tone indicates that the user has a message waiting. This feature is particularly useful for visually impaired people who may not be able to see a message light. It is often used with telephones that have no message waiting lights, but may not be available in countries that restrict the characteristics of dial tones provided to users.

Audio Information Exchange Interface

AUDIX is a message-handling system for recording and distributing spoken messages or voice mail. Stored voice prompts guide users in creating, sending, retrieving, answering, saving, and forwarding spoken messages.

Several versions of AUDIX are available: DEFINITY AUDIX is comprised of circuit packs resident in the switch. INTUITY AUDIX is external to the DEFINITY BCS and connected to it by station lines and data links. AUDIX systems can also be networked through switches or other AUDIX machines. They rely on a data link between the AUDIX adjunct on the switch.

Authorization Codes

Authorization Codes extend calling-privilege control and enhance security for remote-access callers.

Authorization codes may be used to:

- Override facility restriction levels assigned to originating stations or trunks
- Restrict individual incoming tie trunks and remote-access trunks from accessing outgoing trunks
- Track CDR calls for cost-allocation purposes
- Provide additional security control

Auto Start and Don't Split

Auto Start allows the attendant to make a telephone call without pushing the start button first. If the attendant is on an active call and presses digits on the keypad, the system automatically splits the call and begins dialing the second call. The Don't Split feature deactivates the Auto Start feature and allows the sending of touch tones over the line for the purposes of such things as picking up messages.

Automated Attendant

Automated Attendant (formerly known as Direct Access Calling) uses call vectoring commands to allow a caller to enter the extension of the party they wish to reach. The call is routed to that extension by the vector.

Automatic Callback

Allows internal users who placed a call to a busy or unanswered internal telephone to be called back automatically when the called voice terminal becomes available.

When a user activates Automatic Callback, the system monitors the called telephone. When the called telephone becomes available to receive a call, the system originates the Automatic Callback call. The originating party receives priority ringing. The calling party then lifts the handset and the called party receives the same ringing provided on the original call.

Automatic Circuit Assurance

Assists in identifying possible trunk problems. The system maintains a record of the performance of individual trunks and automatically calls a designated user when a possible failure is detected. This feature provides better service through early detection of faulty trunks and consequently reduces out-of-service time.

Automatic Incoming Call Display

Displays information about an incoming call while you are using a display telephone.

Automatic Transmission Measurement System

Measures voice and data trunk facilities for satisfactory transmission performance. The measurement report contains data on trunk signal loss, noise, signaling return loss, and echo return loss. Acceptable performance, the scheduling of tests, and report contents are administrable.

Block Collect Call

Blocks collect calls. This feature is used primarily in Brazil.

Bridged Call Appearance — Multi-Appearance Telephone

Allows calls to be handled from more than one telephone. A bridged call appearance is set up by administering a primary extension and the button number associated with it on a two-lamp button on another telephone. One way this feature is most often used is by secretaries or assistants who answer or handle calls to the primary extension (an executive, for example). When the primary extension receives a call, the bridged call appearance flashes or rings and the call can be handled as if the primary extension user was answering it.

Bridged Call Appearance — Single-Line Telephone

Allows single-line telephones users to have a bridged appearance on a multi-appearance phone.

Bulletin Board

The bulletin board is a place on the switch where you can post information and receive messages from other switch users, including Lucent Technologies personnel. Anyone with appropriate permissions can use the bulletin board for everyday messages. In addition, Lucent Technologies personnel can leave high-priority messages, which are displayed on the first 10 lines of the bulletin board.

Busy Verification of Terminals and Trunks

Allows attendants and users of multi-appearance telephones to make test calls to trunks, telephones, and hunt groups to check the status of an apparently busy resource. With this feature, an attendant or multifunction telephone user can distinguish between a telephone that is truly busy and one that only appears busy because of some problem. You can also use the feature to quickly identify faulty trunks.

Call Charge Information

DEFINITY BCS provides two ways to know the approximate charge for calls made on outgoing trunks:

- Advice of Charge — For ISDN trunks
Advice of Charge (AOC) collects charge information from the public network for each outgoing call. Charge advice is a number representing the cost of a call; it is recorded as either a charging or currency unit.
- Periodic Pulse Metering — For non-ISDN trunks
Periodic Pulse Metering (PPM) accumulates pulses transmitted from the public network at periodic intervals during an outgoing trunk call. At the end of the call, the number of pulses collected is the basis for determining charges.

Call-charge information helps you to account for the cost of outgoing calls without waiting for the next bill from your network provider. This is especially important in countries where telephone bills are not itemized. You can also use this information to let employees know the cost of their phone calls, and so encourage them to help manage the company's telecommunications expenses.

⇒ NOTE:

This feature is not offered by the public network in some countries, including the United States.

Call Coverage

Call Coverage provides automatic redirection of calls that meet specified criteria to alternate answering positions in a Call Coverage path. A coverage path can include any of the following: a telephone, an attendant group, a uniform call distri-

bution hunt group, a direct department calling hunt group, an automatic call distribution hunt group, a voice messaging system, or a coverage answer group established to answer redirected calls.

In addition to redirecting a call to a local answering position, you can administer Call Coverage to:

- Redirect calls based on time-of-day
- Redirect calls to a remote location
- Allow users to change back and forth between two lead-coverage paths from either an on- or off-site location

Call Detail Recording

Records detailed call information on incoming and outgoing calls for the purpose of call accounting and sends this call information to a call detail recording output device. You can specify the trunk groups and extensions for which you want records to be kept as well as the type of information to be recorded. You can keep track of both internal and external calls. This application contains a wide variety of administrable options and capabilities.

Call Forwarding

Call Forwarding provides four functions:

- Call Forwarding All Calls — Allows calls to be forwarded to an internal extension, external (off-net) number, an attendant, or an attendant group.
- Call Forwarding Override — Allows the user at the forwarded-to extension to override Call Forwarding and either initiate a call or transfer a call back to the forwarded-from extension.
- Call Forward Busy/Don't Answer — Allows calls to be forwarded when the called extension is busy or when the call is not answered after an administrable interval. If the extension is busy, the call forwards immediately. If the extension is not busy, the incoming call rings the called extension, then forwards only if it remains unanswered longer than the administered interval.
- Call Forwarding Off Net — Allows calls forwarded off net to be tracked for busy or no-answer conditions. The system brings the call back for further call-coverage processing if specified conditions are met. This feature is particularly useful for telecommuters, who can have their on-site office calls forwarded to their home offices.

Call Park

Allows you to put a call on hold and then retrieve a call from any other telephone on the system. This is helpful when you are on a call and need to go to another location for information. It also allows you to answer a call from any telephone after being paged by a telephone user or an attendant.

Call Pickup

Along with Directed Call Pickup, allows you to answer calls for other telephones within your specified call pickup group. Directed Call Pickup allows you to pick up any call on the DEFINITY BCS system. With this feature, you do not have to leave your telephone to answer a call for a nearby telephone. You simply dial an access code or press a Call Pickup button.

Call Waiting Termination

Allows for users of single-line telephones who are on a call to be notified of a second call. This feature enables the second call to wait and sends a distinctive call waiting tone to the user who is being called.

Class of Restriction

Defines many different classes of call origination and termination privileges. Systems may have no restrictions, only a single class of restriction, or may have as many classes of restrictions as necessary to effect the desired restrictions. Many different types of classes of restriction can be assigned to many types of facilities on the switch. For example, you can use a calling-party COR to prevent callers from accessing the public network.

Class of Service

Defines whether or not telephone users can access the following features and functions: Automatic Callback, Call Forwarding, Data Privacy, Priority Calling, Restrict Call Forwarding Off-Net, Call Forward Busy/Don't Answer, Personal Station Access, Extended Forwarding and Busy/Don't Answer, Trunk-to-Trunk Transfer Restriction Override, Off-Hook Alert, Console Permission, or Client Room.

Code Calling Access

Allows attendants, users, and tie trunk users to page with coded chime signals. This feature is helpful for users who are often away from their telephones or at a location where a ringing telephone might be disturbing.

Conference — Attendant

Allows an attendant to set up a conference call for as many as six conferees, including the attendant. Conferences from inside and outside the system can be added to the conference call.

Conference — Terminal

Allows multi-appearance telephone users to set up six-party conference calls without attendant assistance. Single-line telephone users can set up three-party conference calls without attendant assistance.

Consult

Allows a covering user, after answering a call received through Call Coverage, to call the called party for private consultation. Consult can be used to let a covering user ask the principal if they want to speak with the calling party.

Coverage Callback

Allows a covering user to leave a message for the called party to call back the person who called.

Coverage Incoming Call Identification

Allows multi-appearance telephones users without a display in a Coverage Answer Group to identify an incoming call to that group.

Customer-Provided Equipment Alarm

Provides you with an indication that a system alarm has occurred and that the system has attempted to contact a service organization. A device that you provide, such a lamp or a bell, is used to indicate the alarm situation. You can administer the level of alarm about which you want to be notified.

Data Call Setup

Enables the setting up of data calls using a variety of methods, such as: keyboard dialing, telephone dialing, Hayes command dialing, permanent switched connections, administered connections, automatic calling unit interface, and hotline dialing. Data Call Setup is provided for both DCP and ISDN-BRI telephones.

Data Hot Line

Provides for automatic placement of a data call when the originator hangs up. Data Hot Line may be used for security purposes. This feature offers fast and accurate call placement to commonly called data endpoints. Data terminal users who constantly call the same number can use Data Hot Line to automatically place the call when they hang up the telephone.

Data Privacy

Protects analog data calls from being disturbed by any of the system's overriding or ringing features. Data Privacy is activated when you dial an activation code at the beginning of the call.

Data Restriction

Like Data Privacy, this feature protects analog data calls from being disturbed by any of the system's overriding or ringing features. It is administered at the system level to selected analog and multi-appearance telephones and trunk groups.

Default Dialing

Provides data terminal users who dial a specific number the majority of the time a very simple method of dialing that number. This feature enhances Data Terminal (Keyboard) Dialing by allowing a data terminal user to place a data call to a preadministered destination in several different ways, depending on the type of data module. Data Terminal Dialing and Alphanumeric Dialing are unaffected.

Demand Print

Allows you to print your undelivered messages without calling the Message Center.

Dial Access to Attendant

Allows you to reach an attendant by dialing an access code. The attendant can then extend the call to a trunk or to another telephone.

Dial by Name

The Dial by Name feature allows you to "dial" someone by entering their name from your touch-tone keypad. This feature is accessible by using the Call Vectoring feature and the integrated announcement circuit pack (TN750C) to create an "auto-attendant" procedure where one of the options allows callers to enter a per-

son's name instead of their extension number. The system processes the name characters received, and, when a match is found, the number is dialed automatically.

The Dial by Name feature is described in greater detail in "Dial by Name" on page 201.

Dial Plan

The dial plan is the system's guide to digit translation. When the system receives dialed digits, the system must know what to expect next based on the digits received so far. For example, if you dial 4, the dial plan tells the system how many more digits to expect before the call is processed.

Dialed Number Identification Service

Displays, for a called party or answering position, the service or product associated with an incoming call. You administer what the system displays.

Distinctive Ringing

Helps users and attendants distinguish between various types of incoming calls by distinctive ringing patterns. You can set up ringing patterns to indicate many different types of calls: internal, external, and priority calls, for example.

Dual DCP I-Channels

Support the use of dual DCP I-channels for AUDIX networking. In this case, networking refers to the ability to send data files between AUDIX systems, not to communications with the switch.

Emergency Access to the Attendant

Provides for emergency calls to be placed to an attendant. These calls can be placed automatically by the system or can be dialed by system users. Emergency access calls can receive priority handling by the attendant.

Enhanced Abbreviated Dialing

Supplements Abbreviated Dialing by providing one enhanced number per system. Enhanced number lists can contain any number or dial access code. System Administrators designate privileges for group number lists, system number lists and enhanced number lists. With privileged lists, users can access otherwise-restricted numbers (for example, stations without long-distance access can be programmed to access specified long-distance numbers.)

Enhanced Voice Terminal Display

The Enhanced Voice Terminal Display feature allows you to choose the character set that you want to see in DEFINITY BCS softkeys and display terminals. In addition to the standard Roman character set, you can choose either the Katakana or characters used for most European languages.

External Device Alarming

Allows you to assign analog ports to alarm interfaces for external devices. You can specify a port location, information to identify the external device, and the alarm level to report when a contact closure occurs.

Facility Busy Indication

Allows users of multi-appearance telephones to see which lines, trunk groups, terminating extension groups, hunt groups, or paging zones (called resources or facilities) are busy. When the lamp associated with the resource is lit, the resource is busy.

You can store extension numbers, trunk group access codes, and Loudspeaker Paging access codes in a Facility Busy Indication button. The Facility Busy Indication button provides direct access to any of the facilities.

Facility Test Calls

Allows telephone users to make test calls to access specific trunks, dual tone multifrequency receivers, time slots, and system tones. The user dials an access code and makes the test call to make sure the facility is operating properly. Security measures are included to prevent unauthorized use.

Fiber Link Administration

Port cabinets are connected via direct fiber links or through fiber links to a center-stage switch to provide the connections required for voice and data information transfer. The center-stage switch is composed of switch node carriers that are interconnected by fiber links. It provides both circuit-switched and packet-switched connections. Fiber Link Administration creates the translation data defining these links by identifying the endpoint pairs for each link. Endpoints can be an expansion interface or a switch-node-interface circuit pack.

Go to Cover

Allows users who call another internal extension to send the call directly to coverage.

Group Listen

Simultaneously activates your speakerphone in listen only mode and your handset or headset in listen and speak mode. This allows you to serve as spokesperson for a group. You can participate in a conversation while everyone else in the room is listening to what is said.

⇒ NOTE:

This feature is offered only on the 6400-series telephones.

Group Paging

Allows you to make an announcement to a group of people via their speakerphones. The speakerphones are automatically turned on when you begin the announcement. The recipients can listen to the message via the handset if they wish, but they cannot speak to you in return.

Hold

Allows you to disconnect from a call temporarily, use your telephone for other call purposes, and then return to the original call.

Hold — Automatic

Allows attendants and multi-function telephone users to alternate easily between two or more calls. For example, with automatic hold, selection of a second call appearance automatically puts the active call (if any) on hold and makes the second call appearance active. This feature can be activated on a system-wide basis only. When automatic hold is not activated, the depression of the second call appearance would drop the first call.

Hunt Groups

A group of extensions that can handle multiple calls simultaneously to a single phone number. For each call to the phone number, the system hunts for an available extension in the group and connects the call to that extension.

A hunt group is especially useful when you expect a high number of calls to a particular phone number. A hunt group might consist of people trained to handle calls on specific topics. For example, the group might be:

- A benefits department within your company
- A service department for products you sell
- A travel reservations service
- A pool of attendants

In addition, a hunt group might consist of a group of shared telecommunications facilities. For example, the group might be:

- A group of data-line circuit ports
- A group of data modules

Individual Attendant Access

Allows you to call a specific attendant console. Each attendant console can be assigned an individual extension number.

Integrated Directory

Allows users with display-equipped telephones to access the system database, use the touch-tone buttons to enter a name, and retrieve an extension number from the system directory. The directory contains the names and extensions assigned to all telephones on the system.

Integrated Services Digital Network — Basic Rate Interface (ISDN-BRI)

Enables connection of the system to equipment or endpoints that support an Integrated Services Digital Network (ISDN) by using a standard format called the Basic Rate Interface (BRI). This feature is a 192-Kbps interface that carries two 64-Kbps B-channels and one 16-Kbps D-channel.

ISDN is a global access standard that uses a layered protocol. It eliminates the need for multiple, separate access arrangements for voice, data, facsimile, and video services and networks. Using the same pair of wires that now carry simple telephone calls, ISDN can deliver voice, data, and video services in a digital format.

The ISDN-BRI Trunk circuit pack allows DEFINITY to support the T interface and the S/T interface as defined by ISDN standards (ITU-T recommendation I.411). The circuit pack provides eight ports to the network and supports two B channels and one D channel. ISDN-BRI Trunk provides the following advantages:

- Provides an inexpensive way to connect to ISDN services provided by the network provider.
- Meets almost all ETSI Country protocol requirements.
- Supports essential (not supplementary) ISDN services.

Intercept Treatment

Provides an intercept tone or a recorded announcement or routes the call to an attendant for assistance when calls cannot be completed or when use of a feature is denied.

Intercom — Automatic

Allows two users to talk together easily. Calling users press the Automatic Intercom button and lift the handset. The called user receives a unique intercom ring and the intercom lamp, if provided, flashes. With this feature, users who frequently call each other can do so by pressing one button instead of dialing an extension number.

Intercom — Dial

Allows multi-appearance telephone users to easily call others within an administered group. The calling user lifts the handset, presses the Dial Intercom button, and dials the one- or two-digit code assigned to the desired party. The called user's phone rings, and intercom lamp, if provided, flashes. With this feature, a group of users who frequently call each other can do so by pressing one button and dialing a one- or two- digit code instead of dialing an extension number.

Internal Automatic Answer

Allows specific telephones to answer incoming internal calls automatically. This feature is intended for use with telephones that have speakerphones or headsets. You simply press an Internal Automatic Answer feature button, and calls are automatically answered when the telephone is idle. Internal and Distributed Communications System calls can be answered using automatic answer, but only attendants can use automatic answer to answer external calls directed to the attendant.

Last Number Dialed

Allows you to automatically redial the last number dialed. The system saves the first 24 digits of the last number dialed, whether the call attempt was manually dialed or dialed using Abbreviated Dialing. When you press the Last Number Dialed button or dial the Last Number dialed feature access code, the system places the call again.

Leave Word Calling

Allows internal system users to leave a short preprogrammed message (usually "Call" with the calling user's name, extension number, and the time of the call) for other internal users. When the message is stored on the DEFINITY BCS, the Message lamp on the called telephone automatically lights. Leave Word Calling messages can be retrieved using a telephone display, Voice Message Retrieval, or AUDIX. Messages may be retrieved in English, French, Italian, Spanish, or a user-defined language.

Line Lockout

Removes single-line telephone extension numbers from service when users fail to hang up after receiving dial tone for 10 seconds (default) and then an intercept tone for 30 seconds (default). These intervals are administrable. The out-of-service condition lasts until the telephone user hangs up the phone.

Listed Directory Number

Allows outside callers to access your attendant group in two ways, depending on the type of trunk used for the incoming call. You can allow attendant group access via incoming direct inward dial trunks, or you can allow attendant group access via incoming central office) and foreign exchange trunks.

Loudspeaker Paging Access

Provides attendants and telephone users dial access to voice paging equipment. As many as nine paging zones can be provided by the system and one zone can be provided that activates all zones at the same time. (A zone is the location of the loudspeakers — for example, conference rooms, warehouses, or storerooms.) A user can activate this feature by dialing the trunk access code of the desired paging zone, or the access codes can be entered into Abbreviated Dialing Lists. Once you have activated this feature, you can simply speak into the handset to make the announcement.

Deluxe Loudspeaker Paging Access (called Deluxe Paging) provides attendants and telephone users with integrated access to voice-paging equipment and Call Park capabilities. When you activate Deluxe Paging, the call is automatically parked. The parked call returns to the parking user with distinctive alerting when the time-out interval expires.

Manual Message Waiting

Allows multi-appearance telephone users to light the status lamp associated with the manual Message Waiting button at another multi-appearance telephone. They do this by simply pressing a button on their own telephone. This feature can be administered only to pairs of telephones such as a secretary and an executive. The secretary might press the button to signal to the executive that a call needs answering or someone has arrived for an appointment. The executive might use the button to indicate that he or she should not be disturbed.

Manual Originating Line Service

Connects single-line telephone users to the attendant automatically when the user lifts the handset. The attendant number is stored in an Abbreviated Dialing list. When the telephone user lifts the handset, the system automatically routes the call to the attendant using the Hot Line Service feature.

Manual Signaling

Allows one user to signal another user. The receiving user hears a two-second ring. The signal is sent each time the button is pressed by the signaling user. The meaning of the signal is prearranged between the sender and the receiver. Manual Signaling is denied if the receiving telephone is already ringing from an incoming call.

Misoperation Handling

Defines how calls are handled when a misoperation occurs. A misoperation is when calls are left on hold when the controlling station goes on hook.

For example, a misoperation can occur under either of the following conditions:

- If you hang up prior to completing a feature operation (in some cases, hanging up completes the operation, as in call transfer). If, for example, you place a call on hold, begin to transfer the call, dial an invalid extension number, and then hang up, that is a misoperation.
- When the system enters night service while attendant consoles have calls on hold.

