Lucent Technologies
Bell Labs Innovations

DEFINITY®
Enterprise Communications Server
Release 6

Overview

555-230-024
Comcode 108198029
Issue 6
May 1998

Notice

Every effort was made to ensure that the information in this book was complete and accurate at the time of printing. However, information is subject to change.

Your Responsibility for Your System's Security

Toll fraud is the unauthorized use of your telecommunications system by an unauthorized party, for example, persons other than your company's employees, agents, subcontractors, or persons working on your company's behalf. Note that there may be a risk of toll fraud associated with your telecommunications system and, if toll fraud occurs, it can result in substantial additional charges for your telecommunications services.

You and your system manager are responsible for the security of your system, such as programming and configuring your equipment to prevent unauthorized use. The system manager is also responsible for reading all installation, instruction, and system administration documents provided with this product in order to fully understand the features that can introduce risk of toll fraud and the steps that can be taken to reduce that risk. Lucent Technologies does not warrant that this product is immune from or will prevent unauthorized use of common-carrier telecommunication services or facilities accessed through or connected to it. Lucent Technologies will not be responsible for any charges that result from such unauthorized use.

Lucent Technologies Fraud Intervention

If you *suspect that you are being victimized* by toll fraud and you need technical support or assistance, call Technical Service Center Toll Fraud Intervention Hotline at 1 800 643-2353.

Federal Communications Commission Statement

Part 15: Class A Statement. This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio-frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Part 68: Network Registration Number. This equipment is registered with the FCC in accordance with Part 68 of the FCC Rules. It is identified by FCC registration number AS593M-13283-MF-E.

Part 68: Answer-Supervision Signaling. Allowing this equipment to be operated in a manner that does not provide proper answer-supervision signaling is in violation of Part 68 Rules. This equipment returns answer-supervision signals to the public switched network when:

- Answered by the called station
- Answered by the attendant
- Routed to a recorded announcement that can be administered by the CPE user

This equipment returns answer-supervision signals on all DID calls forwarded back to the public switched telephone network. Permissible exceptions are:

- A call is unanswered
- A busy tone is received
- A reorder tone is received

Canadian Department of Communications (DOC)

Interference Information

This digital apparatus does not exceed the Class A limits for radio noise emissions set out in the radio interference regulations of the Canadian Department of Communications.

Le Présent Appareil Nomérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la class A préscrites dans le reglement sur le brouillage radioélectrique édicté par le ministére des Communications du Canada.

Trademarks

See the preface of this document.

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Issue 6, May 1998

For additional documents, refer to the section in "About This Document" entitled "Other References."

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European Union Declaration of Conformity

The "CE" mark affixed to the DEFINITY® equipment described in this book indicates that the equipment conforms to the following European Union (EU) Directives:

- Electromagnetic Compatibility (89/336/EEC)
- Low Voltage (73/23/EEC)
- Telecommunications Terminal Equipment (TTE) i-CTR3 BRI and i-CTR4 PRI

For more information on standards compliance, contact your local distributor.

Comments

To comment on this document, return the comment card at the front of the document.

Acknowledgment

This document was prepared by Product Publications
Lucent Technologies, Denver, CO.

Contents

About This Book

What Is the Purpose of This Book?

This book provides general information about the components and capabilities of the DEFINITY® Enterprise Communications Server (referred to as DEFINITY ECS or the system). It also discusses practical and creative applications for the DEFINITY ECS platform.

This document covers information related to DEFINITY ECS Release 6, and includes all incremental releases up to and including Release 6.2. For details about changes for Release 6.1, refer to *DEFINITY Enterprise Communications Server Release 6.1, Change Description, 555-230-474, Issue 1*. For details about changes in R6.2, refer to *DEFINITY Enterprise Communications Server R6.2 Change Description, 555-230-476, Issue 1*.

Who Should Read This Book?

This book is written for those who are considering the purchase of a DEFINITY ECS system and for Lucent Technologies representatives and distributors who need high-level information about the system and how it can be used.

What Is in This Book?

This book discusses all DEFINITY capabilities available world-wide. It defines common, practical solutions and suggests unusual, creative ones.

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

Conventions Used in This Book

The following conventions are used in this book:

- The word "system" is a general term for the DEFINITY Enterprise Communications Server.
- The information in this book refers to DEFINITY ECS Release 6 unless otherwise specified.

Trademarks and Service Marks

This book contains references to the following Lucent Technologies trademarked products:

- AUDIX®
- Callmaster®
- CallVisor®
- CenterVu™
- CONVERSANT®
- DEFINITY®
- INTUITY™
- INTUITY Lodging™

- MULTIQUEST®
- OneVision™
- Quorum™
- VOICE POWER®

The following are trademarks or registered trademarks of other companies:

- MicroSoft® is a registered trademark of Microsoft Corporation
- Windows™ is a trademark of the Microsoft Corporation
- Vari-A-Bill™ is a trademark of AT&T

Other References

Please see Appendix A, ‘‘References’’ for a detailed list of DEFINITY ECS documentation.

How Can I Order Other Books?

To obtain DEFINITY Communications System documentation, contact:

General Business Communications System Publications Fulfillment Center
PO Box 4100
Crawfordsville, Indiana 47933-3126
U. S. A.

+1-317-361-5353 Phone
+1-317-364-5355 Fax
(Central Standard Time Zone)

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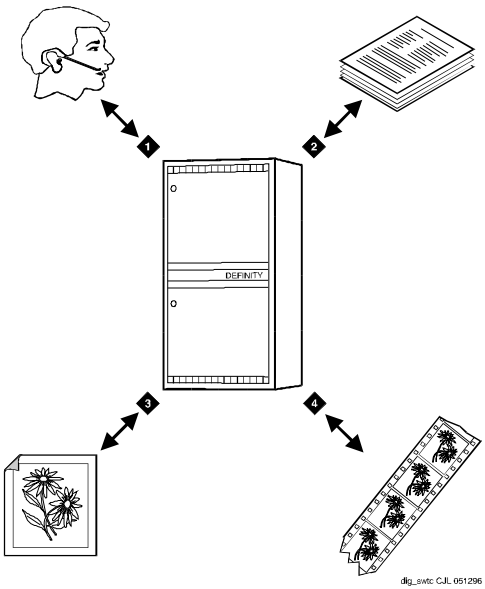
Lucent Technologies welcomes your feedback. Please fill out the reader comment card at the back of this book and return it. Your comments are of great value and help improve our documentation.

If the reader comment card is missing, fax your comments to 303-538-1741, and mention this document's name and number, *DEFINITY Enterprise Communication Server Overview, 555-230-024, Issue 6*.

System Overview

1

DEFINITY Enterprise Communications Server (ECS) organizes and routes voice, data, image and video transmissions.



1) Voice
2) Data
3) Image
4) Multimedia

Figure 1-1. DEFINITY Enterprise Communications Server

Hardware

Though the primary components are the same, your DEFINITY ECS 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 ECS'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 ECS 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 ECS 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 ECS 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.

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.

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 four types of cabinets:

- Compact Single-Carrier Cabinet. This cabinet, which can be mounted on a wall, houses small system configurations for small organizations. It contains one Processor Port Network and does not connect to any Expansion Port Networks.
- Compact Modular Cabinet. This cabinet is similar to the Compact Single-Carrier Cabinet, but up to three of the cabinets can be connected together.
- 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 large organizations that require larger configurations.

Compact Single-Carrier Cabinets

Figure 1-2 shows a compact single-carrier cabinet with a hinge for attaching it to a wall.

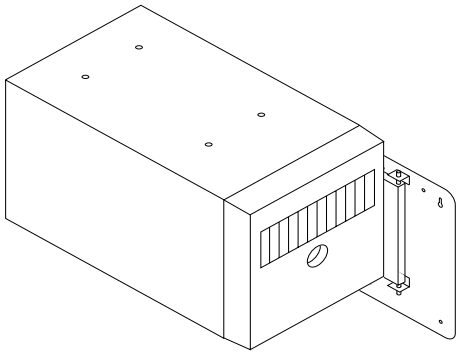


Figure 1-2. Compact Single-Carrier Cabinet

The compact single carrier cabinet has the following characteristics:

- It provides DEFINITY features and applications in a small package.
- It is the only cabinet required for small organizations.
- It can be mounted on a wall.

Compact Modular Cabinets

Figure 1-3 shows a Compact Modular Cabinet.

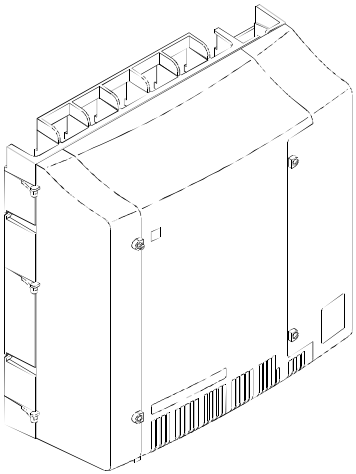


Figure 1-3. Compact Modular Cabinet

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.

Single-Carrier Cabinets

Figure 1-4 shows a typical single-carrier cabinet.

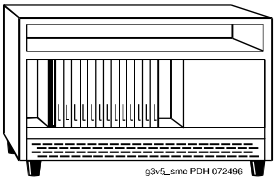


Figure 1-4. Typical Single-Carrier Cabinet

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.

Figure 1-5 shows a typical cabinet stack.

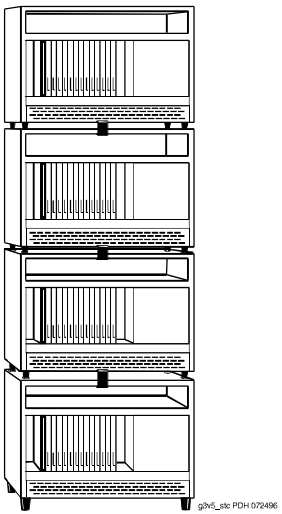


Figure 1-5. Typical Cabinet Stack (Four Cabinets Maximum)

Multicarrier Cabinets

Figure 1-6 shows a typical multicarrier cabinet.

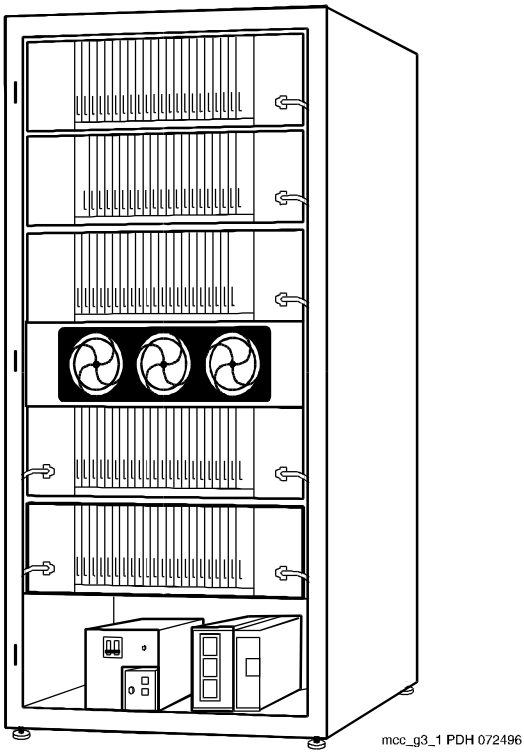
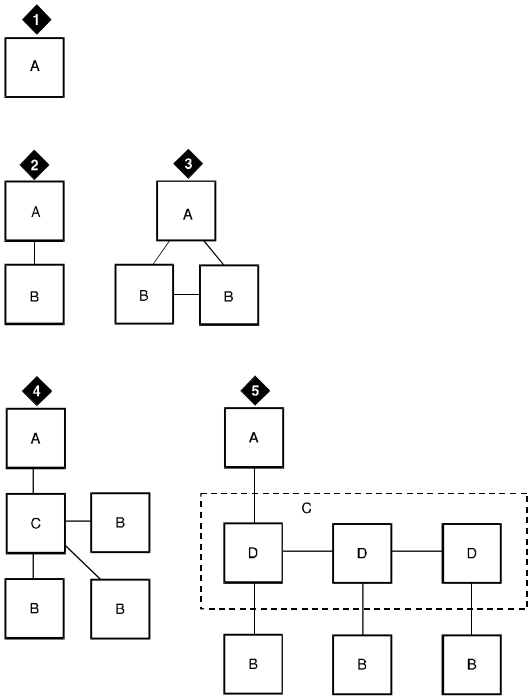