The system administrator can alter the standard Misoperation Handling to ensure that an external caller is not left on hold indefinitely, or dropped by the system after a misoperation with no way to reach someone for help.

This feature is used only in France and Italy.

Multi-Appearance Preselection and Preference

Provides options for placing or answering calls on selected call appearances. Ringing Appearance *Preference* automatically connects you to the incoming ringing call when the user picks up the handset. *Idle Appearance Preference* automatically connects you to an idle appearance. *Preselection* allows the user to manually select an appearance. Preselection is used, for example, when you want to reconnect with a held call or activate a feature. Preselection can be used with a feature button. For example, if you press an Abbreviated Dialing button, the call appearance is automatically selected and, if you pick up the handset within five seconds, the call is automatically placed. The Preselection option overrides both of the other preference options.

Music-on-Hold Access

Automatically provides music, silence, or tone to a caller. Music lets the caller know that the connection is still valid. Many different music options can be administered to accommodate different tenants on the DEFINITY BCS. See the Tenant Partitioning feature for more information.

Night Service

There are five Night Service features:

- Hunt Group Night Service allows an attendant or a split supervisor to assign a hunt group or split to Night Service mode. All calls for the hunt group are then redirected to the hunt group's designated Night Service extension. When a user activates Hunt Group Night Service, the associated button lamp lights.
- Night Console Service directs all calls for primary and daytime attendant consoles to a night console. When a user activates Night Console Service, the Night Service button for each attendant lights and all attendant-seeking calls (and calls waiting) in the queue are directed to the night console. To activate and deactivate this feature, the attendant presses the Night button on the principal attendant console or designated console.
- Night Station Service directs incoming calls for the attendant to designated extensions. Attendants can activate Night Station Service by pressing the Night button on the principle console if there is not an active night console. If the night station is busy, calls (including emergency attendant calls) receive a busy tone. They do not queue for the attendant.
- Trunk Answer from Any Station allows telephone users to answer all incoming calls to the attendant when the attendant is not on duty and when other voice terminals have not been designated to answer the calls. The incoming call activates a gong, bell, or chime and a voice-terminal user dials an access code to answer the call.
- Trunk Group Night Service allows an attendant or a designated telephone user to individually assign a trunk group or all trunk groups to the night service mode. Specific trunk groups individually assigned to the service are in Individual Trunk Night Service Mode. Calls coming into these trunk groups are redirected to designated night service extensions. Incoming calls on other trunk groups are processed normally.

Personal Station Access

Allows you to transfer your telephone station preferences and permissions to any other compatible telephone. This includes the definition of terminal buttons, abbreviated dial lists, and Class of Service and Class of Restrictions permissions. It can be used on-site or off-site (with DEFINITY Extender). This has several telecommuting applications. For example, several telecommuting employees can share the same office on different days of the week. The employees can easily and remotely make the shared telephone "theirs" for the day. Remote use requires DEFINITY Extender.

Personalized Ringing

Allows users of certain telephones to uniquely identify their own calls. Each user can choose one of a number of possible ringing patterns. The eight ringing patterns are tone sequences consisting of different combinations of three tones. With this feature, users working closely in the same area can each specify a different ringing pattern in order to better identify their own calls.

Power Failure Transfer

Provides service to and from the local telephone company central office, including Wide Area Telecommunications System, during a power failure. This allows you to make or answer important or emergency calls during a power failure. This feature is also called Emergency Transfer.

Priority Calling

Allows you to ring another telephone with a distinctive signal that tells the called party the incoming call requires immediate attention. The called party can then handle the call accordingly. You activate priority calling by Dialing a Priority Calling access code or pressing a feature button, followed by the extension number. You can use Priority Calling only if your telephone has been administered with the required class of service.

Privacy — Attendant Lockout

Prevents an attendant from reentering a multiple-party connection held on the console unless recalled by a telephone user. This feature is administered on a system-wide basis. It is either activated or not activated.

Privacy — Manual Exclusion

Allows multi-appearance telephone users to keep other users with appearances of the same extension number from bridging onto an existing call. Exclusion is activated by pressing the Exclusion button on a per-call basis.

Public Network Call Priority

Public Network Call Priority provides call retention, forced disconnect, intrusion, mode-of-release control, and rering to switches on public networks. Different countries frequently refer to these capabilities by different names.

Pull Transfer

Allows *either* the party who was originally called *or* the party to whom the held call will be transferred to complete the transfer. This is a convenient way to connect a party with someone better qualified to handle the call. Attendant assistance is not

required and the call does not have to be redialed. It interfaces with satellite workstations via TGU/TGE trunks and is always available for calls that use TGU/TGE trunks.

Recall Signaling

Recall Signaling allows the user of an analog station to place a call on hold, use the voice terminal for other call purposes, and then return to the original call.

Recent Change History

Allows the system manager to view or print a history report of the most recent administration and maintenance changes on the switch. This report may be used for diagnostic or information purposes.

Recorded Announcements

Provides an announcement to callers under a variety of circumstances. For example, announcements let callers know that their call cannot be completed as dialed, that their call is in queue, or that all lines are busy.

Recorded Telephone Dictation Access

Allows telephone users, including Remote Access and incoming tie trunk users, to access dictation equipment. The dictation equipment is accessed by dialing an access code or extension number. The start/stop function can be voice or dial controlled. Other functions such as initial activation and playback are controlled by additional dial codes.

Restriction — Controlled

Allows an attendant or telephone user with console permission to activate and deactivate for an individual telephone or a group of telephones the following restrictions: outward, total, station-to-station, and termination restrictions.

Ringback Queuing

Places calls in an ordered queue (first in, first out) when all trunks are busy. The telephone user who is trying to make a call is automatically called back when a trunk becomes available, and hears a distinctive three-burst signal when called back.

Ringer Cutoff

Allows the user of a multi-appearance telephone to turn audible ringing signals on and off. Visual alerting is not affected by this feature. When this feature is enabled, only Priority (three-burst) ring, Redirect Notification, Intercom ring, and manual signaling ring at the telephone. Internal and external calls do not ring.

Ringling — Abbreviated and Delayed

Allows you to manually or automatically assign one of four ring types to each call appearance on a telephone. Whatever treatment you assign to a call appearance is automatically assigned to each of its bridged call appearances.

Security Violation Notification

Security Violation Notification (SVN) allows you to set security-related parameters and to receive notification when the limits that you have established are violated. You can run reports related to both valid and invalid access attempts. You can also disable a login ID or remote access authorization that is associated with a security violation.

Send All Calls

Allows users to temporarily direct all incoming calls to coverage regardless of the assigned call-coverage redirection criteria. Covering users can temporarily remove their voice terminals from the coverage path. The feature is activated and deactivated via a button or access code.

Station Hunting

Routes calls made to a busy extension to another extension. To use Station Hunting, you create a station hunting chain that governs the order in which a call routes from one extension to the next when the called extension is busy. Each extension in the chain links *to* only one subsequent extension. An extension may be linked *from* any number of extensions, however.

Station Security Codes

To provide additional security around the customer options the "init" login has been provided with additional security for the purpose of establishing an authentication procedure for attempts to remotely log into the system.

Telephone Self Administration

Allows you to program feature buttons on 6400-series telephones yourself.

Temporary Bridged Appearance

Allows multiappearance telephone users in a terminating extension group or personal central office line group to bridge onto an existing group call. If a call has been answered using the Call Pickup feature, the originally called party can bridge onto the call. This feature also allows a called party to bridge onto a call that redirects to coverage before the called party can answer it.

Terminal Translation Initialization

Allows you to merge an Administration Without Hardware station to a valid port from a terminal connected to that port. You simply dial a system-wide security code and the extension. This feature also allows you to separate a station from its port by dialing a similar separate digit sequence. This action causes the station to be administered without hardware.

Terminating Extension Group

Allows an incoming call to ring (either audible or silent alerting) as many as four telephones at one time. Any user in the group can answer the call. Any telephone can be administered as a group member. Only a multi-appearance telephone can be assigned a feature button with an associated status lamp, however. The feature button allows the user to select a Terminating Extension Group call appearance for answering or bridging onto an existing call but not for call origination. For example, a department in a large store might have three telephones. Anyone in the department can answer the call. The salesperson most qualified to answer the call can bridge onto the call.

Timed Reminder and Attendant Timers

Automatically alerts the attendant after an administered time interval for the following types of calls: extended calls to be answered or waiting to be connected to a busy single-line telephone, one-party calls placed on hold on the console, and transferred calls that have not been answered after transfer. Timed Reminder informs the attendant that a call requires additional attention. After the attendant reconnects to the call, the user can either choose to try another extension number, hang up, or continue to wait. DEFINITY BCS supports a variety of administrable attendant timers for use in a variety of situations.

Transfer

Allows telephone users to transfer trunk or internal calls to other telephones within the system without attendant assistance. This feature provides a convenient way to connect a party with someone better qualified to handle the call. Single-line telephone users momentarily flash the switchhook or press the Recall button, dial the desired extension, and hang up. Multiappearance telephone users press the Transfer button, dial the desired extension number, and press the Transfer button again.

Transfer — Outgoing Trunk to Outgoing Trunk

Allows a user or attendant to initiate two or more outgoing trunk calls and then transfer the trunks together. The transfer operation removes the original user from the connection and conferences the outgoing trunks. Alternatively, the controlling party can establish a conference call with the outgoing trunks and then drop out of the conference, leaving only the outgoing trunks on the conference. This is an optional enhancement to Trunk-to-Trunk Transfer and requires careful administration and use. DCS Trunk Turnaround may be a safer alternative to this feature.

Trunk Flash

Trunk Flash allows a feature or function button on a multifunction telephone or attendant console to be assigned as a Flash button. Pressing this button while connected to a trunk (which must have been administered to allow trunk flash) causes the system to send a flash signal out over the connected trunk.

Trunk Flash enables multifunction voice terminals to access central office customized services that are provided by the Central Office to which DEFINITY BCS is connected. These services are electronic features, such as conference and transfer, that are accessed by a sequence of flash signal and dial signals from the DEFINITY System station on an active trunk call. The Trunk Flash feature can help to reduce the number of trunk lines connected to the DEFINITY system. "Digit 1 as Flash" as used in Italy and the United Kingdom will not serve as the flash button in this application.

Trunk Group Busy/Warning Indicators to Attendant

Provides the attendant with a visual indication that the number of busy trunks in a group has reached an administered level. A visual indication is also provided when all trunks in a group are busy. This feature is particularly helpful to show the attendant that the Attendant Control of Trunk Group Access feature needs to be invoked.

Trunk Identification by Attendant

Allows an attendant or display-equipped telephone user to identify a specific trunk being used on a call. This capability is provided by assigning a Trunk ID button to the attendant console or telephone. This feature is particularly helpful for identifying a faulty trunk. That trunk can then be removed from service and the problem quickly corrected.

Trunk-to-Trunk Transfer

Allows the attendant or telephone user to connect an incoming trunk call to an outgoing trunk call. This feature is particularly useful when a caller outside the system calls a user or attendant and requests a transfer to another outside number. For example, a worker, away on business, can call in and have the call transferred elsewhere. The system assures that incoming central office trunks without Disconnect Supervision are not transferred to outgoing trunks or other incoming central office trunks without Disconnect Supervision.

Visually Impaired Attendant Service

Provides voice feedback to a visually impaired attendant in either Italian or British English. Each voice phrase is a sequence of one or more single voiced messages. This feature defines six new attendant buttons to aid visually impaired attendants:

- Visually Impaired Service Activation/Deactivation button: activates or deactivates the feature. All ringers previously disabled (for example, recall and incoming calls) become reenabled.
- Console Status button: voices whether the console is in Position Available or Position Busy state, whether the console is a night console, the status of the attendant queue, and the status of system alarms.
- Display Status button: voices what is shown on the console display. VIAS support is not available for all display features (for example, class-of-restriction information, personal names, and some call purposes).
- Last Operation button: voices the last operation performed.
- Last Voiced Message button: repeats the last voiced message.
- Direct Trunk Group Selection Status button: voices the status of an attendant-monitored trunk group.

The visually impaired attendant may use the Inspect mode to locate each button and determine the feature assigned to each without actually executing the feature.

Voice Message Retrieval

Allows telephone users, remote access users, and attendants to retrieve Leave Word Calling and Call Coverage voice messages. It can be used to retrieve a user's own messages or messages for another user. However, a different user's messages can be retrieved only by a user at a telephone or attendant console in the coverage path, by an administered system-wide message retriever, or by a remote-access user when the extension and associated security code are known. The system restricts unauthorized users from retrieving messages.

Voice Terminal Alerting Options

Provides multi-appearance telephone users with different ringing patterns. This feature primarily affects audible ringing for calls directed to telephones that are off hook, or calls directed to idle and active CALLMASTER telephones.

Voice Terminal Display

Provides multi-appearance telephone users with updated call and message information. This information is displayed on a display-equipped telephone. The information displayed depends upon the display mode selected by the user. Information that allows personalized call answering is available on many calls.

Users may select any of the following as the display message language: English (default), French, Italian, or Spanish. In addition, messages can be administered on the system in a fifth language. The language for display messages is selected by each user.

Whisper Page

Allows an assistant or colleague to bridge onto your telephone conversation and give you a message without being heard by the other party or parties you are talking to.

World Class Tone Detection

Enables the DEFINITY BCS to identify and handle different types of call progress tones, depending on the system administration. You can use the tone detector and identification to display on Data Terminal Dialing and to decide when to send digits on trunk calls through Abbreviated Dialing, ARS, AAR, and Data Terminal Dialing.

"Tone detect mode 1" designates countries that use the same tone plan as Italy. "Tone detect mode 2" designates countries that use the same tone plan as Australia. "Tone detect mode 3" designates countries that use the same tone plan as the United Kingdom. "Tone detect mode 4" designates countries that use dial tones between 345 Hz and 625 Hz. "Tone detect mode 5" designates countries that use dial tones between 345 Hz and 1190 Hz. The "level of tone detection

precise” is used in countries that, except for the continuous dial tone and discontinuous other tone, have tones with characteristics that do not match those expected by the tone detector board’s detect mode. The “level of tone detection broadband” is used in countries that have a discontinuous dial tone.

World Class Tone Generation

Allows you to define call-progress tones. You can select values for frequency and cadence. If you do not define a call-progress tone, DEFINITY BCS sends silence.

Hospitality Features

The following features are designed for use in the hospitality industry. Other features listed elsewhere may be of use in this industry, however. The Attendant Crisis Alert feature, for example, described in the Basic Features section of this appendix, is primarily used in lodging establishments. That feature is listed as a basic feature because it is available on any system that has the appropriate attendant console.

Attendant Room Status

Allows an attendant to see whether a room is vacant or occupied and what the housekeeping status of each room is. This feature is only available when you have Enhanced Hospitality enabled for your system. This feature combines the property management capabilities of Check-In/Check-Out and Housekeeping Status but does not require that you have a Property Management System.

Automatic Wakeup

Allows attendants, front desk users, and guests to request that one or two wakeup calls be placed automatically to a certain extension number at a later time. When a wakeup call is placed and answered, the system can provide a recorded announcement (which can be a speech synthesis announcement), music, or simply silence. With the Integrated Announcement feature, multiple announcements enables international guests to use wakeup announcements in a variety of languages.

Check-In/Check-Out

Allows front desk personnel to check guests into a hotel and, when the guest leaves, check them out. There are two ways this is done: through the PMS terminal or through the attendant console (or backup voice terminal). Check-in and check-out from the attendant console should be used only if there is no PMS or if the link to the PMS is down. If the PMS is installed and working, check guests using the PMS.

For guest check-in or check-out from the console, there are two buttons on the attendant console (or backup voice terminal): one labeled and the other labeled . The check-in procedure performs two functions: it deactivates the restriction on the telephone in the room allowing outward calls, and it changes the status of the room to occupied.

Controlled Restrictions

Allows an attendant or telephone user with console permission to activate and deactivate the following restrictions for an individual telephone or a group of telephones: outward/toll, total, station-to-station/toll, and termination restrictions. This feature is available in a non-hospitality environment, but is used extensively in hospitality offers.

Do Not Disturb

Allows guests, attendants, and authorized front desk users to request that no calls, other than priority calls, be connected to a particular extension until a specified time.

Dual Wakeup

Allows guests to have two separate wakeup calls. The Dual Wakeup feature is an enhancement to the standard Automatic Wakeup feature used in hospitality environments. With the standard wakeup feature, guests or front desk personnel can create one wakeup call per extension. The Dual Wakeup feature allows guests and front desk personnel to create either one or two wakeup calls. The Dual Wakeup feature for guests is valid only when the system is not equipped with a speech synthesizer circuit pack (TN725B).

Hospitality Services

A system with Hospitality enabled and Hospitality Parameter Reduction disabled provides all system capabilities and supports all types of customers. A system with both Hospitality and Hospitality Parameter Reduction enabled provides reduced system parameters that have a major impact on essential system features used by nonlodging customers. The Hospitality features set (Auto Wakeup, Do Not Disturb, Property Management System) is the same on both packages.

Housekeeping Status

Records the status for up to six housekeeping codes and reports them to the property management system. These status codes are usually entered by the housekeeping staff from the guest room or from a designated telephone, but they can also be updated by the front office personnel using the attendant console or a backup voice terminal. Six status codes can be used from guest rooms, and four status codes can be used from telephones that do not have the client room Class of Service.

Names Registration

Automatically sends a guest's name and room extension from the Property Management System to the system at check-in, and automatically removes this information at check-out. The information may be displayed on any attendant console or display-equipped telephone at various hotel locations (for example, Room Service, or Security).

Property Management System Digit to Insert/Delete

Many customer configurations base the room telephone extension on the room number by adding an extra leading digit. The PMS Insert/Delete Digit feature allows users to delete the leading digit of the extension in messages. The feature is useful for a hotel that has multiple extensions sharing an extra leading digit in front of the room number. The leading digit is automatically inserted when the message goes to the PBX.

⇒ NOTE:

The PMS interface supports 3-, 4-, or 5-digit extensions, but prefixed extensions do not send the entire number across the interface. Only the assigned extension number is sent. Therefore, you should not use prefixed extensions for numbers that are also going to use the Digit to Insert/Delete function.

Property Management System Interface

Provides a communications link between the system and a Property Management System. The Property Management System allows a customer to control features used in both a hospital-type and a hotel/motel-type environment. The communications link allows the Property Management System to interrogate the system and allows information to be passed between the system and the Property Management System.

Room Activated Wakeup with Tones

This capability is part of the Automatic Wakeup Hospitality Hotel/Motel feature. Room Activated Wakeup With Tones allows guests to schedule wakeup calls via tones that prompt for the time they want to receive the wakeup call.

Single-Digit Dialing and Mixed Station Numbering

Allows hotel staff and guests easy access to internal hotel/motel services and provides the capability to associate room numbers with guest room telephones. The feature provides the following dial plan types: single-digit dialing, prefixed extensions, and mixed numbering.

Hunt Group Features

DEFINITY BCS offers the following features designed to help you set up and maintain hunt groups and hunt group members.

Abandoned Call Search

Allows a central office that does not provide timely disconnect supervision to identify abandoned calls. An abandoned call is one in which the calling party hangs up before the call is answered. Abandoned Call Search is suitable only for older central offices that do not provide timely disconnect supervision.

Agent Call Handling

Allows you to administer functions that Automatic Call Distribution members use when handling incoming calls. You define specific member capabilities and can plan capacities based on those capabilities.

Auto-Available Split

Allows members of an ACD hunt group to be in Auto-In work mode continuously. A member in Auto-In work mode becomes available for another ACD call immediately after disconnecting from an ACD call. You can use AAS to bring ACD-hunt group members back into Auto-In work mode after a system restart. Although not restricted to such, this feature is intended to be used for hunt groups containing only recorders or voice-response units.

Automatic Call Distribution

Allows incoming calls to connect automatically to specific hunt group. An ACD hunt group is designed to receive a high volume of similar calls. Calls to a specific hunt group are automatically distributed among the members assigned to that hunt group. Calls queue to the hunt group until a member is available. You can assign a supervisor to each hunt group. The hunt group supervisor can listen in on member calls, monitor the hunt group queue status, and assist members. If you have Basic Call Management System, you can measure and create reports on the status of ACD members, hunt groups, and trunks.

Basic Call Management System

Basic Call Management System provides real-time and historical reports to assist you in managing members, ACD hunt groups, VDNs, and trunk groups. You can display reports on the Management Terminal or print them. In addition, you can schedule historical reports to print automatically on the system printer.