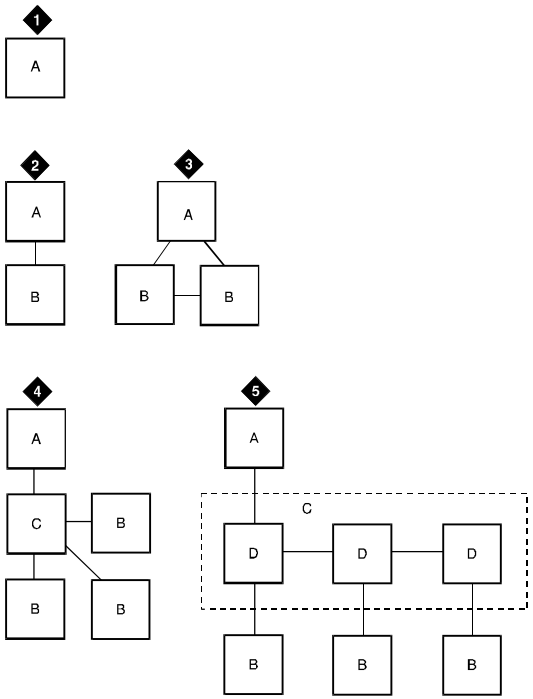
Figure 1-6. Typical Multicarrier Cabinet



1) Basic System
2) Directly Connected System
3) Directly Connected System with Two EPNs
4) CSS-Connected System with up to 15 EPNs
5) CSS-Connected System with up to 43 EPNs

A) Processor Port Network
B) Expansion Port Network
C) Center Stage Switch
D) Switch Node

Figure 1-7. Standard Configurations



1) Basic System
2) Directly Connected System
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4) CSS-Connected System with up to 15 EPNs
5) CSS-Connected System with up to 43 EPNs

A) Processor Port Network
B) Expansion Port Network
C) Center Stage Switch
D) Switch Node

Figure 1-8. Standard Configurations

Reliability and Recoverability

The system is designed to recover from a power outage or other failure instantly, regardless of the source of the failure. Each port network includes a set of segmented, parallel buses. If one of the paired segments fails, the other bus segment continues to handle communications. You can always further enhance the system's reliability by duplicating critical components such as processors or fiber-optic links between port networks.

Configuring for Reliability/Recoverability

DEFINITY ECS can be configured to meet the disaster recovery needs of any business. For example:

- Calls can be routed through an alternate DEFINITY ECS if one site is destroyed or disabled by natural or man-made disaster.
- Multimedia (voice, video, data) connections to the network can all be made redundant, in case of network failures. The system can be routed through multiple public exchanges to protect against network failures (a cable or fiber being cut, for example).
- DEFINITY's universal hardware and flexible software allow systems to be reconfigured quickly in emergency situations. Port networks can be added and network routing can be changed in a matter of minutes.

Survivable Remote EPN (SREPN)

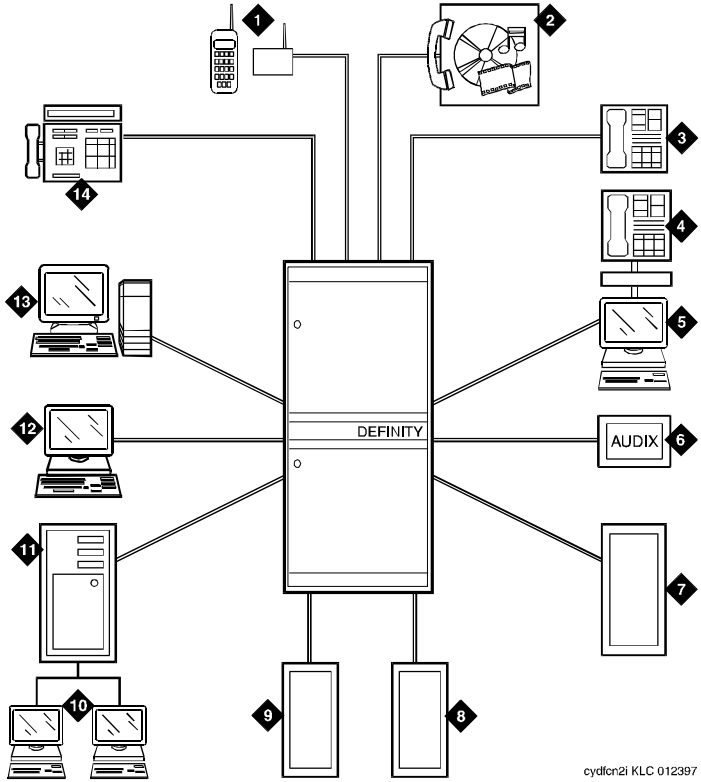
The Survivable Remote Expansion Port Network (SREPN) allow DEFINITY R6r EPN to provide service to the customer when the link to the main R6r processor fails or is severed or when the R6r processor or center stage fails. When the links to the R6r are restored and stable, the logic switch is manually reset and the EPN is reconnected to the links from the R6r.

Connections to ECS

DEFINITY ECS can be connected to communications paths that transmit voice and data signals between the system and a Central Office and/or other systems. The system can also be connected to public and private networks. Other possible connections are:

- Data Communications Equipment, such as a data module, which translates transmitted data to a form compatible with the communications channel.
- Data Terminal Equipment, such as a workstation, which generates or receives data.
- Other peripherals for administering and maintaining the system and auxiliary equipment for features such as Loudspeaker Paging and Music-On-Hold.

Figure 1-9 shows typical DEFINITY ECS connections.



1) Wireless System
2) Multimedia Call Center
3) Business Telephone
4) Telephone with Data Module
8) Digital Facilities
9) Analog Facilities
10) Data Terminals
11) Host Computer

5) Data Terminal
6) Voice Messaging System
7) Outside Private Line Data Transmission Equipment
12) Data Terminal
13) Management Terminal
14) Attendant Console

Figure 1-9. Typical DEFINITY ECS Connections

NOTE:
Actual equipment may appear different than the equipment shown.

International Capabilities

DEFINITY ECS provides features that allow for differences in telecommunication standards around the world, allowing you to use the same communications system at your various locations in other countries. If you are reading this book, it is likely that the system has been type approved in your country. Check with your local distributor for more information.

Public Network Call Priority

Provides call retention, forced disconnect, intrusion, mode-of-release control, and re-ring to switches on public networks. Different countries frequently refer to these capabilities by different names.

World Class Tone Detection

Enables the DEFINITY ECS 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.

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 ECS sends silence.

Power

DEFINITY ECS 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 ECS 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 ECS systems throughout the world use the same basic software. In addition to the basic software, various optional packages can enhance the capabilities of the system. Some of the capabilities described in this document require optional software. See your account representative for more information. The basic software is a prerequisite for all the optional packages.

Telephone Features

2

Telephones

DEFINITY ECS telephones fall into three basic families — analog, Digital Communications Protocol, and BRI. These terms describe how each type of telephone communicates with the DEFINITY ECS switch. 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.

Telephones for the Global Marketplace

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

8400 Series Telephones

The 8400 digital telephones are versatile two-wire/four-wire Digital Communications Protocol (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 two-wire boards in place of 8-port four-wire boards.

9400 Series Telephones

The 9400 digital telephones, also known as Europhones, provide inexpensive support for two-wire installations, while still providing a European design. Three models of the 9400 telephones are available in gray and cream white. The 9403, 9410B, 9410D, and 9434 telephones are similar in design and features to the 8400 series.

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.

Teleconferencing Products

Quorum A-28 Conference Bridge

The Quorum A-28 Conference Bridge is a microprocessor-controlled analog bridge. It allows you to activate a multipoint connection of switched and private-line circuits to create a single conversation. You can set up, monitor, and control your own teleconferences through your DEFINITY ECS.

The Quorum A-28 Conference Bridge allows you to connect up to 28 different people on a single conference call. Or you can set up multiple conferences — up to four conferences with seven participants each.

The bridge also provides a lecture mode that you can use for one-way broadcasts. Using the Mute feature, participants can be placed in a listen-only mode, allowing one speaker to address the rest of the conference.

SoundStation Audioconferencing Systems

Lucent Technologies's 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.

SoundStation

The 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. It connects to an analog telephone line. 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.

SoundStation EX

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 six feet (1.8 m) on either side of the center console. An optional wireless microphone is available for stand-up presenters.

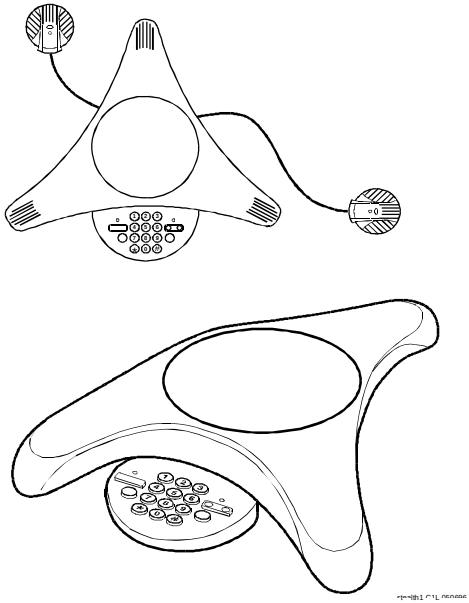


Figure 2-1. Soundstation EX with External Microphones

Telephone Features

Handling Incoming Calls

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.

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.

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.

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.

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.

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.

Misoperation Handling

NOTE:
This feature is used only in France and Italy.

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's 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.

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.

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.

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.

Local Call Timer Automatic Start/Stop

Automatically starts the local timer of a 6400 series telephone when a call is received. The timer is stopped automatically when a call is ended. When a call is placed on hold the timer continues to run, but is not displayed. When the call comes off hold, the total elapsed call-time displays.

Call Redirection

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 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 distribution 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

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.

Go to Cover

Allows users who call another internal extension to send the call directly to coverage.

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.

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.

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 then are 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 typically 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.

Enhanced Night Service

DEFINITY ECS informs a Voice Mail System (VMS) that it is in Night Service, allowing the VMS to perform different actions and call handling for out-of-hours operation. For example, the VMS may be administered to provide recorded announcements after hours. The enhancement is made to the Mode Code Voice Mail Interface.

Bridged Call Appearance — Multiappearance 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 telephone.

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.

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.

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 ECS 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.

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.

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.

Speed/Convenience Calling

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 simply dial the list number and the one-, two-, or three-digit number associated with the telephone 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.

Abbreviated Dialing Labeling

Labeling of Abbreviated Dialing (AD) Buttons on Softkeys allows users of 8400 and 6400 series display telephone sets to administer labels for the AD buttons that appear on their softkeys. These personalized labels appear on the menu display.

Abbreviated Dialing On-Hook Programming

On-Hook Programming allows users of 8400 and 6400 series telephone sets with enabled speakers to access the programming mode without going off-hook during available call appearances. Signaling changes from DTMF to the S-channel, allowing the use of a longer (60 seconds) time-out period. Signaling will remain DTMF and the current time-out period of 10 seconds will still apply to non-display telephone sets.

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 (e.g., Stations without long-distance access can be programmed to access specified long-distance numbers).

Active Dialing

6400 series telephone sets have a dialing option where the set will send S-channel button codes when the user presses a number on the dial pad when on-hook.

Telephone Self-Administration

Allows you to program feature buttons on 6400-series telephones yourself.

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.

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.

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.

Remote Access

Permits authorized callers from remote locations to access the system via the public network and then use its features and services.There are a variety of ways of accessing the feature. After gaining access, you hear a system dial tone, and, for system security, may be required to dial a barrier code.

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.

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.

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.

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 ECS 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.

Telephone Displays

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.

ICLID on Analog Trunk

In the US and Japan, the user’s terminal displays calling party information. Name and calling number are available from the US central offices; only the calling number is available from central offices in Japan. This feature may be used in countries that comply with either US or Japanese requirements. The

display of name and number will work with all DEFINITY digital voice terminals (DCP and BRI) equipped with a 40-character or a 32-character alphanumeric display.

Native Support of 6402D Display Terminal

The 6402D uses a local algorithm to compress and fold the standard 40-character display message onto the 2x16 display. The 6402D does not provide softkeys.

Enhanced Voice Terminal Display

The Enhanced Voice Terminal Display feature allows you to choose the character set that you want to see in DEFINITY ECS 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.

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.

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.

Group Communication

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.

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 telephone 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.

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.

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.

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.

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.

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.

Special Ringing

Distinctive Ringing

Rings or activates alerting on your telephone in such a way that you are aware of the type of incoming call before answering it. This feature operates in a distributed communication system environment the same as it does within a single system.

By default, internal calls are identified by a 1-burst ringing pattern, external calls by a 2-burst ringing pattern, and priority calls by a 3-burst ringing pattern. You can administer these patterns, however.

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.

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.

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.

Ringing — 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.

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.

Multiappearance 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.