Call Prompting

Allows the system to collect information from the calling party and direct the calls via Call Vectoring. The caller is verbally prompted by the system and enters information in response to the prompts. This information is then used to redirect the call or handle the call in some other way (taking a message, for example). This feature is mostly used to enhance the efficient handling of calls in the Automatic Call Distribution application.

Call Vectoring

Processes incoming and internal calls according to a programmed set of commands. Vector commands may direct calls to on-premise or off-premise destinations, to any hunt group or to a specific call treatment such as an announcement, forced disconnect, forced busy, or delay treatment. For example, the system can collect digits from the user via Call Prompting and route calls to a destination specified by those digits. There are many different applications of the Call Vectoring feature, however, Call Vectoring is primarily used to handle the call activity of Automatic Call Distribution hunt groups.

⇒ NOTE:

DEFINITY BCS and GuestWorks enables you to program four vectors and four vector directory numbers.

Intraflow and Interflow

Intraflow and Interflow allow you to redirect ACD calls from one hunt group to another hunt group. Intraflow redirects calls to other hunt groups within the system using Call Coverage or Call Forwarding All Calls. Interflow redirects calls to an external hunt group or location using Call Forwarding All Calls. You can have calls redirected from one hunt group to another conditionally, according to the coverage path's redirection criteria. For example, you can define a hunt group's coverage path to automatically redirect incoming ACD calls to another hunt group when a terminal is busy or unanswered.

Malicious Call Trace

Allows you to trace malicious calls. You define a group of terminal users who can notify others in the group when they receive a malicious call. These users can then retrieve information related to the call. Using this information, you can identify the malicious call source or provide information to personnel at an adjacent system to complete the trace. It also allows you to record the malicious call.

Multiple Call Handling on Request

Allows members to receive an ACD call while other types of calls are alerting, active, or on hold.

Queue Status Indications

Allows you to assign queue-status indicators for Automatic Call Distribution calls based on the number of calls queued and time in queue. You can assign these indications to lamps on member, supervisor, or attendant terminals or consoles to help monitor queue activity. In addition, you can define auxiliary queue warning lamps to track queue status. On display telephones, you can display the number of calls queued and time in queue of a hunt group's oldest call.

Redirection on No Answer

Redirects a ringing ACD hunt group call or Direct Agent Call after an administered number of rings. This prevents an unanswered call from ringing indefinitely. The call can redirect either to the hunt group to be answered by another member or to a vector directory number (VDN) for alternative call handling. Direct Agent Calls route to the member's coverage path, or to a VDN if no coverage path is administered. You must have ACD enabled to use this feature.

Service Observing

Allows a specified user, such as a supervisor, to observe or monitor another user's calls. Observers can observe in listen-only or listen-and-talk mode. You set up Service Observing to observe a particular extension, not all calls to all extensions at a terminal.

⇒ NOTE:

Service Observing may be subject to federal, state, or local laws, rules, or regulations or require the consent of one or both of the call parties. Familiarize yourself and comply with all applicable laws, rules, and regulations before using this feature.

VDN in a Coverage Path

VDN in a Coverage Path enhances Call Coverage and Call Vectoring to allow you to assign vector directory numbers (VDNs) as the last point in coverage paths. Calls that go to coverage can be processed by vectoring/prompting to extend Call Coverage treatments.

Private Networking Features

The great expandability of DEFINITY BCS makes it a logical choice for setting up private networks. Consequently, the system includes many private networking features.

Extended Trunk Access

Used with Uniform Dial Plan, allows DEFINITY BCS to send any unrecognized number (such as an extension not administered locally) to another system for analysis and routing. Such unrecognized numbers can be Facility Access Codes, Trunk Access Codes, or extensions that are not in the Uniform Dial Plan table. Non-Uniform Dial Plan numbers are administered on either the First Digit Table (on the Dial Plan Record form) or the Second Digit Table. They also are not administered on the Extended Trunk Access Call Screening Table. Extended Trunk Access helps you make full use of automatic routing and Uniform Dial Plan.

Inter-PBX Attendant Calls

Allows attendants for multiple branches to be concentrated at a main location. Incoming trunk calls to the branch, as well as attendant-seeking voice-terminal calls, route over tie trunks to the main location.

Private Network Access

Allows calls to other systems in a private network. These calls do not use the public network. They are routed over your dedicated facilities.

QSIG

QSIG provides compliance to the International Organization for Standardization (ISO) ISDN-PRI private-networking specifications. QSIG is defined by ISO as the worldwide standard for private networks.

QSIG is the generic name for a family of signaling protocols. The Q-reference point or interface is the logical point where signaling is passed between 2 peer entities in a private network. QSIG signaling can provide feature transparency in a single-vendor or multi-vendor environment.

QSIG provides call-related supplementary services. These are services that go beyond voice or data connectivity and number transport and display. Examples of supplementary services include Name Identification, Call Forwarding (Diversion), and Call Transfer.

DEFINITY BCS provides the following levels of QSIG functionality:

- Basic Call Setup — Supports basic call setup and number transport

- Basic Supplementary Services — Supports Name Identification Services, Call Forwarding (Diversion), and Call Transfer

QSIG Call Forwarding (Diversion)

QSIG Call Forwarding (Diversion) is based on the DEFINITY BCS Call Forwarding feature. It extends the feature transparency aspects of Call Forwarding over a QSIG trunk:

- If QSIG Call Forwarding is activated, all calls are diverted immediately.
- If QSIG Call Forwarding with busy/don't answer is activated and a station is busy, a call is diverted immediately.
- If QSIG Call Forwarding with busy/don't answer is activated and a station is idle but the call is not answered, a call is diverted after a specified number of rings.

These features are activated either by dialing a feature access code or by pressing a button. See Call Forwarding for detailed descriptions of how to use these features.

This feature applies to all QSIG Call Forwarding features. A forwarded call can be rerouted in a private network to find a more cost-effective or resource-efficient path.

QSIG Call Forwarding (Diversion) provides additional call information to both the caller and the diverted-to station above what is provided if the call is forwarded over a trunk that is not administered for QSIG Supplementary Service Protocol b.

QSIG Call Offer

This feature, on request from the calling-user (or on that user's behalf), enables a call to:

- Be offered to a busy called-user
- Wait for a busy called-user to accept the call when the necessary resources have become available.

QSIG Call Transfer

QSIG Call Transfer is based on the current DEFINITY BCS Transfer and Trunk-to-Trunk Transfer features. QSIG Transfer signaling occurs as long as one of the calls involves a QSIG trunk between the two switches. QSIG Transfer conforms to ISO 13869 for QSIG Call Transfer By Join. This means that the transfer occurs through the system where the transferring user resides and if the transfer involves two trunks, neither is released after the transferring party is dropped from the call.

When you use this feature, you see no difference between QSIG Call Transfer and the standard DEFINITY BCS Transfer or Trunk-to-Trunk Transfer features. QSIG Call Transfer differs from the standard DEFINITY BCS Transfer feature in that additional call information is available for the connected parties after the transfer completes. However, the information is only sent for QSIG trunks. If one call is local to the transferring switch, that user receives the name of the party at the far end.

QSIG Manufacturers Specific Information (MSI)

QSIG handles non-standardized information that is specific to a particular PBX or network. This information is known as Manufacturer Specific Information (MSI). A manufacturer can define manufacturer-specific supplementary services operations after it has:

- Applied to a sponsoring and issuing organization (ECMA in this case)
ECMA: European Computer Manufacturers Association
- Been assigned an organization identifier. This organization identifier is used as the root of the manufacturer-specific service-operation value.

All MSI operation values should be unique to that manufacturer.

In R6, a new information-transport interface allows applications to hand-off information for transport across QSIG networks via Manufacturer Specific Information. It is highly likely that more than two applications will need to send information at the same time. Therefore, the limit has been increased to 4 for R6.

Manufacturer-specific supplementary services can be created using specific operations encoded with the manufacturer's identifier. For R6, support has been added for non-QSIG applications to transport information across QSIG networks in MSI. Applications now have the same functionality over QSIG networks that they have over non-QSIG networks. An interface provides application-specific processing of the operations received. The default platform treatment is to store the information.

QSIG Name and Number Identification

Allows a switch to send and receive the calling number, calling name, connected number, and connected name. Additional parameters that control the display of the connected name and number are administered on the Feature-Related System-Parameters form. QSIG Name and Number Identification displays up to 15 characters for the calling and connected name and up to 15 digits for the calling and connected number across ISDN-PRI interfaces.

QSIG - Called/Busy Name Display

A QSIG Called Name or Busy Name displays on the calling party's display as soon as the ALERTING or DISCONNECT message has been received, as long as the System Version is set to R6 or later configurations.

QSIG Path Retention

Path Retention maintains the signaling connection and permits the caller to invoke supplementary services. The network connection can be retained for more than one supplementary service if Path Retention has been invoked for that service.

Transit Counter

DEFINITY BCS provides QSIG Transit Counter as defined in ISO/IEC 6B032 and 6B033. It prevents indefinite looping, connections giving poor transmission performance, and inefficient use of network resources. This feature is invoked automatically for ISDN-PRI basic calls.

Uniform Dial Plan

Provides a common 4- or 5-digit dial plan that can be shared among a group of switches. Interswitch dialing and intraswitch dialing both require 4- or 5-digit dialing. This feature is used with an electronic tandem network (ETN); main, satellite, and tributary switches; and Distributed Communications Systems. In addition, it can provide uniform 4- or 5-digit dialing between 2 or more private-switching systems without ETN, main, satellite, and tributary switches, or DCS.

Trunk Group Features

DEFINITY BCS offers an array of features for managing trunk groups efficiently.

DS1 Trunk Service

Bit-oriented signaling that multiplexes 24 channels into a single 1.544-Mbps stream. DS1 can be used for voice or voice-grade data and for data-transmission protocols. E1 trunk service is bit-oriented signaling that multiplexes 32 channels into a single 2.048-Mbps stream. Both DS1 and E1 provide a digital interface for trunk groups.

ISDN — General

Gives you access to a variety of public and private network services and facilities. The ISDN standard consists of layers 1, 2, and 3 of the Open System Interconnect (OSI) model. DEFINITY BCS can be connected to an ISDN using standard frame formats: Basic Rate Interface (BRI) and the Primary Rate Interface (PRI).

An ISDN provides end-to-end digital connectivity and uses a high-speed interface which provides service-independent access to switched services. Through internationally accepted standard interfaces, an ISDN provides circuit or packet-switched connectivity within a network and can link to other ISDN supported interfaces to provide national and international digital connectivity.

R6 BRI Trunk Enhancements

Adds support for public-network access outside the U.S. on point-to-midpoint connections, with the restriction that DEFINITY BCS must not be configured in a passive bus arrangement with other BRI endpoints. It will also support the use of ISDN-BRI trunks as inter-PBX tie lines using the QSIG peer protocol.

BRI: Basic Rate Interface. This standard ISDN interface consists of two 64 Kbps B-channels and one 16 Kbps D-channel.
ISDN: Integrated Services Digital Network.

NT Interface on TN556C

Support for the NT (network) side of the T interface has been added in R6 using the TN556C circuit pack, which DEFINITY R5 uses only for voice and data endpoints. This gives R6 full tie trunk capability using BRI trunks. R6 supports leased BRI connections through the public network, with a TN2185 on each end of the leased connection. R6 will not, however, allow customers to administer both endpoints and trunks on the same TN556C circuit pack.

NT QSIG Peer Protocol

The NT side of the QSIG Peer Protocol has been added.

Full ETSI Functionality

The full set of ETSI public-network and private-network ISDN features is officially supported. This includes Lookahead Interflow, Lookahead Routing, and Usage Allocation (including the R5 enhancements). It also includes all QSIG supplementary services supported through Release 6:

- Name Identification
- Call Diversion (including rerouting)
- Call Transfer
- Path Replacement.

It does not include

- Non-Facility Associated Signaling
- D-Channel Backup

Automatic TEI

The user side will support automatic TEI assignment by the network. Both fixed and automatic TEI assignment will be supported on the network side.

TEI: Termination Endpoint Identifier (part of ISDN terminology).

Layer 1 Deactivation

Layer 1 Stable — Tells call processing and maintenance software whether to expect the network to drop Layer 1 when the BRI port is idle. When acting as the TE side, R6 supports the case where the network deactivates Layer 1 when both B-channels of a BRI port are idle. When acting as the NT side, R6 deactivates Layer 1 only when the BRI port is busied out.

Multiple Subscriber Number (MSN) - Limited

The ISDN standard MSN feature lets customers assign multiple extension to a single BRI endpoint. The MSN feature works with BRI endpoints that allow the Channel ID IE to be encoded as “preferred.”

Call-by-Call Service Selection

Enables a single ISDN-PRI trunk group to carry calls to a variety of services, rather than requiring each trunk group to be dedicated to a specific service. It allows you to set up various voice and data services and features for a particular call.

CAMA - E911 Trunk Group

This form administers the Centralized Automatic Message Accounting (CAMA) trunks and provides Caller's Emergency Service Identification (CESID) information to the local community's Enhanced 911 system through the local Central Office.

Facility and Non-Facility Associated Signaling

Allows an ISDN-PRI DS1/E1 interface D-channel to carry signaling information for B-channels (voice or data). D-Channel Backup can also be administered to increase system reliability.

Features Only in Offer Category B

B

Appendix overview

The following features are provided only with Offer Category B:

- Attendant Split Swap
- Controlled Restrictions (including the Controlled Toll Restriction feature)
- Dial by Name

This appendix provides detailed information about each of these features.

Attendant Split Swap

The Attendant Split Swap feature allows the attendant to alternate between active and split calls. This operation may be useful when the attendant may need to transfer a call, but first must talk with each party before completing the transfer. This operation is done using the new button.

User operation

The user operation for Attendant Split Swap is documented in *DEFINITY BCS and GuestWorks server Issue 3.0 Console Quick Reference, Issue 2 (555-231-735)*.

Administration

change system-parameters special-applications

- On Page 1 of this form, enter **y** in the Attendant Split Swap field.

change attendant X (X is the console number; usually 1)

- On Page 2 of this form, add the **split-swap** feature button.

Required hardware

There is no special hardware required for this feature.

Controlled Restrictions

The Controlled Restrictions feature allows you to activate different types of calling restrictions on user telephones. The restriction types include the following:

- Outward — The user cannot place calls to the public network.
- Station-to-Station — The users cannot place or receive calls between themselves.
- Termination — The user cannot receive any calls.
- Total — The user cannot place or receive any calls.
- Toll — The user cannot place toll calls, but can place local free calls.

The Controlled Toll Restriction feature can be substituted for either Outward Restriction or Station-to-Station Restriction. This substitution was done because most PMS products in use today recognize only four different types of restrictions. Through administration, you can enable Outward/Toll Restriction, Station-to-Station/Toll Restriction, Termination Restriction, and Total Restriction.

The ways to activate controlled restrictions are as follows:

- Using a feature access code from the attendant console or from a voice terminal with console permissions, you can enable any of the controlled restrictions for a user's telephone.
- Using a feature access code from the attendant console or from a voice terminal with console permissions, you can enable any of the controlled restrictions for a group of telephones on the system. This grouping is based on the administered Class of Restriction (COR).

When a user tries to make a call from a station that is restricted, the call is routed to one of the following: the attendant, a recorded announcement, a Call Coverage path, another extension (for example, one of the backup voice terminals), or intercept tone.

User operation

To activate a controlled restriction for one user using the attendant console or a voice terminal with console permissions, do the following:

1. Press the **Start** button or an idle call appearance button.
 - You hear a dial tone.
 - The call appearance lamp goes on.
 - The **Position Available** lamp goes off.
2. Dial the User-Controlled Restriction activation feature access code followed by one of these four digits:
 - Dial **1** for Outward/Toll Restriction.
 - Dial **2** for Total Restriction.
 - Dial **3** for Termination Restriction.
 - Dial **4** for Station-to-Station/Toll Restriction.
3. After hearing the second dial tone, dial the extension number.
 - A confirmation tone indicates that the restriction was activated. An intercept tone indicates that the extension number already has a restriction assigned, or you dialed an improper digit.
 - The call appearance lamp goes off.
 - The display goes blank.
 - The **Position Available** lamp goes on.
 - The console returns to the normal operating mode.

To deactivate a controlled restriction for one user, do the following:

1. Press the **Start** button or an idle call appearance button.
 - You hear a dial tone.
 - The call appearance lamp goes on.
 - The **Position Available** lamp goes off.
2. Dial the User-Controlled Restriction deactivation feature access code followed by the digit that represents the current restriction:
 - Dial **1** for Outward/Toll Restriction.
 - Dial **2** for Total Restriction.
 - Dial **3** for Termination Restriction.
 - Dial **4** for Station-to-Station/Toll Restriction.

3. Dial the extension number. You hear one of the following:
 - Confirmation tone if the restriction code was accepted.
 - Intercept tone if you dialed an improper restriction code number. Press **Cancel** and start over again.
4. Press **Release**.
 - The call appearance lamp goes off.
 - The display goes blank.
 - The **Position Available** lamp goes on.
 - The console returns to the normal operating mode.

To activate a controlled restriction for a group of extensions, do the following:

1. Press the **Start** button or an idle call appearance button.
 - You hear a dial tone.
 - The call appearance lamp goes on.
 - The **Position Available** lamp goes off.
2. Dial the Group Controlled Restriction activation dial access code followed by one of these four digits:
 - Dial **1** for Outward/Toll Restriction.
 - Dial **2** for Total Restriction.
 - Dial **3** for Termination Restriction.
 - Dial **4** for Station-to-Station/Toll Restriction.
3. After hearing the second dial tone, dial the two-digit COR number of the group.
 - A confirmation tone indicates that the restriction was activated. An intercept tone indicates that the group of extensions already have a restriction assigned, or you dialed an improper digit.
 - The call appearance lamp goes off.
 - The display goes blank.
 - The **Position Available** lamp goes on.
 - The console returns to the normal operating mode.

To deactivate a controlled restriction for a group of extensions, do the following:

1. Press the **Start** button or an idle call appearance button.
 - You hear a dial tone.
 - The call appearance lamp goes on.
 - The **Position Available** lamp goes off.
2. Dial the Group Controlled Restriction deactivation feature access code followed by the digit that represents the current restriction:
 - Dial **1** for Outward/Toll Restriction.
 - Dial **2** for Total Restriction.
 - Dial **3** for Termination Restriction.
 - Dial **4** for Station-to-Station/Toll Restriction.
3. Dial the two-digit COR number of the group. You hear one of the following:
 - Confirmation tone if the restriction code was accepted.
 - Intercept tone if you dialed an improper restriction code number. Press **Cancel** and start over again.
4. Press **Release**.
 - The call appearance lamp goes off.
 - The display goes blank.
 - The **Position Available** lamp goes on.
 - The console returns to the normal operating mode.

Administration

change system-parameters guestworks-bcs-options

- Use this form to assign Toll Restriction as a substitute for either Outward or Station-to-Station restriction. Enter **nothing**, **outward**, or **station-station** into the `Controlled Toll Restriction replaces` field.

If you enter **nothing**, you have access to Outward, Total, Termination, and Station-to-Station restrictions. If you enter **outward**, you have access to Toll, Total, Termination, and Station-to-Station restrictions. If you enter **station-station**, you have access to Outward, Total, Termination, and Toll restrictions.

change system-parameters features

- On Page 3 of this form, add the intercept treatment desired for the Outward/Toll, Termination, and Station-to-Station restricted calls in these fields:
 - `Control Outward/Toll Restriction Intercept Treatment`
 - `Controlled Termination Restriction`
 - `Controlled Station to Station Restriction`

Callers that encounter one of these restrictions can be routed to an announcement, the attendant, Call Coverage (for Termination Restriction only), an extension, or to intercept tone. If you select announcement or extension, you must enter the appropriate extension number.

If restricted calls are routed to a recorded announcement, the specific announcement must be recorded and assigned to the correct extension number.

change feature-access-codes

- Enter feature access codes for the Group-Controlled Restrictions and the User-Controlled Restrictions.

Required hardware

There is no special hardware required for this feature.

Dial by Name

The Dial by Name feature allows you to “dial” someone by entering their name from your touch-tone keypad. This feature is accessible by using the Call Vectoring feature and the integrated announcement circuit pack (TN750C) to create an “auto-attendant” procedure where one of the options allows callers to enter a person’s name instead of their extension number. The system processes the name characters received, and, when a match is found, the number is dialed automatically.

A typical scenario might be:

- When a call comes in to the system (usually to a Listed Directory Number), a vector routes the call to an announcement that says, “Hello. You have reached A1 Hotel. Please press 1 for the operator, press 2 to reach a guest or employee, or press 3 for the reservation desk.”
- When the caller selects 2, the caller then hears, “If you know the person’s extension, press 1. If you know their name, press 2.”
- If the caller does not know the person’s extension number, the caller can opt to enter the person’s name instead. The caller would press 2.
- The caller is then instructed to enter the person’s name.
- As soon as a match is found, the call is placed to that person.

The database for the names used in this feature comes from names entered into a management terminal or from names entered into a property management system (PMS) terminal, which are then communicated to the DEFINITY system during a database update.

User operation

NOTE:

This feature is not accessible from rotary telephones or telephones that do not have a labeled dial keypad. This feature operates using the Roman alphabet only.

1. Dial the published directory number.
 - The call is routed to the auto-attendant procedure.
2. Listen to the recorded announcements and select the option that allows you to enter a name.
 - You are prompted to enter the person’s name.

3. Enter the first four characters of the person's last name.
 - If only one name matches the four characters entered, the call is placed to that person.
 - If there is more than one match, continue with Step 4.
 - If there are not matches, continue with Step 6.
4. If there is more than one match for the first four characters, you are prompted to enter the rest of the characters in the person's last name. After you enter the rest of the characters, press the **#** key.
 - If only one name matches the characters entered, the call is placed to that person.
 - If there is more than one match, continue with Step 5.
 - If there are not matches, continue with Step 6.
5. If there are still multiple matches, you are prompted to enter the first two characters of the person's first name.
 - If only one name matches the characters entered, the call is placed to that person.
 - Otherwise, the call cannot be completed using Dial by Name. Continue with Step 6.
6. You can dial **1** and try entering the name again, or you can dial **0** and the call is routed to a designated extension (usually the attendant or a voice mailbox).
 - If routed to an attendant, the attendant can then attempt to connect the call.
 - If routed to a voice mailbox, the caller can leave a message.

Considerations

Consider the following when implementing the Dial by Name feature:

- The names used for this feature cannot have any accent marks or be characters other than the Roman alphabet. If non-Roman characters must be entered, the logical equivalent should be used in the names database.
- Special characters, such as the dash (-) and the apostrophe ('), are ignored if entered into the names database when it comes to using the Dial by Name feature. For example, when searching on the name O'Neill, a user should enter "onei" for the initial search. The ***** key can be entered to represent a dash or apostrophe, but the users must be aware that special characters are an option.
- Special characters, such as the pound sign (#), the asterisk (*), and numbers 0-9, cause names in the database to be unsearchable. That is, if a name in the database has any of these characters, a user cannot search on that name.

- If a person's last name is less than four characters long, the caller must press the (#) key to signify end-of-dialing. This instruction should be part of the recorded announcement.
- The system supports a maximum length of 15-character names (last name, first name). If the last name is longer than 15 characters, the first 15 characters should be entered. If two or more people have the same last name and that name is 15 characters long (or longer), the Dial by Name feature cannot be used to dial those persons.
- There are no "canned" announcements already recorded on the announcement circuit pack. All of the announcements for the Dial by Name feature must be customized on-site.
- This feature may provide a security issue for some industries (such as a hotel or a hospital). If there are people that should not be accessible using Dial by Name, their name can be entered into the names database using a numerical digit at the beginning of their last name (such as 9Carrier). This can be done only if the property management system will allow non-alphabetic characters at the beginning of names.

Administration

change system-parameters special-applications

- On Page 2 of this form, enter **y** in the `Dial by Name` field. The default for this field is **y**.

add vdn number XXXX (XXXX is the extension number)

- Use this form to specify which vector directory number (VDN) callers will access when the VDN is dialed. The number used to support the Dial by Name feature is usually the published telephone number for the company. You can make this number accessible for outside callers, guests within the hotel, and employees.

change vector X

- You can assign several vectors that define how calls will be handled as users select the different prompts. The following example shows an “auto-attendant” procedure that can be used to access the Dial by Name feature. Step numbers 1-20 contain the basic auto-attendant steps, and Steps 21-32 contain the Dial by Name steps. Contact Lucent Technologies or your authorized dealer for support in setting up your procedures.

```
change vector 2                                     Page 1 of 3
                                     CALL VECTOR
Procedure: 2                                     Name Dial by Name

01 wait-time      2  secs hearing ringback
02 collect        1  digits after announcement 381
03
04 route-to      number 0                      with cov n if digit      = 0
05 route-to      number 105                   with cov n if digit      = 1
06 goto          step 12 if digits              = 2
07 goto          step 21 if digits              = 3
08 goto          step 19 if digits              = 4
09 goto          step 16 if digits              = 5
10 route-to      number 0                      with cov n if unconditionally
11
```

```
change vector 2                                     Page 2 of 3
                                     CALL VECTOR

12 collect        3  digits after announcement 382
13 route-to      digits with coverage y
14 route-to      number 0                      with cov n if unconditionally
15
16 goto          step 2 if unconditionally
17
18
19 collect        3  digits after announcement 383
20 goto          step 13 if unconditionally
21 collect        4  digits after announcement 661
22 route-to      name1 with coverage y
```

```
change vector 2                                     Page 3 of 3
                                     CALL VECTOR

23 goto          step 30 if nomatch
24 collect        11 digits after announcement 662
25 route-to      name2 with coverage y
26 goto          step 30 if nomatch
27 collect        2  digits after announcement 663
28 route-to      name3 with coverage y
29 goto          step 30 if nomatch
30 collect        1  digits after announcement 660
31 goto          step 21 if digits = 1
32 route-to      number 0                      with cov n if unconditionally
```

The procedure above does the following:

1. When someone calls the system, the person receives ringback for 2 seconds.
2. Announcement 381 plays. This announcement asks them to do one of the following:
 - Press **0** or wait if they want the operator; if they press **0** or wait for the timeout, they are routed to the operator.
 - Press **1** if they want the help desk; if they press **1**, they are routed to extension 105, which is the help desk.
 - Press **2** if they know the person's extension; if they press **2**, they are routed to announcement 382, which tells them to dial the person's extension.
 - Press **3** if they know the person's name; if they press **3**, the following sub-procedure occurs:
 - a. Announcement 661 plays requesting they enter the first four characters of the person's last name.
 - If there is a match, the call is redirected.
 - If there are multiple matches, continue with Step b.
 - If there is no match, go to Step d.
 - b. Announcement 662 plays requesting they enter the rest of the person's last name, followed by the **#** key.
 - If there is a match, the call is redirected.
 - If there are multiple matches, continue with Step c.
 - If there is no match, go to Step d.

- c. Announcement 663 plays requesting they enter the first two characters of the person's first name.
 - If there is a match, the call is redirected.
 - If there is no match, continue with Step d.
- d. Since there are still no matches, announcement 660 plays telling them they can press **1** to try again, or press **0** to get an operator.
 - Press **4** if they know the department they wish to access (such as engineering); if they press **4**, they are routed to announcement 383, which gives them a listing of several departments that they can dial directly.
 - Press **5** to start over again; if they press **5**, the caller hears announcement 381, which repeats all of the options.
 - If the caller dials anything else, the call is routed to the operator.

Required hardware

The integrated announcement circuit pack (TN750C) is required for this feature.

Appendix overview

This appendix provides a description of the following new hardware available only with the DEFINITY BCS and GuestWorks *server* Issue 4 product:

- TN2214 – Digital line (24-port)
- TN2215 – Analog line (16-port)
- TN791 – Analog line (16-port)

TN2214 — Digital line (24-Port)

The TN2214 digital line circuit pack is designed for use with 2-wire digital communications protocol (DCP) voice terminals. The TN2214 supports either A-Law or Mu-Law companding (as selected by software), and operates with the following voice terminals and adjuncts:

- 302B and 302C attendant console
- 603E CALLMASTER voice terminal
- 6400-series
- 8400-series
- 9400-series

The distance limit for 8400-series voice terminals using the TN2214 is 3500 feet (1066 m).

TN2215 — Analog line (16-Port)

The TN2215 analog line circuit pack is designed for use globally with any standard analog telephone. The TN2215 has the following characteristics:

- Supports installations in Australia, Belgium, China, France, Germany, Italy, The Netherlands, Spain, and the United Kingdom. For North American installations, the TN791 should be used.
- 16 ports
- Supports LED Message Waiting indicators
- Supports selectable ringing cadence
- Supports balanced ringing (when configured for France with the TN2202 Ring Generator)
- Supports selectable impedance and gain for various country requirements
- Feed voltage of -48V
- Supports hard bridging
- Supports station adjuncts
- Secondary lightning protection
- Same premises, out-of-building support
- Supports the 500-type, 2500-type, 7100-series, 8102-type, and 8110-type telephones

The distance limit for the 500-type, 2500-type, and 7102A telephones is 20,000 feet (6096 m). The distance limit for the 7101A and 7103A telephones is 15,200 feet (4633 m). The distance limit for the 8100-series and 9100-series telephones (not supported in the United States) is 12,000 feet (3657 m). All distances are with 24-gauge wire.

- Ringer load of 3.0
- Supports simultaneous ringing on eight ports

The TN2215 allows ringing on four ports of each half of the circuit pack for a maximum of eight simultaneous ports ringing.

TN791 — Analog line (16-Port)

The TN791 analog line circuit pack (labeled Guest Line) is intended for use with analog telephone connections. The TN791 contains the circuitry to support many types of analog telephones, including most telephones used today in sites that have neon or LED message lamps. The TN791 has the following characteristics:

- 16 ports
- Supports neon and LED Message Waiting indicators (a separate power supply is required to support neon Message Waiting indicators)
- Feed voltage of -48V
- Supports A-law and Mu-law companding and administrable timers
- Supports queue warning level lamps and paging system circuits
- Supports hard bridging
- Supports station adjuncts
- Secondary lightning protection
- Same premises, out-of-building support
- Supports the 500-type, 2500-type, 7100-series, 8102-type, and 8110-type telephones

The distance limit for the 500-type, 2500-type, and 7102A telephones is 20,000 feet (6096 m). The distance limit for the 7101A and 7103A telephones is 15,200 feet (4633 m). The distance limit for the 8100-series and 9100-series telephones (not supported in the United States) is 12,000 feet (3657 m). All distances are with 24-gauge wire.

- Ringer load of 3.0
- Supports simultaneous ringing on eight ports

The TN791 allows ringing on four ports of each half of the circuit pack for a maximum of eight simultaneous ports ringing.

System Capacity Limits

D

Appendix overview

This appendix provides information on the overall characteristics and capacities of the DEFINITY BCS.

Multiple offer categories

Beginning with DEFINITY ECS R6.2, the system software is administered upon initialization to specify an Offer Category. Currently there are two categories: A and B. The Offer Categories are administered by Lucent Technologies personnel or authorized distributors depending on the offer that is purchased. Appendix D, "System Capacity Limits" shows the limits for Category B only. See the *System Description Pocket Reference*, 555-230-211, Issue 2 to view a table with capacity limits for both categories A and B.

The Offer Category specifies the system capabilities in the following areas:

- Customer options allowed
- System capacities
- Hardware allowed

Offer category B limits

The following customer options are not allowed:

- ASAI Proprietary Adjunct Links
- ASAI Interface
- Barrier Codes
- BCMS/VuStats Login IDs
- BCMS/VuStats Service Level
- Call Work Codes

- CAS Main
- Coverage Of Calls Redirected Off-net
- DCS (Basic)
- DCS Call Coverage
- DCS with Rerouting
- DTMF Feedback Signals For VRU
- EAS-PHD
- Expert Agent Selection (EAS)
- Extend Cover/Forward Administration
- Extension Number Portability
- Flexible Billing
- Forced ACD Calls
- Hospitality Parameter Reduction
- Look Ahead Interflow
- Main/Satellite
- Modem Pooling
- Multimedia Application Server Interface (MASI)
- Multimedia Call Handling (MMCH)
- Multiple Call Handling (Forced)
- PNC Duplication
- PASTE (Display PBX Data on Phone)
- Reason Codes
- Remote Access
- Service Observing (Remote by FAC)
- Service Observing (VDNs)
- Supplementary Services with Rerouting
- Tenant Partitioning
- Timed ACW
- VDN of Origin Announcements
- VDN Return Destination
- Vectoring (G3V4 enhanced)
- Vectoring (G3V4 advanced Routing)
- Vectoring (ANI/II-Digit Routing)

- Vectoring (CINFO)
- VuStats
- VuStats (G3V4 enhanced)
- Wideband Switching

System capacity limits

The maximum parameters for the DEFINITY hardware and software items are listed on the following pages. These parameters apply to compact single-carrier cabinets, compact modular cabinets, single-carrier cabinets, and multi-carrier cabinet systems in category B.

Terminal and digital station capacities are reduced by such administered items as attendant consoles and number of ACD agents.

⇒ NOTE:

Not all maximum capacities listed in Table 1 can be reached simultaneously with all versions or all configurations of the system. See Station Button Capacity for the system button limitations.

Table 1. Maximum system parameters for category B

ITEM	Release 6			
	R6vs (16 MB)	R6csi (16 MB)	R6si (16 MB)	R6r
Abbreviated Dialing (AD)				
AD lists per system	2400	2400	2400	5000
AD list entry size	24	24	24	24
AD entries per system	12000	12000	12000	100000
Auto dialing button				
Entries per system ¹	Note 1	Note 1	Note 1	Note 1
Enhanced list (system list)	1	1	1	1
Maximum entries	10000	10000	10000	10000
Group lists	100	100	100	1000
Maximum entries	100	100	100	100
Group lists per extension	3	3	3	3
System list	1	1	1	1
Maximum entries	100	100	100	100
Personal lists	2400	2400	2400	5000
Maximum entries	100	100	100	100
Personal lists per extension	3	3	3	3
Applications Adjuncts				

Continued on next page

Table 1. Maximum system parameters for category B — Continued

ITEM	Release 6			
	R6vs (16 MB)	R6csi (16 MB)	R6si (16 MB)	R6r
Asynchronous links (RS-232) ²	5	5	5	10
CDR output devices	2	2	2	2
Journal system printer	2:1	2:1	2:1	2:1
Property management systems	1	1	1	1
BX.25 physical links ³	4	NA	8	16
Application processors	NA	NA	NA	7
Voice processing adjuncts				
Traditional AUDIX	1	NA	1	8
DEFINITY AUDIX DCP emulation	1	1	1	1
DEFINITY AUDIX control link	1	NA	1	1
INTUITY AUDIX				
INTUITY AUDIX (Via mode code)	1	1	1	1
INTUITY AUDIX (Via BX.25)	1	NA	1	8
INTUITY AUDIX (MAPD)	1	1	1	1
Mode code voice mail systems	1	1	1	1
BX.25 processor channels	64	NA	64	128
Hop channels	64	NA	64	128
Automatic Call Distribution (ACD)				
Announcements per hunt group	2	2	2	2
Announcements per system	128	128	128	256
Hunt groups	99	99	99	600
ACD members per hunt group	200	200	200	999
Hunt group members per system	150	150	150	150
Logged-In ACD members	150	150	150	150
Logged-In splits per agent ⁴	4	4 ⁵	4	4
Queue slots per group	200	200	200	999
Queue slots per system	1500	1500	1500	15000
ARS/AAR⁶				
AAR/ARS patterns (shared)	254	254	254	640
ARS/AAR analysis tables	2000	2000	2000	2000
Choices per RHNPA table	12	12	12	12
Digit conversion entries	400	400	400	400
AAR/ARS digit conversion				
Digits deleted for ARS/AAR	28	28	28	28

Continued on next page

Table 1. Maximum system parameters for category B — Continued

ITEM	Release 6			
	R6vs (16 MB)	R6csi (16 MB)	R6si (16 MB)	R6r
Digits inserted for ARS/AAR	18	18	18	18
AAR/ARS sub-net trunking				
Digits deleted for ARS/AAR ⁷	28	28	28	28
Digits inserted for ARS/AAR	36	36	36	36
Entries in each RHNPA table	1000	1000	1000	1000
FRLs	8	8	8	8
Inserted digit strings ⁸	1200	1200	1200	3000
Patterns for measurement				
Shared patterns for measurement	20	20	20	25
RHNPA tables	32	32	32	32
Routing plans	8	8	8	8
ARS toll tables	32	32	32	32
Entries per toll table	800	800	800	800
Trunk groups in ARS/AAR pattern	6	6	6	16
UDP (entries)	10000	10000	10000	50000
TOD charts	8	8	8	8
Toll analysis table entries	1000	1000	1000	1000
Attendant Service				
Attendant consoles (day:night) ⁹	6:1	15:1	15:1	27:1
Attendant console 100s groups per attendant	20	20	20	20
Attendant control restriction groups	96	96	96	96
Other access queues				
Maximum number of queues	12	12	12	12
Maximum number of queue slots ¹⁰	80	80	80	80
Size range of reserved queue	2-75	2-75	2-75	2-75
Reserved queue default size	5	5	5	5
Queue length	80	80	80	300
Switched loops per console	6	6	6	6
Authorization				
Authorization codes	5000	5000	5000	90000
Station security code length	7	7	7	7
Classes of restriction	96	96	96	96
Classes of service	16	16	16	16

Continued on next page

Table 1. Maximum system parameters for category B — Continued

ITEM	Release 6			
	R6vs (16 MB)	R6csi (16 MB)	R6si (16 MB)	R6r
Length of authorization code	4-7	4-7	4-7	4-7
Length of account codes	1-15	1-15	1-15	1-15
Restricted call list	1	1	1	1
CDR account code list	1	1	1	1
Toll call list	1	1	1	1
Unrestricted/allowed call lists	10	10	10	10
Total call list entries	1000	1000	1000	1000
Automatic Callback Calls	240	240	240	1500
Automatic Wakeup				
Simultaneous display requests	10	10	10	30
Wakeup requests per system	2400	2400	2400	15000
Wakeup request per extension	2	2	2	2
Wakeup requests per 15-minute interval	450	450	450	950
Basic CMS (BCMS)				
Measured members or Login IDs	20	20	20	20
Measured members per hunt group	20	20	20	20
Measured hunt group	5	5	5	5
Measured trunk groups	32	32	32	32
Measured VDNs	4	4	4	8
Maximum agents displayed by monitor BCMS hunt group command ¹¹	100	100	100	100
Maximum BCMXs terminals	3	3	3	4
Maximum active maintenance commands for the system	1	1	1	5
Maximum simultaneous BCMS terminals in monitor mode ¹²	1	1	1	3
Reporting periods				
Intervals	25	25	25	25
Days	7	7	7	7
Cabinets				
Expansion port network (EPN)				
Multicarrier cabinet ¹³	NA	NA	2	43
Single-carrier cabinet ¹³	NA	NA	8	164
Small (upgrades only) ¹⁴	NA	NA	2	41

Continued on next page

Table 1. Maximum system parameters for category B — Continued

ITEM	Release 6			
	R6vs (16 MB)	R6csi (16 MB)	R6si (16 MB)	R6r
Inter-port network connectivity				
Port networks	1	1	3	44
Maximum number of PNs per cabinet	1	1	1	2
Switch nodes (Simplex)	NA	NA	NA	3
Switch nodes (Duplex)	NA	NA	NA	6
DS1 converter complex (simplex)	NA	NA	NA	41
DS1 converter complex (duplex)	NA	NA	NA	82
Processor port network				
Multicarrier cabinet ¹⁵	NA	NA	1	1
Single-carrier cabinet	NA	NA	4	NA
Compact Modular Cabinet	NA	4	NA	NA
Call Appearances				
Bridged images per appearance ¹⁶	26	26	26	26
Call appearances per station ¹⁷	54	54	54	54
Maximum appearances per extension	10	10	10	10
Minimum appearances per extension	0	0	0	0
Total bridged appearances	2400	2400	2400	25000
Maximum simultaneous off-hook per call ¹⁸	5	5	5	5
Call Coverage				
Coverage answer groups (CAG)	200	200	200	750
Coverage paths	999	999	999	9999
Coverage paths including in call coverage report	100	100	100	100
Coverage path per station	4	4	4	4
Coverage points in a path	3	3	3	3
Remote coverage points	999	999	999	999
Maximum users per coverage path ¹⁹	3500	3500	3500	3500
Members per coverage answer group	8	8	8	8
Time of day coverage tables	999	999	999	999
Time of day changes per table	5	5	5	5
Call Detail Recording				
Intra-switch call trackable extensions	1000	1000	1000	5000