Messaging

Leave Word Calling

Allows internal system users to leave a short preprogammed 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 ECS, 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.

Audible Message Waiting

Places a stutter at the beginning of the dial tone when a telephone user picks up the telephone. 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.

Voice Messaging and Call Coverage

Often an AUDIX system is set up as the last point on a call-coverage path, as in Figure 2-2 above. A secretary or colleague who answers a redirected call intended for you can also transfer the caller to your 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. For example, a caller can redirect a call from the AUDIX system to an attendant. Or the caller can transfer to another extension instead of leaving a message. You can even have the AUDIX automated attendant answer all calls to the company and send calls to various extensions. In this case, callers are instructed to enter keypad commands to direct the call.

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.

Message-Retrieval Options

With the message-waiting lamp on their telephones, employees always know when they have messages. Messages can be retrieved in a variety of ways, such as:

- Display retrieval — Users having digital telephones with displays or a personal computer integrated with a telephone can display messages.
- Speak-to-Me — Using any touch-tone telephone, employees can dial Speak-to-Me and hear a synthesized voice read their messages over the telephone.

These message-retrieval options can be assigned to users individually.

Demand Print

Allows you to print your undelivered messages without calling the Message Center.

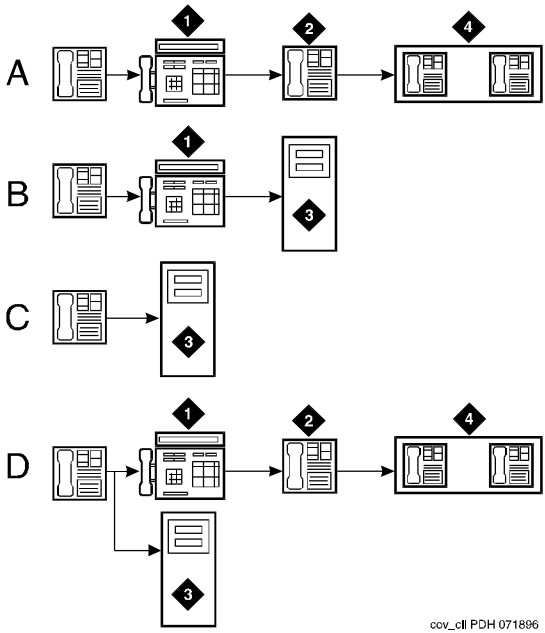
Voice Messaging Systems

The Lucent Technologies voice messaging solutions include:

- DEFINITY AUDIX
- INTUITY AUDIX

Voice Response solutions include:

- CONVERSANT Voice Information System
- CONVERSANT Intro
- CONVERSANT Form Filler Plus



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

Figure 2-2. Typical DEFINITY ECS Call Coverage Options

Telecommuting

Remote Call Coverage/Call Forwarding Off-Net

Remote Call Coverage and Call Forwarding Off-Net allow calls to be redirected to a remote location. This allows you to have calls placed to your on-site office redirected to your home office. You can administer the system to either monitor calls and bring them back for additional processing if not answered or to leave calls at the remote (off-net) location.

Extended User Administration of Redirected Calls (Telecommuting Access)

Extended User Administration of Redirected Calls (also called Telecommuting Access) allows you to change the lead call coverage path or forwarding extension from any on-site or off-site location. Thus you can change the path or extension from your home office, for example.

Off-Premises Station

A trunk-data module connects off-premises private-line trunk facilities and DEFINITY ECS. The trunk-data module converts between the RS-232C and the DCP, and can connect to DDD modems as the DCP member of a modem pool.

See also, ‘‘Call Redirection’’ on page 2-8.

See also, ‘‘Call Vectoring’’ on page 7-7.

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.

Attendant (Operator) Features

3

Attendant (Operator)

A person at a console who provides personalized service for incoming callers and voice-services users by performing switching and signaling operations.

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 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.

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.

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. If a Spanish-speaking attendant takes over for a French-speaking attendant, for example, a single press of a button converts all labels, error messages and online help to Spanish.

Attendant Features

Call Handling

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.

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.

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.

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.

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.

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.

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 ECS supports a variety of administrable attendant timers for use in a variety of situations.

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.

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.

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.

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.

Conference

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.

Making Calls

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.

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.

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.

Accessing the 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.

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.

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.

Individual Attendant Access

Allows you to call a specific attendant console. Each attendant console can be assigned an individual extension number.

Monitoring Calls

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.

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.

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.

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.

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.

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.

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.

Centralized Attendant Service

Enables attendant services in a private network to be concentrated at a central location. Each branch in a Centralized Attendant Service has its own listed directory number or other type of access from the public network. Incoming calls to the branch, as well as calls made by users directly to the attendants, are routed to the centralized attendants over release link trunks.

Attendant with DCS

Control of Trunk Group Access

Allows an attendant at any node in the distributed communication system to take control of any outgoing trunk group at an adjacent node. This is helpful when an attendant wants to prevent telephone users from calling out on a specific trunk group for any number of reasons, such as reserving a trunk group for incoming calls or for a very important outgoing call.

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.

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.

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.

DCS With Reroute

A sophisticated DCS rerouting capability for optimizing trunks. When you transfer out of your AUDIX voice messaging system, for example, DEFINITY ECS sets up a new path that optimizes system resources. Similar to the rerouting capabilities used with Q-SIG.

Enhanced DCS

Enhanced DCS adds features to the existing DCS capabilities. Additional features include:

- Exchanging information to provide class of restriction (COR) checking between switches in the EDCS network
- Providing call-progress information for the attendant
- Allowing attendant intrusion between a main and a satellite
- Allowing a main PBX to provide DID/CO intercept treatment rather than the satellite PBX

Computer-Related Calling Features

4

Data Modules

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

DEFINITY ECS supports the following types of data module:

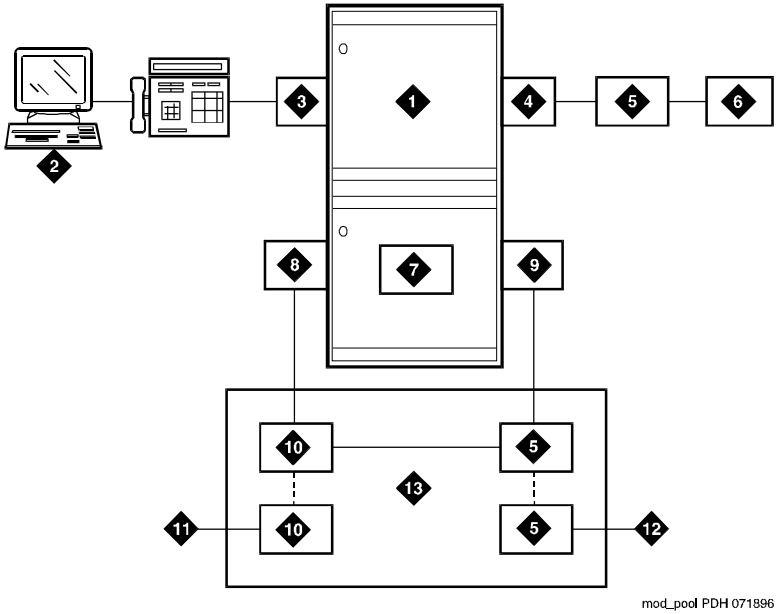
- High Speed Links
- Data stands
- Modular-processor data module
- 7000-series data modules
- Modular-trunk data module
- Asynchronous data unit
- Asynchronous data module (for ISDN-Basic Rate Interface telephones)
- Terminal adapters

All of these data modules support industry standards and include options for setting the operating profile to match that of the data equipment.

Modem Pooling

Enables switched connections between digital data endpoints (data modules) and analog data endpoints and acoustic coupled modems. Data transmission between a digital data endpoint and an analog endpoint requires a conversion since the DCP format used by the data module is not compatible with the modulated signals of an analog modem. A modem translates DCP format into modulated signals and vice versa. The Modem Pooling feature provides a set of modems for such conversions.

DEFINITY ECS modem pools are assigned into modem pool groups. A group can have up to 32 modems, called “members.” DEFINITY ECS can have as many as 63 modem pool groups.



1) DEFINITY ECS
2) Asynchronous Terminal
3) Digital Port
4) Analog Trunk
5) Modem
6) Remote Application
7) Integrated Pooled Modem
8) Data Line Port
9) Analog Port
10) 7400A
11) Digital Communications Protocol
12) Analog
13) EIA Standard

Figure 4-1. DEFINITY ECS Modem Pooling

Alphanumeric Dialing

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

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 Hot Line 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.

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.

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

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.

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.

Multimedia Calling

Multimedia Features

Multimedia calls are initiated with voice and video only. Once a call is established, one of the parties may initiate an associated data conference to include all of the parties on the call who are capable of supporting data. The data conference is controlled by an adjunct device called an Expansion Services Module (ESM).

Multimedia call Early Answer on vectors and stations

Early Answer is a feature applied to multimedia calls in conjunction with conversion to voice. Early Answer:

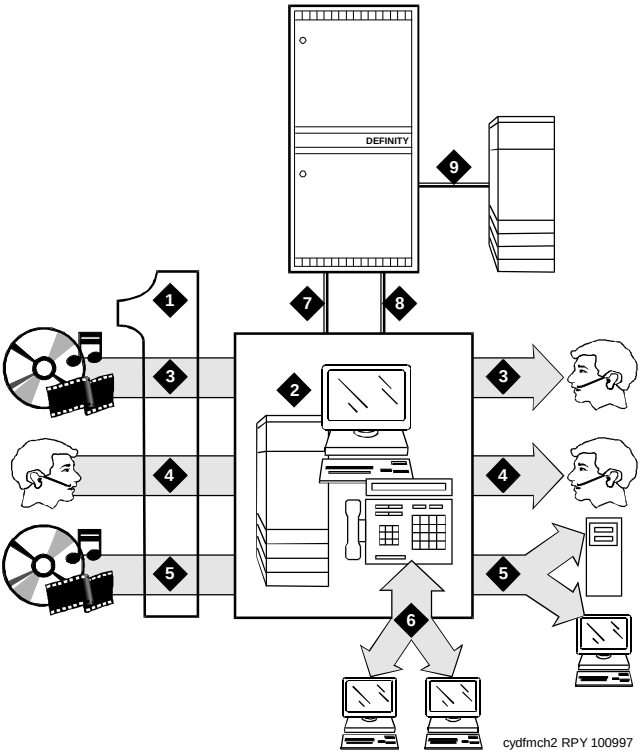
- Answers the data call
- Establishes the multimedia protocol prior to completion of a converted call
- Ensures that a voice path to/from the originator is available when the (voice) call is answered

For an incoming call, Early Answer answers the dynamic service-link calls when the destination endpoint answers, unless Early Answer is specified during routing or termination processing.

NOTE:
The “destination voice endpoint” might be an outgoing voice trunk if the destination voice station is forwarded or covered off-premises.

Multimedia Call Handling

Multimedia Call Handling (MMCH) enables you to control voice, video, and data transmissions using your telephone set. The feature buttons on a multifunction telephone enable you to conduct video conferences, and forward, cover, hold, or park multimedia calls much as you would a standard voice call. You can also share PC applications so that you and colleagues can collaborate while working from remote sites. The R6 upgrade allows the Enhanced Mode MMCH station.



1) One number access
2) Multimedia call complex
3) Multimedia to voice conversion
4) Standard voice call handling
5) Call redirection
6) Multimedia conferencing
7) BRI data connection
8) DCP voice connection
9) ESM data collaboration

Figure 4-2. DEFINITY ECS Multimedia Call Handling

Multimedia Call Redirection to MM Endpoint

A dual port multimedia station may be a destination of call redirection features such as call coverage, forwarding, and station hunting. The station can receive and accept full multimedia calls or data calls converted to multimedia.

Multimedia data conferencing (T.120) via ESM

The data conference is controlled by an adjunct device called an Expansion Services Module (ESM). The Expansion Services Module is used to terminate T.120 protocols [including Generalized Conference Call (GCC), a protocol standard for data conference control] and provide data conference control and data distribution. The MultiMedia Interface circuit pack, TN787, is used to rate adapt T.120 data to/from the ESM.

Multimedia Hold, Conference, Transfer, and Drop

Station users have the ability to activate hold, conference, transfer, or drop on multimedia calls. Multimedia endpoints and voice-only stations may participate in the same conference.

Multimedia multiple-port network

In R6, the expansion to multiple-port networks required a distinction between G3r and G3si. For G3r, R6 supports the equivalent of 580 Basic mode complexes operating at 6CCS traffic level. All enhanced mode complexes operate with soft-mode service links since the use of hard-mode service links reduces capacities. G3si limits are 1/3 to 1/2 of the G3r limits, depending on memory limitations and port network limitations.