Continued on next page

Table 1. Maximum system parameters for category B — Continued

ITEM	Release 6			
	R6vs (16 MB)	R6csi (16 MB)	R6si (16 MB)	R6r
Maximum number of CDR records buffered in switch	300	300	300	1900
Number of records buffered for the primary output device to cause secondary device to be busied out for 2 minutes	200	200	200	1800
Call Forwarding				
Call forwarded digits (off-net)	16	16	16	16
Call forwarded numbers	2400	2400	2400	25000
Call Park				
Attendant group common shared extension numbers per system ²⁰	80	80	80	80
Number of Parked Calls	723	723	723	10604
Call Pickup Groups				
Call pickup members per group	50	50	50	50
Call pickup members per system	2400	2400	2400	25000
Number of groups	800	800	800	5000
Call Vectoring (Used for Automated Attendant)				
Priority levels	4	4	4	4
Recorded announcements/analog sources for vector delay	128	128	128	256
Steps per vector	32	32	32	32
Vector directory numbers	4	4	4	8
Vectors per system	4	4	4	8
Number of collected digits for call prompting or CINFO	16	16	16	16
Number of dial-ahead digits for call prompting	24	24	24	24
Vector routing tables	10	10	10	100
Conference Parties				
Simultaneous 3-way conference calls ²¹	483	483	483	7084
Simultaneous 6-way conference calls ²²	240	240	240	3520
Data Parameters				
Administered connections	128	128	128	128

Continued on next page

Table 1. Maximum system parameters for category B — Continued

ITEM	Release 6			
	R6vs (16 MB)	R6csi (16 MB)	R6si (16 MB)	R6r
Alphanumeric dialing				
Maximum entries	200	200	200	1250
Characters per entry	22	22	22	22
PRI endpoints (PE)	25	8	25	50
Access endpoints (number of trunks)	400	400	400	4000
Digital Data Endpoints	800	800	800	7500
Dial Plan				
Direct inward dialing listed directory numbers	8	8	8	20
Extensions	3500	3500	3500	36065
Extension number portability ²³	10000	10000	10000	50000
Feature dial access codes	77	77	77	77
Number of digits	1-4	1-4	1-4	1-4
Integrated directory entries ²⁴	2416	2416	2416	25028
Maximum extension size	5	5	5	5
Minimum extension size	1	1	1	1
Miscellaneous extensions ²⁵	900	900	900	3317
Names				
Number of names ²⁶	4215	4215	4215	36511
Number of characters in a name	27	27	27	27
Non-DID LDNs	50	50	50	666
Prefix extensions	Yes	Yes	Yes	Yes
Trunk dial access codes				
Number of access codes	317	317	317	317
Number of digits	1-4	1-4	1-4	1-4
Do Not Disturb (DND)				
Do not disturb requests per system	2400	2400	2400	25000
Simultaneous display requests	10	10	10	30
External Device Alarming)	32	32	32	90
Facility Busy Indicators				
Buttons per tracked resource	100	100	100	500
Number of indicators (station and trunk groups)	3600	3600	3600	10000
Hunt Groups (Non-ACD)				

Continued on next page

Table 1. Maximum system parameters for category B — Continued

ITEM	Release 6			
	R6vs (16 MB)	R6csi (16 MB)	R6si (16 MB)	R6r
Announcements per group	2	2	2	2
Announcements per system	128	128	128	256
Groups	99	99	99	600
Group members per group	200	200	200	999
Group members per system ²⁷	1000	1000	1000	10000
Queue slots per group	200	200	200	999
Queue slots per system	1500	1500	1500	15000
Intercom Translation Table (ICOM)				
Automatic/manual and dial				
ICOM groups per system	32	32	32	256
Auto/manual	32	32	32	256
Dial	32	32	32	256
Members per ICOM group				
Auto	32	32	32	32
Dial	32	32	32	32
Members per system	1024	1024	1024	8192
Last Number Dialed				
Entries per system ²⁸	3216	3216	3216	32528
Number of digits	24	24	24	24
Leave Word Calling (Switch-Based)²⁹				
Messages stored	2000	2000	2000	6000
Messages per user	125	125	125	125
Simultaneous message retrievers	60	60	60	400
System-wide message retrievers	10	10	10	10
Malicious Call Trace				
Maximum simultaneous traces	16	16	16	16
MLDN				
Via direct inward dialing	8	8	8	20
Via Central Office	99	99	99	666
Paging				
Code calling IDs	125	125	125	125
Loudspeaker zones	9	9	9	9
Personal CO Lines (PCOL)				
PCOL appearances	16	16	16	16

Continued on next page

Table 1. Maximum system parameters for category B — Continued

ITEM	Release 6			
	R6vs (16 MB)	R6csi (16 MB)	R6si (16 MB)	R6r
PCOL lines (trunk groups)	200	200	200	200
PCOL trunks per trunk group	1	1	1	1
Port Circuit Pack Slots³⁰				
Per expansion port network				
Multicarrier cabinet standard reliability	NA	NA	99	99
Single-carrier cabinet standard reliability	NA	NA	71	71
Small cabinet standard reliability (upgrade only)	NA	NA	39	39
Per processor port network				
Multicarrier cabinet standard reliability	NA	NA	89	80
Single-carrier cabinet standard reliability	NA	NA	64	NA
Enhanced single-carrier cabinet standard reliability	NA	NA	70	NA
Compact modular cabinet	NA	38 ³⁷	NA	NA
Recorded Announcements/Audio Sources				
Analog and auxiliary trunk announcements				
Analog and auxiliary trunk queue slots per Announcement	150	150	150	1000
Analog and auxiliary trunk queue slots per System	150	150	150	1000
Calls connected per announcement	50	150	150	1000
Integrated announcements				
Integrated announcement circuit packs	5	5	5	10
Channels connected per integrated Announcement circuit pack	16	16	16	16
Calls connected per integrated announcement	50	50	50	1000

Continued on next page

Table 1. Maximum system parameters for category B — Continued

ITEM	Release 6			
	R6vs (16 MB)	R6csi (16 MB)	R6si (16 MB)	R6r
Integrated announcement recording time (minutes: seconds) per circuit pack				
16 kB recording	8:32	8:32	8:32	8:32
32 kB recording	4:16	4:16	4:16	4:16
64 kB recording	2:08	2:08	2:08	2:08
Integrated queue slots per system	200	200	200	4000
Total recorded announcements	128	128	128	256
System Administration				
Number of logins	15	15	15	15
Administrable history file entries	500	500	500	1250
Simultaneous administration command	1	1	1	5
Simultaneous maintenance command	1	1	1	5
Simultaneous system maintenance sessions	5	5	5	8
Number of scheduled reports	50	50	50	50
Speech Synthesis Circuit Packs				
Channels per speech circuit pack	4	4	4	4
Terminating Extension Groups (TEG)				
TEGs	32	32	32	32
Users that may share a TEG	4	4	4	4
Time Slots				
Simultaneous circuit-switched calls ³¹	241	241 ³²	723	7712
Total slots	512	512 ³²	1536	22528
Time slots for voice and data ³³	483	483 ³²	1449	21208
Time slots per port network	512	512 ³²	512	512
Tone Classifiers				
Tone receivers (general) ³⁴	200	200	200	840
TTR queue size	4	4	4	4
Prompting TTR queue size	80	80	80	80
Trunks				
DS1 circuit packs	30	30	30	166
Queue slots for trunks	198	198	198	1332
PRI interfaces	30	8	30	166

Continued on next page

Table 1. Maximum system parameters for category B — Continued

ITEM	Release 6			
	R6vs (16 MB)	R6csi (16 MB)	R6si (16 MB)	R6r
PRI interfaces via processor interface ³⁵	4	NA	8	NA
PRI interfaces via PACCON ³⁶ (packet controller)	30 ³⁷	NA	30	NA
PRI interfaces via TN1655 PKTINT	NA	NA	NA	166
BRI trunks ³⁸				
BRI interfaces via PACCON (packet controller)	240 ³⁷	NA	240	NA
BRI trunks via TN1655 PKTINT	NA	NA	NA	1328
BRI via time division multiplexing (TDM) bus	NA	64	NA	NA
BRI trunks total	240 ³⁷	64	240	1328
PRI temporary signaling connections (TSCs)				
TSCs in system	656	656	656	4256
Call associated TSCs	400	400	400	4000
Non call associated TSCs	256	256	256	256
Administered TSCs	128	128	128	128
Ringback queue slots	198	198	198	1332
Trunk groups				
Trunk groups hourly measurements	25	25	25	75
Trunk groups in the system	99	99	99	666
Trunk members in a trunk group	99	99	99	255
Trunks in system (including remote access)	400	400	400	4000
Measured Trunks in system	400	400	400	4000
ISDN services				
Incoming call handling treatment (per trunk group)	18	18	18	54
Incoming call handling treatment (per trunk system)	288	288	288	576
User defined services	24	24	24	60
Usage allocation entries (per plan)	15	15	15	15
ISDN PRI Usage				
ICHT entries/trunk grp	18	18	18	54
ICHT entries/system	288	288	288	576

Continued on next page

Table 1. Maximum system parameters for category B — Continued

ITEM	Release 6			
	R6vs (16 MB)	R6csi (16 MB)	R6si (16 MB)	R6r
User defined services	24	24	24	60
Usage allocation entries/plan	15	15	15	15
Voice Terminals³⁹				
Associated data modules (such as DTDMs)	800	800	800	7500
BRI stations ⁴⁰				
Multipoint	1000 ³⁷	84	1000	7000
Digital stations ⁴¹	2400	168	2400	25000
Point-to-Point	1000 ³⁷	84	1000	7000
Display stations	2400	2400	2400	10000
Stations ⁴²	2400	2400	2400	25000
Station button capacity (K Units) ⁴³	700.8	700.8	700.8	5260
Station button feature capacity ⁴⁴	15900	15900	15900	15900
DEFINITY Wireless Business System				
Maximum number of terminals (9601)	250	250	250	250
Radio controller circuit packs ⁴⁵	8	30	30	30
Wireless fixed bases	16	60	60	60
Cell antenna units (CAU)	64	240	240	240
Coverage (million square feet)	1	3	3	3
Button capacity for wireless	700.8	700.8	700.8	5260

1. There is no limit on the maximum number of auto dial buttons (other than the system limit on button capacity). See Station Button Capacity for system button limitations.
2. In si, 4 netcon channels plus one direct connect. In G3r, 10 system ports through the packet data circuit pack.
3. In SCC/ESCC, only 4 BX.25 physical links are supported in the configuration.
4. When going from 4 to 3 login maximums, a change to the hunt group form is required. This requires all agents to be logged-out. In one extreme case, this is potentially avoided and R2 & R3 CMS handles the fourth login as UNSTAFFED appropriately.
5. The Release 6csi platform does not support CMS.
6. AAR was Not An Optional Feature in the G3vsV4G3/G3sV4 ABP.
7. Plus up to 7 inter-exchange carrier (IXC) digits.
8. Number of available 12 character inserted-digit-strings available for AAR/ARS preferences.
9. For Release 6vs, 4 is the recommended number of consoles supported due to power limitations. Of these, 1 may be used as a night console. The software supports 6:1 day/night attendant consoles.
10. Referred to as "emergency access queue length" in Release 6si.
11. The monitor split command displays status for the first 100 agents logged into the split regardless of how many additional agents log into the split.

12. BCMS monitoring is a maintenance command limited by the active maintenance commands limit. It is reduced by 2 in the r system configuration because 2 active command slots are reserved for the INADS and SAT logins.
13. Only EPNs in Release 6r can be DS1-remote EPNs.
14. Small systems refer to the 2 carrier cabinet systems that are no longer sold to new customers.
15. Multicarrier cabinet includes the medium Cabinet.
16. 26 bridged appearances (principal + 25) are supported on all R6 platforms, provided that ASAI is not used. The capacity is 16 with ASAI.
17. The number of call appearances is the sum of primary and bridged appearances; at most 10 can be primary. A maximum of 54 administrable buttons are supported for the 8434D terminal with expansion module — 34 buttons in the basic terminal and 20 more buttons in the expansion module.
18. Does not apply to conferencing.
19. The maximum number of users per coverage path equals the number of extensions.
20. Shared extensions must be shared among all attendant groups in the system including tenant partition scenarios.
21. Simultaneous 3-way conference call = $(483 / 3) * \text{number PNs}$.
22. Simultaneous 6-way conference call = $(483 / 6) * \text{number PNs}$.
23. These are uniform dialing plan (UDP) entries.
24. The integrated directory entries = stations + attendant consoles.
25. Used for PCOL groups, common shared extensions, access endpoints, administered TSCs, code calling IDs, LDNs, hunt groups, announcements, and TEGs (phantom extensions).
26. The number of names = number of stations + attendant consoles + trunk groups + digital data endpoints + miscellaneous extensions.
27. Hunt group members include non-ACD (hunting, message center service, AUDIX, and so forth) and ACD uses (splits or skills including auto-available split or skills).
28. The last number dialed entries = stations + digital data endpoints + attendant consoles.
29. Leave Word Calling is available in the APB only if the Voice Mail Option is purchased.
30. Only port slots are included in this count. For example, there are 100 port slots per MCC EPN cabinet with 99 port slots and one slot dedicated to the Tone/Clock board. Other service circuits may further reduce the number of port slots available. In Release 6r and Release 6si, the service slot may be equipped with service boards that do not require tip and ring connections.
31. 241 simultaneous circuit-switched calls per port network, except for Release 6si with 180 simultaneous circuit switched calls and Release 6r with 7,712 (limited by the number of call records supported).
32. R6csi supports PRI D channels over the TDM bus. Each D channel for PRI uses one timeslot pair. An R6csi with 8 PRIs utilize 8 timeslot pairs, allowing a maximum of 233 simultaneous circuit switched calls.
33. 483 time slots for voice and data per port network.
34. G3V4 and Release 6 use TN744C Call Classifier for basic TTR usage as well as call prompting/call classification/MFC. Also, the TN2182 Tone/Clock/Detector is used for multiple tone detection functions. The number of TN748, TN420, or TN744C circuit packs is limited only by the number of available slots. The number of TN2182 boards is limited. There is a single limit on the total number of tone receiver (classifier) ports for the system: TN748/TN420 have 4 ports for TTR use, TN748/TN420 have 2 ports for GPTD use, TN744C has 8 ports for call prompting/call classification/ MFC/TTR/GPTD use, and TN2182 has 8 ports for call prompting/call classification/MFC/ TTR/GPTD use.
35. Only 1 processor interface (PI) circuit pack is supported in Release 6vs and Release 6si configurations, therefore a total of 4 physical links (used for BX.25 or PRI) are available. PRI interface via the PI is not available in France, Germany, and Italy. PRI interface via the packet controller is used.
36. Other countries must use the PI when they have the Release 6vs configuration without packet bus capability.
37. BRI stations and ASAI are supported on R6.2csi and CMC only with TN556C. The TN2198 is not supported on R6.2cis or CMC.
38. The TN2185 BRI trunk circuit pack provides 8 ports. Each port (2B+D) provides 2 BRI trunks.

39. The following items detract from the total number of available "stations:"
 - Analog music-on-hold
 - Attendants
 - Modem pool conversion resources
 - TAAS port
 - Stations (digital, display, BRI, and so forth.)
 - Analog announcements
 - Analog external alarm port
 - Agent login IDs
 - ACD agents
40. All BRI stations can be display stations. Release 6vs can have up to 50 BRI stations if the unit is configured for packet interface.
41. The software limit for digital stations in Release 6vs is 400. Due to power limitations, 120 is the recommended limit.
42. Including extensions administered without associated hardware (Release 6si and Release 6r). The station capacity for Release 6vs is a software limit because of the physical capacity (10 port slots).
43. The station button capacity can support all stations equipped as 8410D digital sets with display. For example, a total of $(292 \times 2400) = 700.8K$ units. The table below shows approximate unit values for various station types. The term "default" means with no non-default buttons administered. The term "loaded" means all possible buttons - including the indicated number of call/bridged appearances (CA) - administered.
 - 8403B (default): 32
 - 8403B (loaded with 3 CA): 152
 - 8410B (default): 32
44. The following button features share a common resource in memory:
 - Call Forwarding, Call Forward Busy Don't Answer, Send Extension Calls (SAC w/extension), Station Busy Indicators, Trunk Group Status, Hunt Group Status, PCOL Group Status, Data Module, Terminating Extension Group Status, Attendant Group Status/DXS, Remote Trunk Group Select.
45. For G3r, TN789 Radio Controller Circuit Packs cannot be used in DS1 remoted EPNs.

Related Documents



Appendix overview

Since the DEFINITY BCS is based on the Lucent Technologies DEFINITY product line, the following is a list of DEFINITY documents to use for reference. This Overview and most of these documents are included on the *DEFINITY BCS and GuestWorks server Issue 4 Documents* CD (555-231-802, Issue 1). This appendix includes a brief description of each document.

 **NOTE:**

These references contain some information about features not available with the DEFINITY BCS.

To order copies of these documents, refer to the ordering information on the back of the title page.

DEFINITY Terminals and Adjuncts Reference **555-015-201
Issue 9**

Describes peripheral equipment that can be used with System 75, System 85, and DEFINITY Communications System. Written for both customers and Lucent Technologies account teams who select the correct peripherals to accompany a system.

***DEFINITY DS1/CEPT1/ISDN PRI Reference
Manual*** **555-025-107
Issue 1**

Describes digital trunks in DEFINITY Communications Systems G2.2 and G3V2. Includes trunks conforming to the DS1 standard (1.544 Mbps) and the CEPT1 standard (2.048 Mbps) and all methods of signaling, including bit-oriented signaling as well as ISDN PRI signaling. Includes background information on these topics, information on how digital trunk capabilities have been designed into the DEFINITY systems, and information for field personnel and customers on how to provision and administer digital trunk capabilities and features. Provides both domestic and international information.

DEFINITY Security Handbook

**555-025-600
Issue 6**

Written for console operators, telecommunications managers, and other telecommunications management personnel with responsibilities for implementing a security policy. Discusses security risks and measures that you can take to help prevent external telecommunication fraud. Includes specific information on the Lucent INTUITY system and other Lucent Technologies products.

Maintenance for DEFINITY R6vs/si

**555-230-127
Issue 2**

Provide detailed descriptions of the procedures for monitoring, testing, and maintaining the systems. Included are maintenance commands, step-by-step trouble-clearing procedures, the procedures for using all tests, and explanations of the system's error codes.

DEFINITY Installation for Adjuncts and Peripherals

**555-230-125
Issue 3**

Provides procedures and information for hardware installation and initial testing of typical adjuncts and peripherals used with the DEFINITY communications system.

DEFINITY Administration & Feature Description

**555-230-522
Issue 3**

Describes DEFINITY Enterprise Communications Server features and parameters. Includes applications and benefits, feature interactions, administration requirements, hardware and software requirements, and a brief discussion of data communications and private-networking configurations.

DEFINITY System Monitoring and Reporting

**555-230-511
Issue 4**

Describes all of the measurement, status, and security reports available in the system. Describes each report and all of the fields on the report. Provides suggested actions to correct potential problem areas. For earlier systems, this manual was entitled ``System Reports."

DEFINITY Implementation Blank Forms

**555-230-303
Issue 3**

This is a complete set of blank screen forms to be used in conjunction with the implementation manual, (555-230-655), in administering a G3V4 system. The

forms may be ordered separately, but are also included with all orders for the implementation manual.

DEFINITY Console Operation

**555-230-700
Issue 3**

Provides operating instructions for the attendant console. Included are descriptions of the console control keys and functions, call-handling procedures, basic system troubleshooting information, and routine maintenance procedures.

***DEFINITY Basic Call Management System
Operation***

**555-230-706
Issue 1**

A complete description of the Basic Call Management System. Includes instructions for generating reports; sample reports; explanations of all data in reports; information for interpreting reports for call center management; and procedures for using the report scheduler.

DEFINITY Telephone Guide Builder

**555-230-755
Issue 3**

Telephone Guide Builder is a software product that allows you to produce laser-printed documentation for specific voice terminals. The software is supported by a comprehensive user's guide and online help. This product requires a 386 PC (mouse recommended), 6 MB or more of disk space, 4 MB or more of RAM, a printer supported by Microsoft GDI printer drive, and Microsoft Windows 3.1 or higher. A mouse is recommended.

DEFINITY Installation for Single-Carrier Cabinets

**555-230-894
Issue 3**

This book supports G3 V3 and later only. It provides procedures and information for installing the hardware and wiring, and for initial testing. All the information in this book applies to single-carrier cabinet switches only.

***GuestWorks server Issue 4 Technicians
Handbook***

**555-231-106
Issue 1**

Describes how to connect, administer, and test the adjuncts of the GuestWorks server. Written for technician's and software consultants. Includes connectivity diagrams, administration screens, and hardware testing procedures. Covers all versions of the GuestWorks server.

GuestWorks server INTUITY Lodging Call Accounting User's Guide **555-231-205**
Issue 1

Describes the Lucent INTUITY Lodging call accounting system offered with GuestWorks. Provides procedures for setting up reports and capturing call record data. Written for customers. Includes accessing the system, managing the database, accessing and printing reports, sample reports, backing up the system, and troubleshooting. Covers all releases of the GuestWorks server INTUITY Lodging Call Accounting.

DEFINITY and GuestWorks Property Management System Interface Specifications **555-231-601**
Issue 1

Describes the property management system (PMS) interface for several Lucent Technologies servers. Provides detailed interface specifications. Written for property management system vendors to design products that interface to these servers. Includes a description of each protocol mode and feature code. Covers the following releases: System 75 R1V3, DEFINITY G1, DEFINITY G3 Versions 1-4, DEFINITY ECS Release 5, and GuestWorks *server*.

DEFINITY Business Communications System and GuestWorks server Issue 3.0 Console Quick Reference **555-231-735**
Issue 2

Describes basic operations for attendant console users. Provides detailed procedures for most operations performed at the attendant console. Written for customers. Includes features such as Transfer, Attendant Conference, and Attendant Backup. Covers all versions of the DEFINITY Business Communications System and GuestWorks *server*.

GuestWorks server Issue 3.0 Hospitality Operations **555-231-741**
Issue 1

Describes how to use the hospitality features of the GuestWorks *server*. Included are guest procedures, front desk procedures, housekeeping staff procedures, administration, and report.

DEFINITY Business Communications System and GuestWorks server Issue 4 Documentation Library **555-231-801**
Issue 2

A CD-ROM that contains all of the documents referenced in this section. The documents are presented in "pdf" format using the Adobe* Acrobat* reader.

*. Adobe is a registered trademark of Adobe Systems Inc.

DEFINITY Application Notes for Type Approval **N/A**

Describes the hardware and administration required to activate features in different countries. This document is not orderable at this time, but is available to the Lucent Technologies Centers of Excellence.

Glossary and Abbreviations

Numerics

800/888 service

A service in the United States that allows incoming calls from certain areas to an assigned number for a flat-rate charge based on usage.

A

AA

Archangel. See angel.

AAR

See Automatic Alternate Routing (AAR).

abandoned call

An incoming call in which the caller hangs up before the call is answered.

Abbreviated Dialing (AD)

A feature that allows callers to place calls by dialing one or two digits.

AC

1. Alternating current.
2. See Administered Connection (AC).

AAR

Automatic Alternate Routing

ACA

See Automatic Circuit Assurance (ACA).

ACB

See Automatic Callback (ACB).

ACD

See Automatic Call Distribution (ACD).

ACU

See Automatic Calling Unit (ACU)

access code

A 1-, 2-, or 3-digit dial code used to activate or cancel a feature, or access an outgoing trunk.

access endpoint

Either a nonsignaling channel on a DS1 interface or a nonsignaling port on an analog tie-trunk circuit pack that is assigned a unique extension.

access tie trunk

A trunk that connects a main communications system with a tandem communications system in an electronic tandem network (ETN). An access tie trunk can also be used to connect a system or tandem to a serving office or service node. Also called access trunk.

access trunk

See access tie trunk.

ACCUNET

A trademarked name for a family of digital services offered by AT&T in the United States.

ACD

See Automatic Call Distribution (ACD). ACD also refers to a work state in which a hunt group member is on an ACD call.

ACD work mode

See work mode.

ACU

See Automatic Calling Unit (ACU).

AD

See Abbreviated Dialing (AD).

ADAP

AUDIX Data Acquisition Package

ADC

See analog-to-digital converter (ADC).

ADM

Asynchronous data module

administer

To access and change parameters associated with the services or features of a system.

Administered Connection (AC)

A feature that allows the switch to automatically establish and maintain end-to-end connections between access endpoints (trunks) and/or data endpoints (data modules).

administration group

See capability group.

administration terminal

A terminal that is used to administer and maintain a system. See also terminal.

Administration Without Hardware (AWOH)

A feature that allows administration of ports without associated terminals or other hardware.

ADU

See asynchronous data unit (ADU).

AE

See access endpoint.

AIM

Asynchronous interface module

AIOD

Automatic Identification of Outward Dialing

ALBO

Automatic Line Build Out

All trunks busy (ATB)

The state in which no trunks are available for call handling.

ALM-ACK

Alarm acknowledge

American Standard Code for Information Interchange

See ASCII (American Standard Code for Information Interchange).

AMW

Automatic Message Waiting

AN

Analog

analog

The representation of information by continuously variable physical quantities such as amplitude, frequency, and phase. See also digital.

analog data

Data that is transmitted over a digital facility in analog (PCM) form. The data must pass through a modem either at both ends or at a modem pool at the distant end.

analog telephone

A telephone that receives acoustic voice signals and sends analog electrical signals along the telephone line. Analog telephones are usually served by a single wire pair (tip and ring). The model-2500 telephone set is a typical example of an analog telephone.

analog-to-digital converter (ADC)

A device that converts an analog signal to digital form. See also digital-to-analog converter (DAC).

angel

A microprocessor located on each port card in a processor port network (PPN). The angel uses the control-channel message set (CCMS) to manage communications between the port card and the archangel on the controlling switch-processing element (SPE). The angel also monitors the status of other microprocessors on a port card and maintains error counters and thresholds.

ANI

See Automatic Number Identification (ANI).

ANSI

American National Standards Institute. A United States professional/technical association supporting a variety of standards.

answer tone

A high-pitched continuous tone that indicates a data endpoint has answered.

answerback code

A number used to respond to a page from a code-calling or loudspeaker-paging system, or to retrieve a parked call.

AOL

Attendant-offered load

AP

Applications processor

APLT

Advanced Private-Line Termination

appearance

A software process that is associated with an extension and whose purpose is to supervise a call. An extension can have multiple appearances. Also called call appearance, line appearance, and occurrence. See also call appearance.

applications processor

A micro-computer based, program controlled system providing application services for the DEFINITY switch. The processor is used with several user-controlled applications such as traffic analysis and electronic documentation.

application service element

See capability group.

architecture

The organizational structure of a system, including hardware and software.

ARS

See Automatic Route Selection (ARS).

ASCII (American Standard Code for Information Interchange)

The standard code for representing characters in digital form. Each character is represented by an 8-bit code (including parity bit).

association

A communication channel between adjunct and switch for messaging purposes. An active association is one that applies to an existing call on the switch or to an extension on the call.

asynchronous data transmission

A method of transmitting data in which each character is preceded by a start bit and followed by a stop bit, thus permitting data characters to be transmitted at irregular intervals. This type transmission is advantageous when transmission is not regular (characters typed at a keyboard). Also called asynchronous transmission. See also synchronous data transmission.

asynchronous data unit (ADU)

A device that allows direct connection between RS-232C equipment and a digital switch.

asynchronous Transfer Mode (ATM)

A packet-like switching technology in which data is transmitted in fixed-size (53-byte) cells. ATM provides high-speed access for data communication in LAN, campus, and WAN environments.

ATB

See All trunks busy (ATB).

ATD

See Attention dial (ATD).

attendant

A person at a console who provides personalized service for incoming callers and voice-services users by performing switching and signaling operations. See also attendant console.

ATM

See asynchronous Transfer Mode (ATM).

attendant console

The workstation used by an attendant. The attendant console allows the attendant to originate a call, answer an incoming call, transfer a call to another extension or trunk, put a call on hold, and remove a call from hold. Attendants using the console can also manage and monitor some system operations. Also called console. See also attendant.

Attention dial (ATD)

A command in the Hayes modem command set for asynchronous modems.

Audio Information Exchange (AUDIX)

A fully integrated voice-mail system. Can be used with a variety of communications systems to provide call-history data, such as subscriber identification and reason for redirection.

AUDIX

See Audio Information Exchange (AUDIX).

auto-in trunk group

Trunk group for which the CO processes all of the digits for an incoming call. When a CO seizes a trunk from an auto-in trunk group, the switch automatically connects the trunk to the destination — typically an ACD hunt group where, if no members are available, the call goes into a queue in which callers are answered in the order in which they arrive.

Auto-In Work mode

One of four work modes: the mode in which a member is ready to process another call as soon as the current call is completed.

Automatic Alternate Routing (AAR)

A feature that routes calls to other than the first-choice route when facilities are unavailable.***

Automatic Callback (ACB)

A feature that enables internal callers, upon reaching a busy extension, to have the system automatically connect and ring both parties when the called party becomes available.

Automatic Call Distribution (ACD)

A feature that answers calls, and then, depending on administered instructions, delivers messages appropriate for the caller and routes the call to a hunt group member when one becomes available.

Automatic Call Distribution (ACD) Hunt Group

A method of routing calls of a similar type among members in a hunt group. Also, a group of extensions that are staffed by members trained to handle a certain type of incoming call.

Automatic Calling Unit (ACU)

A device that places a telephone call.

Automatic Circuit Assurance (ACA)

A feature that tracks calls of unusual duration to facilitate troubleshooting. A high number of very short calls or a low number of very long calls may signify a faulty trunk.

Automatic Number Identification (ANI)

Representation of the calling number, for display or for further use to access information about the caller. Available with Signaling System 7.

automatic restoration

A service that restores disrupted connections between access endpoints (nonsignaling trunks) and data endpoints (devices that connect the switch to data terminal and/or communications equipment). Restoration is done within seconds of a service disruption so that critical data applications can remain operational.

Automatic Route Selection (ARS)

A feature that allows the system to automatically choose the least-cost way to send a toll call.

automatic trunk

A trunk that does not require addressing information because the destination is predetermined. A request for service on the trunk, called a seizure, is sufficient to route the call. The normal destination of an automatic trunk is the communications-system attendant group. Also called automatic incoming trunk and automatic tie trunk.

AUX

Auxiliary

auxiliary equipment

Equipment used for optional system features, such as Loudspeaker Paging and Music-on-Hold.

auxiliary trunk

A trunk used to connect auxiliary equipment, such as radio-paging equipment, to a communications system.

Aux-Work mode

A work mode in which members are unavailable to receive ACD calls. Members enter Aux-Work mode when involved in non-ACD activities such as taking a break, going to lunch, or placing an outgoing call.

AVD

Alternate voice/data

AWOH

See Administration Without Hardware (AWOH).

AWG

American Wire Gauge

AWT

Average work time

B

B8ZS

Bipolar Eight Zero Substitution

bandwidth

The difference, expressed in hertz, between the defined highest and lowest frequencies in a range.

baud

A unit of transmission rate equal to the number of signal events per second. See also bit rate and bits per second (bps).

BCC

See Bearer capability class (BCC).

BCMS

Basic Call Management System

BCT

See business communications terminal (BCT).

Bearer capability class (BCC)

Code that identifies the type of a call (for example, voice and different types of data). Determination of BCC is based on the caller's characteristics for non-ISDN endpoints and on the Bearer Capability and Low-Layer Compatibility Information Elements of an ISDN endpoint. Current BCCs are 0 (voice-grade data and voice), 1 (56 kbps data transmission), 2 (synchronous/asynchronous data transmission up to 19.2 kbps) 3 (64 kbps circuit/packet data transmission), 4 (64 kbps synchronous data), 5 (temporary signaling connection), and 6 (wideband call, 128–1984 kbps synchronous data; not used on the IntroWorks).

BER

Bit error rate

BHCC

Busy-hour call completions

bit (binary digit)

One unit of information in binary notation, having two possible values: 0 or 1.

bits per second (bps)

The number of binary units of information that are transmitted or received per second. See also baud and bit rate.

bit rate

The speed at which bits are transmitted, usually expressed in bits per second. Also called data rate. See also baud and bits per second (bps).

BLF

Busy Lamp Field

BN

Billing number

BOS

Bit-oriented signaling

BPN

Billed-party number

bps

See bits per second (bps).

bridge (bridging)

The appearance of a voice terminal's extension at one or more other voice terminals.

BRI

The ISDN Basic Rate Interface specification.

bridged appearance

A call appearance on a voice terminal that matches a call appearance on another voice terminal for the duration of a call.

BTU

British Thermal Unit

buffer

1. In hardware, a circuit or component that isolates one electrical circuit from another. Typically, a buffer holds data from one circuit or process until another circuit or process is ready to accept the data.

2. In software, an area of memory that is used for temporary storage.

bus

A multiconductor electrical path used to transfer information over a common connection from any of several sources to any of several destinations.

business communications terminal (BCT)

A digital data terminal used for business applications. A BCT can function via a data module as a special-purpose terminal for services provided by a processor or as a terminal for data entry and retrieval.

busy tone

A low-pitched repeating tone that indicates the dialed number is in use.

BX.25

A version of the CCITT X.25 protocol for data communications. BX.25 adds a fourth level to the standard X.25 interface. This uppermost level combines levels 4, 5, and 6 of the ISO reference model.

bypass tie trunks

A 1-way, outgoing tie trunk from a tandem switch to a main switch in an ETN. Bypass tie trunks, provided in limited quantities, are used as a last-choice route when all trunks to another tandem switch are busy. Bypass tie trunks are used only if all applicable intertandem trunks are busy.

byte

A sequence of (usually eight) bits processed together.

C

CACR

Cancellation of Authorization Code Request

cabinet

Housing for racks, shelves, or carriers that hold electronic equipment.

cable

Physical connection between two pieces of equipment (for example, data terminal and modem) or between a piece of equipment and a termination field.

cable connector

A jack (female) or plug (male) on the end of a cable. A cable connector connects wires on a cable to specific leads on telephone or data equipment.

CAG

Coverage answer group

call appearance

1. For the attendant console, six buttons, labeled a–f, used to originate, receive, and hold calls. Two lights next to the button show the status of the call appearance.
2. For the voice terminal, a button labeled with an extension and used to place outgoing calls, receive incoming calls, or hold calls. Two lights next to the button show the status of the call appearance.

Call Detail Recording (CDR)

A feature that uses software and hardware to record call data (same as CDRU).

Call Detail Recording utility (CDRU)

Software that collects, stores, optionally filters, and outputs call-detail records.

call-reference value (CRV)

An identifier present in ISDN messages that associates a related sequence of messages.

callback call

A call that automatically returns to a voice-terminal user who activated the Automatic Callback or Ringback Queuing feature.

Call Vectoring directory number

An extension that provides access to the Call Vectoring feature on the switch. Call Vectoring allows a customer to specify the treatment of incoming calls based on the dialed number.

call-waiting ringback tone

A low-pitched tone identical to ringback tone except that the tone decreases in the last 0.2 seconds (in the United States). Call-waiting ringback tone notifies the attendant that Attendant Call Waiting is active and that the called party is aware of the waiting call. Tones in international countries may sound different.

call-waiting tone

One, two, or three beeps (short bursts of high-pitched tone) that indicate to a busy single-line terminal that an incoming call is waiting. The type of incoming call determines the number of beeps the busy terminal receives: one beep indicates the call is from another terminal in the system, two beeps indicate the call is from the attendant or an outside caller, and three beeps indicate the waiting call is a priority call.

CAMA

Centralized Automatic Message Accounting

carrier

An enclosed shelf containing vertical slots that hold circuit packs.

carried load

The amount of traffic served by traffic-sensitive facilities during a given interval.

CARR-POW

Carrier Port and Power Unit for AC Powered Systems

CAS

Call Accounting System

CCS or hundred call seconds

A unit of call traffic. Call traffic for a facility is scanned every 100 seconds. If the facility is busy, it is assumed to have been busy for the entire scan interval. There are 3600 seconds per hour. The Roman numeral for 100 is the capital letter C. The abbreviation for call seconds is CS. Therefore, 100 call seconds is abbreviated CCS. If a facility is busy for an entire hour, then it is said to have been busy for 36 CCS. See also Erlang.

capability

A request or indication of an operation. For example, *Third Party Make Call* is a request for setting up a call; *event report* is an indication that an event has occurred.

capability group

Set of capabilities, determined by switch administration, that can be requested by an application. Capability groups denote association types. For example, *Call Control* is a type of association that allows certain functions (the ones in the capability group) to be performed over this type of association. Also referred to as administration groups or application service elements (ASEs).

CA-TSC

Call-Associated Temporary Signaling Connection

CBC

Call-by-call or coupled bonding conductor

CC

Country code

CCIS

Common-Channel Interoffice Signaling

CCITT

CCITT (Comit te Consultatif International Telephonique et Telegraphique), now called *International Telecommunications Union* (ITU). See International Telecommunications Union (ITU).

CCMS

Control-Channel Message Set

CCS

See CCS or hundred call seconds.

CCSA

Common-Control Switching Arrangement

CDM

Channel-division multiplexing

CDOS

Customer-dialed and operator serviced

CDR

See Call Detail Recording (CDR).

CDRP

Call Detail Record Poller

CDRR

Call Detail Recording and Reporting

CDRU

See Call Detail Recording utility (CDRU).

CEM

Channel-expansion multiplexing

central office (CO)

The location housing telephone switching equipment that provides local telephone service and access to toll facilities for long-distance calling.

central office (CO) codes

The first three digits of a 7-digit public-network telephone number in the United States.

central office (CO) trunk

A telecommunications channel that provides access from the system to the public network through the local CO.

CEPT1

European Conference of Postal and Telecommunications Rate 1

channel

1. A circuit-switched call.
2. A communications path for transmitting voice and data.

3. A DS0 on a T1 or E1 facility not specifically associated with a logical circuit-switched call; analogous to a single trunk.

channel negotiation

The process by which the channel offered in the Channel Identification Information Element (CIIE) in the SETUP message is negotiated to be another channel acceptable to the switch that receives the SETUP message and ultimately to the switch that sent the SETUP. Negotiation is attempted only if the CIIE is encoded as *Preferred*.

CI

Clock input

circuit

1. An arrangement of electrical elements through which electric current flows.
2. A channel or transmission path between two or more points.

circuit pack

A card on which electrical circuits are printed, and IC chips and electrical components are installed. A circuit pack is installed in a switch carrier.

CISPR

International Special Committee on Radio Interference

Class of Restriction (COR)

A feature that allows up to 64 classes of call-origination and call-termination restrictions for voice terminals, voice-terminal groups, data modules, and trunk groups. See also Class of Service (COS).

Class of Service (COS)

A feature that uses a number to specify if voice-terminal users can activate the Automatic Callback, Call Forwarding All Calls, Data Privacy, or Priority Calling features. See also Class of Restriction (COR).

cm

Centimeter

CM

Connection Manager

CO

See central office (CO).

common-control switching arrangement (CCSA)

A private telecommunications network using dedicated trunks and a shared switching center for interconnecting company locations.

communications system

The software-controlled processor complex that interprets dialing pulses, tones, and keyboard characters and makes the proper connections both within the system and external to the system.

The communications system itself consists of a digital computer, software, storage device, and carriers with special hardware to perform the connections. A communications system provides voice and data communications services, including access to public and private networks, for telephones and data terminals on a customer's premises. See also switch.

confirmation tone

Three short bursts of tone that confirms a feature activation, deactivation, or cancellation has been accepted. This tone also can indicate that an outgoing call from a single-line voice terminal was placed in a ringback queue.

connectivity

The connection of disparate devices within a single system.

console

See attendant console.

contiguous

Adjacent DS0s within one T1 or E1 facility or adjacent TDM or fiber time slots. The first and last TDM bus, DS0, or fiber time slots are not considered contiguous (no wraparound). For an E1 facility with a D-channel, DS0s 15 and 17 are considered contiguous.

control cabinet

See control carrier.

control carrier

A carrier in a multicarrier cabinet that contains the SPE circuit packs and, unlike an R5r control carrier, port circuit packs. Also called control cabinet in a single-carrier cabinet. See also switch-processing element (SPE).

controlled station

A station that is monitored and controlled via a domain-control association.

COR

See Class of Restriction (COR).

COS

See Class of Service (COS).

coverage answer group

A group of up to eight voice terminals that ring simultaneously when a call is redirected to it by Call Coverage. Any one of the group can answer the call.

coverage call

A call that is automatically redirected from the called party's extension to an alternate answering position when certain coverage criteria are met.

coverage path

The order in which calls are redirected to alternate answering positions.

coverage point

An extension or attendant group, Call Vectoring directory number, or ACD hunt group designated as an alternate answering position in a coverage path.

coverage tone

A long-burst of tone indicating to the calling party that a call to an extension is being answered at another extension by a covering user.

covering user

A person at a coverage point who answers a redirected call.