Multiple Call Appearances

The dual port multimedia station provides multiple call appearances, each representing a multimedia call or a voice call.

Multimedia Applications Server Interface

The Multimedia Applications Server Interface provides a link between the DEFINITY ECS and one or more Multimedia Communications eXchange nodes. A Multimedia Communications eXchange is a stand-alone multimedia call processor produced by Lucent Technologies. This new link to DEFINITY ECS enhances the capabilities of each Multimedia Communications eXchange system by enabling it to share some of the DEFINITY ECS features. In particular, the interface provides the following advantages:

- Call Detail Recording — The capture of call detail records so you can analyze the call patterns and usage of multimedia calls just as DEFINITY administrators analyze normal calls.
- Automatic Alternate Routing/Automatic Route Selection — The intelligent selection of the most cost-effective routing for calls, based on available resources and your carrier preference. The system may select public trunks via DEFINITY or Multi Media Communication Exchange.
- Voice Mail Integration — You can access your DEFINITY or INTUITY AUDIX voice messaging system from a Multimedia Communication eXchange.

Hospitality Features

5

Overview

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 is primarily used in lodging establishments. That feature is a basic feature because it is available on any system that has the appropriate attendant console.

Automatic Wakeup

Allows attendants, front desk users, and guests to request that a wakeup call 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.

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

This capability is part of the Automatic Wakeup Hospitality Hotel/Motel feature. Dual Wakeup allows each extension to request two wakeup calls within one 24-hour period.

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.

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.

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 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.

Property Management System (PMS) 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.

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.

System Management Features

6

Scheduling

DEFINITY ECS's functional scheduling allows you to specify the time a command will be executed or to specify that it should be executed on a periodic basis. Only commands that do not require user interaction after being entering on the command line (such as list, display, test) can be scheduled.

Concurrent User Sessions

In order to increase the efficiency of administration and maintenance functions, the DEFINITY ECS switch accommodates multiple concurrent administration and maintenance user sessions. Three or more devices (management terminals or operation support systems) can be connected to the switch to perform administration and/or maintenance tasks simultaneously. DEFINITY ECS supports eight concurrent administration and maintenance users — five can perform concurrent administration, and three can perform concurrent maintenance. The eight concurrent sessions can be in any combination of local and remote connections.

Security

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 cannot place toll calls.
- Total — User can neither place nor receive any calls.

The risks of unauthorized access can be minimized by combining the use of Remote Network Access with the following:

- An unpublished remote access number
- Deactivate unassigned barrier codes immediately
- Change barrier codes frequently
- Inform remote access users of their responsibility
- Monitor call detail reports for unauthorized or abnormal calling patterns

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.

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.

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.

Calling/Connected Party Number (CPN) Restriction

Per Line CPN Restriction

Users may block the Calling Party Number when originating calls. For ISDN calls, the CPN Presentation Indicator is encoded accordingly. For non-ISDN calls, going to a public network that supports the CPN Restriction feature, the network specific Feature Activation Code gets passed to the network for interpretation and activation.

If Per Line CPN Restriction is administered for a station, it will override any ISDN Trunk Group administration for sending Calling Party Number.

Per Call CPN Restriction

Users may indicate Calling Number privacy information. For ISDN calls, the CPN Presentation Indicator is encoded accordingly. For non-ISDN calls going to a public network that supports the CPN Restriction feature, the network specific Feature Activation Code gets passed to the network for interpretation and activation of the desired feature.

If Per Call CPN Restriction is activated for an outgoing call, it will override any Per Line CPN Restriction administration for the calling station, and will override any ISDN Trunk Group administration for sending Calling Number.

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.

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.

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.

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

Block Collect Call

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

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.

Troubleshooting

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.

DCS Automatic Circuit Assurance

Allows a user or attendant at one node to activate or deactivate Automatic Circuit Assurance referral calls for the entire DCS network. This transparency allows the referral calls to originate at a node other than the node that detects the problem.

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.

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.

Information and Reports

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.

Service Observing

Allows a specified user, such as a supervisor, to observe or monitor another user's calls. A vector directory number call can also be observed. 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.

Calling Party/Billing Number

Allows the system to transmit Calling Party Number/Billing Number (CPN/BN) information to an ISDN-PRI trunk group. The CPN is the calling party's telephone number. BN is the calling party's billing number. The CPN/BN may contain international country codes. It is used with an adjunct application.

Call Charge Information

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.

Bulletin Board

Provides 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.

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.

Traffic Reports

Shows measurements in the form of switch-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:

- Call Coverage reports, which display measurements of the distribution of traffic offered to call-coverage groups. Separate reports for all calls and external calls are supplied.
- Coverage Points, which differs based on whether “All Calls” or “External Calls” is selected. 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.
- Processor Occupancy report, which provides summary information on how heavily the processor is loaded.
- Traffic Summary report, which provides a performance summary of the switch.
- Attendant Position report, which 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
- Tandem Traffic report, which provides information on facilities that serve tandem traffic
- Hunt Group Measurements
- Automatic Route Selection Pattern Measurements
- Trunk Group Detailed Measurements
- Blockage Study report
- Port Network and Link Usage

Announcements

Recorded Announcement

Provides a recorded announcement to a variety of types of calls: calls that cannot be completed as dialed, calls that have been in queue for an assigned interval, any calls whose destination is an announcement, or incoming calls to a user.

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 ECS. See the Tenant Partitioning feature for more information.

Multimedia Queuing with Voice Announcement

When multimedia callers queue for an available member of a hunt group they are able to hear an audio announcement.

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.

See "Class of Restriction" on page 6-2.

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.

Terminal Translation Initialization

DEFINITY ECS 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 at a terminal that is connected to a wired (but untranslated) jack.

Tenant Partitioning

Allows partitioning of the system in order to lease the system's services and features to tenants. This provides attractive new services and revenue for "virtual" landlords. It provides the robust features of a large system at affordable rates to small business tenants. The system supports up to 100 partitions and 27 Attendant Groups. Multiple Attendant Groups can be assigned to each partition. Stations, hunt groups, and other endpoints assigned to a Class of Service can be partitioned. Network routing pattern preferences also support the assigned tenant partitioning. Tenant Partitioning also allows you to assign a unique music source for each tenant partition for customers who are put on hold.

See also, "Music-on-Hold Access" on page 6-10.