CP

Circuit pack

CPE

Customer-premises equipment

CPN

Called-party number

CPTR

Call-progress-tone receiver

CRC

Cyclical Redundancy Checking

CSA

Canadian Safety Association

CSCC

Compact single-carrier cabinet

CSD

Customer-service document

CSSO

Customer Services Support Organization

CSU

Channel service unit

CTS

Clear to Send

D

DAC

1. Dial access code
2. See digital-to-analog converter (DAC).

data channel

A communications path between two points used to transmit digital signals.

data-communications equipment (DCE)

The equipment (usually a modem, data module, or packet assembler/disassembler) on the network side of a communications link that makes the binary serial data from the source or transmitter compatible with the communications channel.

data link

The configuration of physical facilities enabling end terminals to communicate directly with each other.

data module

An interconnection device between a BRI or DCP interface of the switch and data terminal equipment or data communications equipment.

data port

A point of access to a computer that uses trunks or lines for transmitting or receiving data.

data rate

See bit rate.

data service unit (DSU)

A device that transmits digital data on transmission facilities.

data terminal

An input/output (I/O) device that has either switched or direct access to a host computer or to a processor interface.

data terminal equipment (DTE)

Equipment consisting of the endpoints in a connection over a data circuit. In a connection between a data terminal and host, the terminal, the host, and their associated modems or data modules make up the DTE.

dB

Decibel

dBa

Decibels in reference to amperes

dBmC

Decibels above reference noise with C filter

DC

Direct current

DCE

Data-communications equipment

D-channel backup

Type of backup used with Non-Facility Associated Signaling (NFAS). A primary D-channel provides signaling for an NFAS D-channel group (two or more PRI facilities). A second D-channel, on a separate PRI facility of the NFAS D-channel group, is designated as backup for the D-channel. Failure of the primary D-channel causes automatic transfer of call-control signaling to the backup D-channel. The backup becomes the primary D-channel. When the failed channel returns to service, it becomes the backup D-channel.

DCO

Digital central office

DCP

Digital Communications Protocol

DDC

Direct Department Calling

DDD

Direct Distance Dialing

delay-dial trunk

A trunk that allows dialing directly into a communications system (digits are received as they are dialed).

denying a request

Sending a negative acknowledgement (NAK), done by sending an FIE with a *return error* component (and a cause value). It should not be confused with the denial event report that applies to calls.

designated voice terminal

The specific voice terminal to which calls, originally directed to a certain extension, are redirected. Commonly used to mean the forwarded-to terminal when Call Forwarding All Calls is active.

dial tone

A continuous tone indicating that a user can begin dialing or activate features.

dial-repeating trunks

A PBX tie trunk that is capable of handling PBX station-signaling information without attendant assistance.

dial-repeating tie trunk

A tie trunk that transmits called-party addressing information between two communications systems.

DID

Direct Inward Dialing

digit conversion

A process used to convert specific dialed numbers into other dialed numbers.

digital

The representation of information by discrete steps. See also analog.

digital communications protocol (DCP)

A proprietary protocol used to transmit both digitized voice and digitized data over the same communications link. A DCP link is made up of two 64-kbps information (I-) channels and one 8-kbps signaling (S-) channel. Digital Communications Protocol. The DCP protocol supports two information-bearing channels, and thus two telephones/data modules. The I1 channel is the DCP channel assigned on the first page of the 8411 station form. The I2 channel is the DCP channel assigned on the analog adjunct page of the 8411 station form or on the data module page.

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digital data endpoints

In the IntroWorks, devices such as the 510D terminal or the 515-type business communications terminal (BCT).

digital signal level 0 (DS0)

A single 64-kbps voice channel. A DS0 is a single 64-kbps channel in a T1 or E1 facility and consists of eight bits in a T1 or E1 frame every 125 microseconds.

digital signal level 1 (DS1)

A single 1.544-Mbps (United States) or 2.048-Mbps (outside the United States) digital signal carried on a T1 transmission facility. A DS1 converter complex consists of a pair, one at each end, of DS1 converter circuit packs and the associated T1/E1 facilities.

digital terminal data module (DTDM)

An integrated or adjunct data module that shares with a digital telephone the same physical port for connection to a communications system. The function of a DTDM is similar to that of a PDM and MPDM in that it converts RS-232C signals to DCP signals.

digital-to-analog converter (DAC)

A device that converts data in digital form to the corresponding analog signals. See also analog-to-digital converter (ADC).

digital transmission

A mode of transmission in which information to be transmitted is first converted to digital form and then transmitted as a serial stream of pulses.

digital trunk

A circuit that carries digital voice and/or digital data in a telecommunications channel.

DIOD

Direct Inward and Outward Dialing

Direct Extension Selection (DXS)

A feature on an attendant console that allows an attendant direct access to voice terminals by pressing a group-select button and a DXS button.

Direct Inward Dialing (DID)

A feature that allows an incoming call from the public network (not FX or WATS) to reach a specific telephone without attendant assistance.

Direct Inward Dialing (DID) trunk

An incoming trunk used for dialing directly from the public network into a communications system without help from the attendant.

disk drive

An electromechanical device that stores data on and retrieves data from one or more disks.

DIVA

Data In/Voice Answer

DLC

Data line circuit

DLDM

Data-line data module

DND

Do not disturb

DNIS

Dialed-Number Identification Service

DOD

Direct Outward Dialing

DOSS

Delivery Operations Support System

DOT

Duplication Option Terminal

DPM

Dial Plan Manager

DPR

Dual-port RAM

DS1

Digital Signal Level 1

DS1C

Digital Signal Level-1 protocol C

DS1 CONV

Digital Signal Level-1 converter

DSI

Digital signal interface

DSU

Data service unit

DTDM

Digital-terminal data module

DTE

Data-terminal equipment

DTGS

Direct Trunk Group Select

DTMF

Dual-tone multifrequency

DTS

Disk-tape system

DWBS

DEFINITY Wireless Business System

DXS

Direct extension selection

E

E1

A digital transmission standard that carries traffic at 2.048 Mbps. The E1 facility is divided into 32 channels (DS0s) of 64 kbps information. Channel 0 is reserved for framing and synchronization information. A D-channel occupies channel 16.

E & M

Ear and mouth (receive and transmit)

EA

Expansion archangel

EAL

Expansion archangel link

ear and mouth (E & M) signaling

Trunk supervisory signaling, used between two communications systems, whereby signaling information is transferred through 2-state voltage conditions (on the E and M leads) for analog applications and through a single bit for digital applications.

EBCDIC

Extended Binary-Coded Decimal Interexchange Code

ECC

Error Correct Code

ECMA

European Computer Manufacturers Association

EPF

Electronic power feed

EI

Expansion interface

EIA

Electronic Industries Association

EIA-232

A physical interface specified by the EIA. EIA-232 transmits and receives asynchronous data at speeds of up to 19.2 kbps over cable distances of up to 50 feet. EIA-232 replaces RS-232 protocol in some DEFINITY applications.

electronic tandem network (ETN)

A tandem tie-trunk network that has automatic call-routing capabilities based on the number dialed and the most preferred route available. Each switch in the network is assigned a unique private network office code (RNX), and each voice terminal is assigned a unique extension.

Electronics Industries Association (EIA)

A trade association of the electronics industry that establishes electrical and functional standards.

emergency transfer

If a major system failure occurs, automatic transfer is initiated to a group of telephones capable of making outgoing calls. The system operates in this mode until the failure is repaired and the system automatically returns to normal operation. Also called power-failure transfer.

EMI

Electromagnetic interference

end-to-end signaling

The transmission of touch-tone signals generated by dialing from a voice terminal to remote computer equipment. These digits are sent over the trunk as DTMF digits whether the trunk signaling type is marked as tone or rotary and whether the originating station is tone or rotary. Example: a call to a voice-mail system or automated-attendant service. A connection is first established over an outgoing trunk. Then additional digits are dialed to transmit information to be processed by the computer equipment.

enhanced private-switched communications service (EPSCS)

An analog private telecommunications network based on the No. 5 crossbar and 1A ESS that provides advanced voice and data telecommunications services to companies with many locations.

EPROM

Erasable programmable read-only memory

EPSCS

Enhanced Private Switched Communications Services

ERL

Echo return loss

Erlang

A unit of traffic intensity, or load, used to express the amount of traffic needed to keep one facility busy for one hour. One Erlang is equal to 36 CCS. See also CCS or hundred call seconds.

ESF

Extended superframe format

ESPA

European Standard Paging Access

ETA

1. Extended Trunk Access
2. Enhanced Terminal Administration

ETN

Electronic tandem network

ETSI

European Telecommunications Standards Institute

extension-in

Extension-In (ExtIn) is the work state members go into when they answer (receive) a non-ACD call.

extension-out

The work state that members go into when they place (originate) a non-ACD call.

extension

A 1- to 5-digit number by which calls are routed through a communications system or, with a Uniform Dial Plan (UDP), through a private network.

external call

A connection between a communications system user and a party on the public network or on another communications system in a private network.

F

FAC

Feature Access Code

facility

A telecommunications transmission pathway and associated equipment.

facility-associated signaling (FAS)

Signaling for which a D-channel carries signaling only for those channels on the same physical interface.

FAS

Facility-associated signaling

FAT

Facility access trunk

FAX

Facsimile

FCC

Federal Communications Commission

FEAC

Forced Entry of Account Codes

feature

A specifically defined function or service provided by the system.

feature button

A labeled button on a telephone or attendant console used to access a specific feature.

FEP

Front-end processor

FIC

Facility interface codes

fiber optics

A technology using materials that transmit ultrawideband electromagnetic light-frequency ranges for high-capacity carrier systems.

FNPA

Foreign Numbering-Plan Area

foreign-exchange (FX)

A CO other than the one providing local access to the public telephone network.

foreign-exchange trunk

A telecommunications channel that directly connects the system to a CO other than its local CO.

foreign numbering-plan area code (FNPAC)

An area code, other than the local area code, that must be dialed to call outside the local geographical area.

FRL

Facilities Restriction Level

FX

Foreign exchange

G

generalized route selection (GRS)

An enhancement to Automatic Alternate Routing/Automatic Route Selection (AAR/ARS) that performs routing based on call attributes, such as Bearer Capability Classes (BCCs), in addition to the address and facilities restriction level (FRL), thus facilitating a Uniform Dial Plan (UDP) that is independent of the type of call being placed.

glare

The simultaneous seizure of a 2-way trunk by two communications systems, resulting in a standoff.

GM

Group manager

GPTR

General-purpose tone receiver

grade of service

The number of call attempts that fail to receive service immediately. Grade of service is also expressed as the quantity of all calls that are blocked or delayed.

ground-start trunk

A trunk on which, for outgoing calls, the system transmits a request for services to a distant switching system by grounding the trunk ring lead. To receive the digits of the called number, that system grounds the trunk tip lead. When the system detects this ground, the digits are sent.

GRS

Generalized Route Selection

H

H0

An ISDN information transfer rate for 384-kbps data defined by CCITT and ANSI standards.

H11

An ISDN information transfer rate for 1536-kbps data defined by CCITT and ANSI standards.

H12

An ISDN information transfer rate for 1920-kbps data defined by CCITT and ANSI standards.

handshaking logic

A format used to initiate a data connection between two data module devices.

hertz (Hz)

A unit of frequency equal to one cycle per second.

HNPA

See home numbering-plan area code (HNPA).

holding time

The total length of time in minutes and seconds that a facility is used during a call.

home numbering-plan area code (HNPA)

The local area code. The area code does not have to be dialed to call numbers within the local geographical area.

hop

Nondirect communication between two switch communications interfaces (SCI) where the SCI message passes automatically without intermediate processing through one or more intermediate SCIs.

host computer

A computer, connected to a network, that processes data from data-entry devices.

hunt group

A group of extensions that are assigned so that a call to a busy extension reroutes to an idle extension in the group. See also ACD work mode.

hunt group condition

A condition whereby a caller is temporarily separated from a connection with an attendant. A hunt group condition automatically occurs when the attendant, active on a call, presses the start button.

hunt group number

The hunt group's identity to the switch and BCMS.

hunt group report

A report that provides historical traffic information for internally measured hunt groups.

Hz

See hertz (Hz).

I

I1

The first information channel of DCP.

I2

The second information channel of DCP.

ICC

Intercabinet cable or intercarrier cable

ICD

Inbound Call Director

ICDOS

International Customer-Dialed Operator Service

ICHT

Incoming call-handling table

ICI

Incoming call identifier

ICM

Inbound Call Management

IDDD

International Direct Distance Dialing

IDF

Intermediate distribution frame

IE

Information element

immediate-start tie trunk

A trunk on which, after making a connection with a distant switching system for an outgoing call, the system waits a nominal 65 ms before sending the digits of the called number. This allows time for the distant system to prepare to receive digits. On an incoming call, the system has less than 65 ms to prepare to receive the digits.

IMT

Intermachine trunk

in

Inch

INADS

Initialization and Administration System

incoming gateway

A PBX that routes an incoming call on a trunk *not* administered for Supplementary Services Protocol B to a trunk *not* administered for Supplementary Services Protocol B.

information exchange

The exchange of data between users of two different systems, such as the switch and a host computer, over a LAN.

INS

ISDN Network Service

inside call

A call placed from one telephone to another within the local communications system.

Integrated Services Digital Network (ISDN)

A public or private network that provides end-to-end digital communications for all services to which users have access by a limited set of standard multipurpose user-network interfaces defined by the CCITT. Through internationally accepted standard interfaces, ISDN provides digital circuit-switched or packet-switched communications within the network and links to other ISDNs to provide national and international digital communications. See also Integrated Services Digital Network Basic Rate Interface (ISDN-BRI) and Integrated Services Digital Network Primary Rate Interface (ISDN-PRI).

Integrated Services Digital Network Basic Rate Interface (ISDN-BRI)

The interface between a communications system and terminal that includes two 64-kbps B-channels for transmitting voice or data and one 16-kbps D-channel for transmitting associated B-channel call control and out-of-band signaling information. ISDN-BRI also includes 48 kbps for transmitting framing and D-channel contention information, for a total interface speed of 192 kbps. ISDN-BRI serves ISDN terminals and digital terminals fitted with ISDN terminal adapters. See also Integrated Services Digital Network (ISDN) and Integrated Services Digital Network Primary Rate Interface (ISDN-PRI).

Integrated Services Digital Network Primary Rate Interface (ISDN-PRI)

The interface between multiple communications systems that in North America includes 24 64-kbps channels, corresponding to the North American digital signal level-1 (DS1) standard rate of 1.544 Mbps. The most common arrangement of channels in ISDN-PRI is 23 64-kbps B-channels for transmitting voice and data and 1 64-kbps D-channel for transmitting associated B-channel call control and out-of-band signaling information. With nonfacility-associated signaling (NFAS), ISDN-PRI can include 24 B-channels and no D-channel. See also Integrated Services Digital Network (ISDN) and Integrated Services Digital Network Basic Rate Interface (ISDN-BRI).

intercept tone

An alternating high and low tone that indicates a dialing error or denial of the service requested.

interface

A common boundary between two systems or pieces of equipment.

internal call

A connection between two users within a system.

International Telecommunications Union (ITU)

Formerly known as International Telegraph and Telephone Consultative Committee (CCITT), ITU is an international organization that sets universal standards for data communications, including ISDN. ITU members are from telecommunications companies and organizations around the world.

International Telegraph and Telephone Consultative Committee

See International Telecommunications Union (ITU).

interflow

The ability for calls to forward to other hunt groups on the same PBX or a different PBX using the Call Forward All Calls feature.

intraflow

The ability for calls to redirect to other hunt groups on the same PBX on a conditional or unconditional basis using call coverage busy, don't answer, or all criteria.

internal measurements

BCMS measurements that are made by the system.

in-use lamp

A red light on a multiappearance voice terminal that lights to show which call appearance will be selected when the handset is lifted or which call appearance is active when a user is off-hook.

INWATS

Inward Wide Area Telephone Service

IO

Information outlet

ISDN

See Integrated Services Digital Network (ISDN).

ISDN trunk

A trunk administered for use with ISDN-PRI. Also called ISDN facility.

ISDN-PRI terminal adapter

An interface between endpoint applications and an ISDN PRI facility. ISDN-PRI terminal adapters are currently available from other vendors and are primarily designed for video conferencing applications. Accordingly, currently available terminal adapters adapt the two pairs of video codec data (V.35) and dialing (RS-366) ports to an ISDN PRI facility.

IS/DTT

Integrated Services/digital tie trunk

ISO

International Standards Organization

ISV

Independent software vendor

ITP

Installation test procedure

ITU

International Telecommunications Union

IXC

Interexchange carrier code

K

kHz

Kilohertz

kbps

Kilobits per second

kbyte

Kilobyte

kg

Kilogram

L

LAN

Local area network

LAP-D

Link Access Procedure on the D-channel

LAPD

Link Access Procedure data

LATA

Local access and transport area

lb

Pound

LBO

Line buildout

LDN

Listed directory number

LDS

Long-distance service

LEC

Local exchange carrier

LED

See light-emitting diode (LED).

light-emitting diode (LED)

A semiconductor device that produces light when voltage is applied. LEDs provide a visual indication of the operational status of hardware components, the results of maintenance tests, the alarm status of circuit packs, and the activation of telephone features.

lightwave transceiver

Hardware that provides an interface to fiber-optic cable from port circuit packs and DS1 converter circuit packs. Lightwave transceivers convert electrical signals to light signals and vice versa.

line

A transmission path between a communications system or CO switching system and a voice terminal or other terminal.

line appearance

See appearance.

line buildout

A selectable output attenuation is generally required of DTE equipment because T1 circuits require the last span to lose 15–22.5 dB.

line port

Hardware that provides the access point to a communications system for each circuit associated with a telephone or data terminal.

link

A transmitter-receiver channel that connects two systems.

link-access procedure on the D-channel (LAPD)

A link-layer protocol on the ISDN-BRI and ISDN-PRI data-link layer (level 2). LAPD provides data transfer between two devices, and error and flow control on multiple logical links. LAPD is used for signaling and low-speed packet data (X.25 and mode 3) on the signaling (D-) channel and for mode-3 data communications on a bearer (B-) channel.

LINL

Local indirect neighbor link

local area network (LAN)

A networking arrangement designed for a limited geographical area. Generally, a LAN is limited in range to a maximum of 6.2 miles and provides high-speed carrier service with low error rates. Common configurations include daisy chain, star (including circuit-switched), ring, and bus.

logical link

The communications path between a processor and a BRI terminal.

loop-start trunk

A trunk on which, after establishing a connection with a distant switching system for an outgoing call, the system waits for a signal on the loop formed by the trunk leads before sending the digits of the called number.

LSU

Local storage unit

LWC

Leave Word Calling

M

MAC

Medium access

MADU

Modular asynchronous data unit

main distribution frame (MDF)

A device that mounts to the wall inside the system equipment room. The MDF provides a connection point from outside telephone lines to the PBX switch and to the inside telephone stations.

maintenance

Activities involved in keeping a telecommunications system in proper working condition: the detection and isolation of software and hardware faults, and automatic and manual recovery from these faults.

management terminal

The terminal that is used by the system administrator to administer the switch. The terminal may also be used to access the BCMS feature.

major alarm

An indication of a failure that has caused critical degradation of service and requires immediate attention. Major alarms are automatically displayed on LEDs on the attendant console and maintenance or alarming circuit pack, logged to the alarm log, and reported to a remote maintenance facility, if applicable.

Manual-In work mode

One of four work modes: the mode in which a member is ready to process another call manually. See Auto-In Work mode for a contrast.

MAP

Maintenance action process

MAPD

Multiapplication platform for DEFINITY

MA-UUI

Message-Associated User-to-User Signaling

Mbps

Megabits per second

M-Bus

Memory bus

Mbyte

Megabyte

MCC

Multicarrier cabinet

MCS

Message Center Service

MCT

Malicious Call Trace

MCU

Multipoint conferencing unit

MDF

Main distribution frame

MDM

Modular data module

MDR

Message detail record

MEM

Memory

memory

A device into which information can be copied and held, and from which information can later be obtained.

memory shadowing link

An operating-system condition that provides a method for memory-resident programs to be more quickly accessed, allowing a system to reboot faster.

message center

An answering service that stores messages for later retrieval.

MET

Multibutton electronic telephone

MF

Multifrequency

MFB

Multifunction board

MFC

Multifrequency code

MHz

Megahertz

MIM

Management information message

minor alarm

An indication of a failure that could affect customer service. Minor alarms are automatically displayed on LEDs on the attendant console and maintenance or alarming circuit pack, sent to the alarm log, and reported to a remote maintenance facility, if applicable.

MIPS

Million instructions per second

MIS

Management information system

MISCID

Miscellaneous identification

MMCS

Multimedia Call Server

MMCH

Multimedia call handling

MMI

Multimedia interface

MMS

Material Management Services

MO

Maintenance object

modem

A device that converts digital data signals to analog signals for transmission over telephone circuits. The analog signals are converted back to the original digital data signals by another modem at the other end of the circuit.

modular processor data module (MPDM)

A processor data module (PDM) that can be configured to provide several kinds of interfaces (RS-232C, RS-449, and V.35) to customer-provided data terminal equipment (DTE). See also processor data module (PDM).

modular trunk data module (MTDM)

A trunk data module that can be configured to provide several kinds of interfaces (RS-232, RS-449, and V.35) to customer-provided data terminal equipment.

modulator-demodulator

See modem.

MOS

Message-oriented signaling

MPDM

Modular processor data module

MS

Message server

ms

Millisecond

MSA

Message servicing adjunct

MSG

Message service

MSL

Material stocking location

MSM

Modular System Management

MSS

Mass storage system

MSSNET

Mass storage/network control

MT

Management terminal

MTDM

Modular trunk data module

MTP

Maintenance tape processor

MTT

Multitasking terminal

multiappearance voice terminal

A terminal equipped with several call-appearance buttons for the same extension, allowing the user to handle more than one call on that same extension at the same time.

Multicarrier cabinet

A structure that holds one to five carriers. See also single-carrier cabinet.

Multifrequency Compelled (MFC) Release 2 (R2) signaling

A signal consisting of two frequency components, such that when a signal is transmitted from a switch, another signal acknowledging the transmitted signal is received by the switch. R2 designates signaling used in the United States and in countries outside the United States.

multiplexer

A device used to combine a number of individual channels into a single common bit stream for transmission.

multiplexing

A process whereby a transmission facility is divided into two or more channels, either by splitting the frequency band into a number of narrower bands or by dividing the transmission channel into successive time slots. See also time-division multiplexing (TDM).

multirate

The new N x DS0 service (see N x DS0).

MWL

Message-waiting lamp

N

N+1

Method of determining redundant backup requirements. Example: if four rectifier modules are required for a DC-powered single-carrier cabinet, a fifth rectifier module is installed for backup.

NANP

North American Numbering Plan

narrowband

A circuit-switched call at a data rate up to and including 64 kbps.

native terminal support

A predefined terminal type exists in switch software, eliminating the need to alias the terminal (that is, manually map call appearances and feature buttons onto some other natively supported terminal type).

NAU

Network access unit

NCA/TSC

Noncall-associated/temporary-signaling connection

NCOSS

Network Control Operations Support Center

NCSO

National Customer Support Organization

NEC

National Engineering Center

NEMA

National Electrical Manufacturer's Association

NETCON

Network-control circuit pack

network

A series of points, nodes, or stations connected by communications channels.

network-specific facility (NSF)

An information element in an ISDN-PRI message that specifies which public-network service is used. NSF applies only when Call-by-Call Service Selection is used to access a public-network service.

network interface

A common boundary between two systems in an interconnected group of systems.

NFAS

See Nonfacility-associated signaling (NFAS).

NI

Network interface

NID

Network Inward Dialing

NM

Network management

NN

National number

node

A switching or control point for a network. Nodes are either tandem (they receive signals and pass them on) or terminal (they originate or terminate a transmission path).

Nonfacility-associated signaling (NFAS)

A method that allows multiple T1 and/or E1 facilities to share a single D-channel to form an ISDN-PRI. If D-channel backup is not used, one facility is configured with a D-channel, and the other facilities that share the D-channel are configured without D-channels. If D-channel backup is used, two facilities are configured to have D-channels (one D-channel on each facility), and the other facilities that share the D-channels are configured without D-channels.

NPA

Numbering-plan area

NPE

Network processing element

NQC

Number of queued calls

NSE

Night-service extension

NSU

Network sharing unit

null modem cable

Special wiring of an RS-232-C cable such that a computer can talk to another computer (or to a printer) without a modem.

NXX

Public-network office code

O

OA

Operator assisted

occurrence

See appearance.

OCM

Outbound Call Management

offered load

The traffic that would be generated by all the requests for service occurring within a monitored interval, usually one hour.

ONS

On-premises station

OPS

Off-premises station

OPX

Off-premises extension

OQT

Oldest queued time

OSHA

Occupational Safety and Health Act

OSI

Open Systems Interconnect

OSS

Operations Support System

OSSI

Operational Support System Interface

OTDR

Optical time-domain reflectometer

OTQ

Outgoing trunk queuing

outgoing gateway

A PBX that routes an incoming call on a trunk administered for Supplementary Services Protocol B to a trunk *not* administered for Supplementary Services Protocol B.

P

PACCON

Packet control

packet

A group of bits (including a message element, which is the data, and a control information element (IE), which is the header) used in packet switching and transmitted as a discrete unit. In each packet, the message element and control IE are arranged in a specified format. See also **packet bus** and **packet switching**.

packet bus

A wide-bandwidth bus that transmits packets.

packet switching

A data-transmission technique whereby user information is segmented and routed in discrete data envelopes called packets, each with its own appended control information, for routing, sequencing, and error checking. Packet switching allows a channel to be occupied only during the transmission of a packet. On completion of the transmission, the channel is made available for the transfer of other packets. See also BX.25 and packet.

PAD

Packet assembly/disassembly

paging trunk

A telecommunications channel used to access an amplifier for loudspeaker paging.

party/extension active on call

A party is on the call if he or she is actually connected to the call (in active talk or in held state). An originator of a call is always a party on the call. Alerting parties, busy parties, and tones are not parties on the call.

PBX

Private branch exchange

PC

See personal computer (PC).

PCM

See pulse-code modulation (PCM).

PCOL

Personal central-office line

PCOLG

Personal central-office line group

PCS

Permanent switched calls

PDM

See processor data module (PDM).

PDS

Premises Distribution System

PE

Processing element

PEC

Price element code

PEI

Processor element interchange

personal computer (PC)

A personally controllable microcomputer.

PGATE

Packet gateway

PGN

Partitioned group number

PI

Processor interface

PIB

Processor interface board

pickup group

A group of individuals authorized to answer any call directed to an extension within the group.

PIDB

Product image database

PKTINT

Packet interface

PL

Private line

PLS

Premises Lightwave System

PMS

Property Management System

PN

Port network

PNA

Private network access

POE

Processor occupancy evaluation

POP

Point of presence

port

A data- or voice-transmission access point on a device that is used for communicating with other devices.

port carrier

A carrier in a multicarrier cabinet or a single-carrier cabinet containing port circuit packs, power units, and service circuits. Also called a port cabinet in a single-carrier cabinet.

port network (PN)

A cabinet containing a TDM bus and packet bus to which the following components are connected: port circuit packs, one or two tone-clock circuit packs, a maintenance circuit pack, and service circuit packs. Each PN is controlled by a switch processing element (SPE).

PPM

1. Parts per million
2. Periodic pulse metering

PPN

See processor port network (PPN).

PRI

See Primary Rate Interface (PRI).

primary extension

The main extension associated with the physical voice or data terminal.

Primary Rate Interface (PRI)

A standard ISDN frame format that specifies the protocol used between two or more communications systems. PRI runs at 1.544 Mbps and, as used in North America, provides 23 64-kbps B-channels (voice or data) and one 64-kbps D-channel (signaling). The D-channel is the 24th channel of the interface and contains multiplexed signaling information for the other 23 channels.

PRI endpoint (PE)

A PRI endpoint consists of one or more contiguous B-channels on a line-side T1 or E1 ISDN PRI facility and has an extension. Endpoint applications have call-control capabilities over PRI endpoints.

principal

A terminal that has its primary extension bridged on one or more other terminals.

principal (user)

A person to whom a telephone is assigned and who has message-center coverage.

private network

A network used exclusively for the telecommunications needs of a particular customer.

private network office code (RNX)

The first three digits of a 7-digit private network number.

PROCR

Processor

processor carrier

See control carrier.

processor data module (PDM)

A device that provides an RS-232C DCE interface for connecting to data terminals, applications processors (APs), and host computers, and provides a DCP interface for connection to a communications system. See also modular processor data module (MPDM).

processor port network (PPN)

A port network controlled by a switch-processing element that is directly connected to that PN's TDM bus and LAN bus. See also port network (PN).

processor port network (PPN) control carrier

A carrier containing the maintenance circuit pack, tone/clock circuit pack, and SPE circuit packs for a processor port network (PPN) and, optionally, port circuit packs.

Property Management System (PMS)

A stand-alone computer used by lodging and health-services organizations for services such as reservations, housekeeping, and billing.

protocol

A set of conventions or rules governing the format and timing of message exchanges to control data movement and correction of errors.

PSC

Premises service consultant

PSDN

Packet-switch public data network

PT

Personal terminal

PTC

Positive temperature coefficient

PTT

Postal Telephone and Telegraph

public network

The network that can be openly accessed by all customers for local and long-distance calling.

pulse-code modulation (PCM)

An extension of pulse-amplitude modulation (PAM) in which carrier-signal pulses modulated by an analog signal, such as speech, are quantized and encoded to a digital, usually binary, format.

Q

QPPCN

Quality Protection Plan Change Notice

quadrant

A group of six contiguous DS0s in fixed locations on an ISDN-PRI facility. Note that this term comes from T1 terminology (one-fourth of a T1), but there are five quadrants on an E1 ISDN-PRI facility (30B + D).

queue

An ordered sequence of calls waiting to be processed.

queuing

The process of holding calls in order of their arrival to await connection to an attendant, to an answering group, or to an idle trunk. Calls are automatically connected in first-in, first-out sequence.

R

RAM

See random-access memory (RAM).

random-access memory (RAM)

A storage arrangement whereby information can be retrieved at a speed independent of the location of the stored information.

RBS

Robbed-bit signaling

RC

Radio controller

RCL

Restricted call list

read-only memory (ROM)

A storage arrangement primarily for information-retrieval applications.

recall dial tone

Tones signalling that the system has completed a function (such as holding a call) and is ready to accept dialing.

recorded telephone dictation ready tone

A tone that indicates a dictation machine is connected to the voice terminal.

redirection criteria

Information administered for each voice terminal's coverage path that determines when an incoming call is redirected to coverage.

Redirection on No Answer

An optional feature that redirects an unanswered ringing ACD call after an administered number of rings. The call is then redirected back to the hunt group member.

remote home numbering-plan area code (RHNPAC)

A foreign numbering-plan area code that is treated as a home area code by the Automatic Route Selection (ARS) feature. Calls can be allowed or denied based on the area code and the dialed CO code rather than just the area code. If the call is allowed, the ARS pattern used for the call is determined by these six digits.

Remote Operations Service Element (ROSE)

A CCITT and ISO standard that defines a notation and services that support interactions between the various entities that make up a distributed application.

REN

Ringer equivalency number

reorder tone

A tone to signal that at least one of the facilities, such as a trunk or a digit transmitter, needed for the call was not available.

report scheduler

Software that is used in conjunction with the system printer to schedule the days of the week and time of day that the desired reports are to be printed.

RFP

Request for proposal

RHNPA

See remote home numbering-plan area code (RHNPA).

ringback tone

A low-pitched repeating tone that indicates to the calling party that the dialed number has been reached successfully and is ringing.

RINL

Remote indirect neighbor link

RISC

Reduced-instruction-set computer

RLT

Release-link trunk

RMATS

Remote Maintenance, Administration, and Traffic System

RNX

Route-number index (private network office code)

ROM

See read-only memory (ROM).

RPN

Routing-plan number

RS-232C

A physical interface specified by the Electronic Industries Association (EIA). RS-232C transmits and receives asynchronous data at speeds of up to 19.2 kbps over cable distances of up to 50 feet.

RS-449

Recommended Standard 449

RSC

Regional Support Center

ROSE

See Remote Operations Service Element (ROSE).

S

S1

The first logical signalling channel of DCP. The channel is used to provide signaling information for DCP's I1 channel.

S2

The second logical signaling channel of DCP. The channel is used to provide signaling information for DCP's I2 channel.

SABM

Set Asynchronous Balance Mode

SAC

Send All Calls

SAKI

See sanity and control interface (SAKI).

sanity and control interface (SAKI)

A custom VLSI microchip located on each port circuit pack. The SAKI provides address recognition, buffering, and synchronization between the angel and the five control time slots that make up the control channel. The SAKI also scans and collects status information for the angel on its port circuit pack and, when polled, transmits this information to the archangel.

SAT

System access terminal

SCC

1. See single-carrier cabinet.
2. Serial communications controller

SCD

Switch-control driver

SCI

Switch communications interface

SCO

System control office

SCOTCH

Switch Conferencing for TDM Bus in Concentration Highway

SCSI

See small computer system interface (SCSI).

SDDN

Software-Defined Data Network

SDI

Switched Digital International

SDLC

Synchronous data-link control

SDN

Software-defined network

SFRL

Single-frequency return loss

SID

Station-identification number

simplex system

A system that has no redundant hardware.

simulated bridged appearance

The same as a temporary bridged appearance; allows the terminal user (usually the principal) to bridge onto a call that had been answered by another party on his or her behalf.

single-carrier cabinet

A combined cabinet and carrier unit that contains one carrier. See also Multicarrier cabinet.

single-line voice terminal

A voice terminal served by a single-line tip and ring circuit (models 500, 2500, 7101A, 7103A).

SIT

Special-information tones

small computer system interface (SCSI)

An ANSI bus standard that provides a high-level command interface between host computers and peripheral devices.

SMDR

See Station Message Detail Recording.

SN

Switch Node

SNA

Systems Network Architecture

SNC

Switch Node Clock

SNI

Switch Node Interface

SNMP

Simple Network Management Protocol

software

A set of computer programs that perform one or more tasks.

SPE

Switch Processing Element

SPID

Service Profile Identifier

SSI

Standard serial interface

SSM

Single-site management

SSV

Station service

ST3

Stratum 3 clock board

staffed

Indicates that a hunt group position is logged in. A staffed hunt group member functions in one of four work modes: Auto-In, Manual-In, ACW, or AUX-Work.

STARLAN

Star-Based Local Area Network

Station Message Detail Recording (SMDR)

An obsolete term now called CDR — a switch feature that uses software and hardware to record call data. See Call Detail Recording (CDR).

standard serial interface (SSI)

A communications protocol developed for use with 500-type business communications terminals (BCTs) and 400-series printers.

status lamp

A green light that shows the status of a call appearance or a feature button by the state of the light (lit, flashing, fluttering, broken flutter, or unlit).

SVN

Security-violation notification

switch

Any kind of telephone switching system. See also communications system.

switchhook

The buttons located under the receiver on a voice terminal.

switch-processing element (SPE)

A complex of circuit packs (processor, memory, disk controller, and bus-interface cards) mounted in a PPN control carrier. The SPE serves as the control element for that PPN.

SXS

Step-by-step

synchronous data transmission

A method of sending data in which discrete signal elements are sent at a fixed and continuous rate and specified times. See also association.

SYSAM

System Access and Administration

system administrator

The person who maintains overall customer responsibility for system administration. Generally, all administration functions are performed from the Management Terminal. The switch requires a special login, referred to as the system administrator login, to gain access to system-administration capabilities.

system printer

An optional printer that may be used to print scheduled reports via the report scheduler.

system report

A report that provides historical traffic information for internally measured hunt groups.

system-status report

A report that provides real-time status information for internally measured hunt groups.

system manager

A person responsible for specifying and administering features and services for a system.

system reload

A process that allows stored data to be written from a tape into the system memory (normally after a power outage).

T

T1

A digital transmission standard that in North America carries traffic at the DS1 rate of 1.544 Mbps. A T1 facility is divided into 24 channels (DS0s) of 64 kbps. These 24 channels, with an overall digital rate of 1.536 Mbps and an 8-kbps framing and synchronization channel, make up the 1.544-Mbps transmission. When a D-channel is present, it occupies channel 24. T1 facilities are also used in Japan and some Middle-Eastern countries.

TAAS

Trunk Answer from Any Station

TABS

Telemetry asynchronous block serial

TAC

Trunk-access code

tandem switch

A switch within an electronic tandem network (ETN) that provides the logic to determine the best route for a network call, possibly modifies the digits outputted, and allows or denies certain calls to certain users.

tandem through

The switched connection of an incoming trunk to an outgoing trunk without human intervention.

tandem tie-trunk network (TTTN)

A private network that interconnects several customer switching systems.

TC

Technical consultant

TDM

See time-division multiplexing (TDM).

TDR

Time-of-day routing

TEG

Terminating extension group

terminal

A device that sends and receives data within a system. See also administration terminal.

tie trunk

A telecommunications channel that directly connects two private switching systems.

time-division multiplex (TDM) bus

A bus that is time-shared regularly by preallocating short time slots to each transmitter. In a PBX, all port circuits are connected to the TDM bus, permitting any port to send a signal to any other port.

time-division multiplexing (TDM)

Multiplexing that divides a transmission channel into successive time slots. See also multiplexing.

time interval

The period of time, either one hour or one-half hour, that BCMS measurements are collected for a reports.

time-out tone

Tones that indicate the user failed to dial within the preset time interval after lifting the handset or after dialing the previous digit.

time slice

See **time interval**.

time slot

64 kbps of digital information structured as 8 bits every 125 microseconds. In the switch, a time slot refers to either a DS0 on a T1 or E1 facility or a 64-kbps unit on the TDM bus or fiber connection between port networks.

TOD

Time of day

tone ringer

A device with a speaker, used in electronic voice terminals to alert the user.

TOP

Task-oriented protocol

trunk

A dedicated telecommunications channel between two communications systems or COs.

trunk-data module

A device that connects off-premises private-line trunk facilities and the IntroWorks. The trunk-data module converts between the RS-232C and the DCP.

trunk group

Telecommunications channels assigned as a group for certain functions that can be used interchangeably between two communications systems or COs.

TSC

Technical Service Center

TTI

Terminal translation initialization

TTR

Touch-tone receiver

TTT

Terminating trunk transmission

TTTN

See tandem tie-trunk network (TTTN).

TTY

Teletypewriter

U

UAP

Usage-allocation plan

UART

Universal asynchronous transmitter

UCD

Uniform call distribution

UCL

Unrestricted call list

UDP

See Uniform Dial Plan (UDP).

UL

Underwriter Laboratories

UM

User manager

Uniform Dial Plan (UDP)

A feature that allows a unique 4- or 5-digit number assignment for each terminal in a multiswitch configuration.

UNMA

Unified Network Management Architecture

UNP

Uniform numbering plan

UPS

Uninterruptible power supply

USOP

User service-order profile

UUCP

UNIX-to-UNIX Communications Protocol

UUI

User-to-user information

V

VAR

Value-added reseller

VIS

Voice Information System

VLSI

Very-large-scale integration

VM

Voltmeter

VNI

Virtual nodepoint identifier

voice terminal

A single-line or multiappearance telephone.

W

warning tone

A low-pitched tone heard by all parties in a Busy Verification attempt that bridges to an active call.

WATS

See Wide Area Telecommunications Service (WATS).

WCC

World-Class Core

WCR

World-Class Routing

WCTD

World-Class Tone Detection

WFB

Wireless fixed base

Wide Area Telecommunications Service (WATS)

A service in the United States that allows calls to certain areas for a flat-rate charge based on expected usage.

wink-start tie trunk

A trunk with which, after making a connection with a distant switching system for an outgoing call, the system waits for a momentary signal (wink) before sending the digits of the called number. Similarly, on an incoming call, the system sends the wink signal when ready to receive digits.

work mode

One of four states (Auto-In, Manual-In, ACW, AUX-Work) that an ACD member can be in. Upon logging in, a hunt group member enters AUX-Work mode. To become available to receive ACD calls, the member enters Auto-In or Manual-In mode. To do work associated with a completed ACD call, a member enters ACW mode.

work state

An ACD member may be a member of up to four different hunt groups. Each ACD member continuously exhibits a work state for every hunt group of which it is a member. Valid work states are Avail, Unstaffed, AUX-Work, ACW, ACD (answering an ACD call), ExtIn, ExtOut, and OtherSpl. A member's work state for a particular hunt group may change for a variety of reasons (example: when a call is answered or abandoned, or the member changes work modes). The BCMS feature monitors work states and uses this information to provide BCMS reports.

write operation

The process of putting information onto a storage medium, such as a hard disk.

WSA

Waiting session accept

Z

ZCS

Zero Code Suppression

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