Trunk Management

DEFINITY ECS supports a variety of interfaces to voice and data networks. Trunks supply links between DEFINITY ECS, the public network, and other switches.

Trunk Group Circuits

Trunks provide the communications links between DEFINITY ECS and other switches, 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 DEFINITY ECS via port circuit packs. DEFINITY ECS trunk group circuit types include the following:

Local Exchange Trunks

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

- Central office trunks, which connect DEFINITY ECS to the local central office for incoming and outgoing calls
- Foreign exchange trunks, which connect DEFINITY ECS 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, priced according to distance in the service area, length of the call, time of day, and the day of the week
- 800-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 DEFINITY ECS 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 DEFINITY ECS and other switches in a private network. Several types of trunks can be used, depending on the type of private network you establish.

Auxiliary Trunks

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

Central Office: The location housing telephone switching equipment that provides local telephone service and access to toll facilities for long-distance calling.

Advanced Private Line Termination

Provides access to and termination from CO (Central Office)-based private networks; namely, Common Control Switching Arrangements (CCSA) and Enhanced Private Switched Communications Service (EPSCS). APLT trunks are physically the same as those used for analog tie trunks, where the trunk signaling is compatible with EPSCS and CCSA network switches. The outgoing APLT trunk repeats any number of digits to the private network as dialed. APLT trunks can tandem through the PBX from EPSCS network only; CCSA networks require an attendant to complete the call.

Direct Inward/Outward Dialing

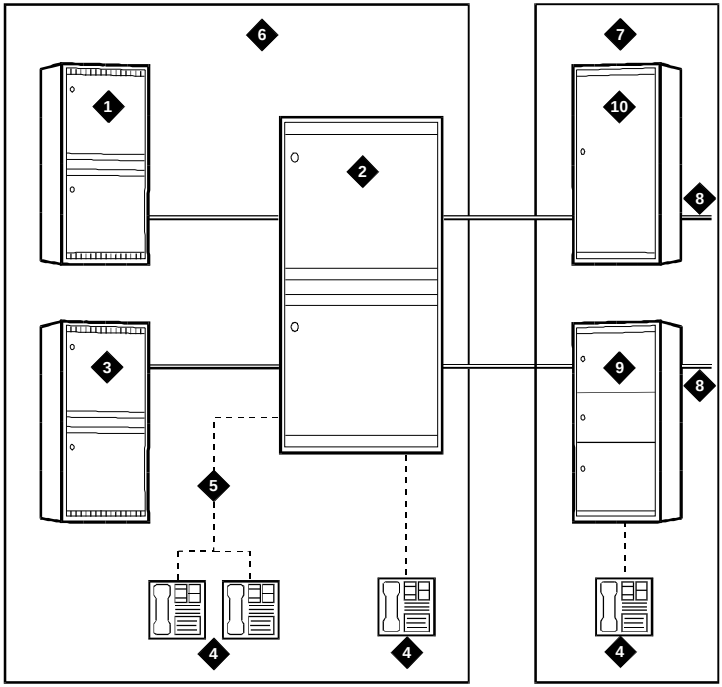
Traditionally, CO (Central Office) trunks and DID (Direct Inward Dialing) trunks interface a PBX with a central office. A CO trunk services outgoing calls and accepts incoming calls that are terminated at the attendant. A DID trunk is used for calls that need to be terminated without an attendant interaction.

The DIOD trunk combines the features of a CO trunk and a DID trunk to provide both outgoing and incoming calls with addressing information in both directions.

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 ECS 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.



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

Figure 6-1. DEFINITY ECS and ISDN

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

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:

- DCS
- Non-Facility Associated Signaling
- D-Channel Backup
- Wideband Signaling

R6 BRI Trunk Enhancements

Adds support for public-network access outside the U.S. on point-to-midpoint connections, with the restriction that DEFINITY ECS 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.

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.

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.

Wideband Switching

Provides the ability to dedicate 2 or more ISDN B-channels or DSO endpoints for applications that require large bandwidth. Certain applications, such as video conferencing and high-speed data transmission, require extra bandwidth and it becomes necessary to put several ISDN-PRI narrowband channels into one wideband channel to accommodate the needs of these applications. This feature supports both European and North American standards.

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.”

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).

Personal Central Office Line (PCOL)

Provides a dedicated trunk circuit between multiappearance voice terminals and a CO or other switch via the network.

Tandem

In an Electronic Tandem Network, DEFINITY ECS 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, DEFINITY ECS enhances the standard uniform dial plan with the unrestricted 5-digit uniform dial play, which allows up to five digits to be parsed for call routing.
- Extension Number Portability — When employees move within the network, they can retain their extension numbers. The ability to keep extension numbers, and even Electronic Tandem Network and Direct Inward Dialed numbers, when moving to other locations within the company eliminates missed calls and saves valuable time.
- Traveling Class Marks — Traveling Class Marks are a mechanism for passing a caller's facility restriction level from one Extended Tandem Network switch to another. Traveling Class Marks allow privilege checking to be passed across switches through the Electronic Tandem Network.
- Automatic Alternate Conditional Routing — You can 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.
- Enhanced Trunk Signaling and Error Recovery — The reliability of Electronic Tandem Network calls is improved by allowing a trunk call to be retried on another circuit when signaling failures occur.

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 outpulsed, 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.

See also, "ATM PNC" on page 8-1.

Digital Multiplexed Interface

Supports two signaling techniques: bit-oriented signaling and message-oriented signaling for direct connection to host computers.

Digital Multiplexed Interface offers two major advantages. It delivers a standard, single-port interface for linking host computers internally and externally via T1 carrier. And, since it is compatible with ISDN standards and is licensed to numerous equipment manufacturers, it promotes multi-vendor connectivity.

DEFINITY ECS supports two versions of Digital Multiplexed Interface, each differing in the way information is carried over the 24th channel:

- Digital Multiplexed Interface-bit-oriented signalling carries framing and alarm data and signalling information for connections to host computers and other vendor equipment.
- Digital Multiplexed Interface message-oriented signalling, fully compatible with ISDN-PRI, uses the same message-oriented signalling format, Link Access Procedure on the D-channel, as ISDN-PRI for control and signalling. These signalling capabilities extend the advantages of Digital Multiplexed Interface-Message Oriented Signalling multiplexed communications to the public ISDN network.

Miscellaneous Trunks

Miscellaneous trunks perform functions that do not fit neatly into any of those already described:

- Release-link trunks are used between switch locations to provide Centralized Attendant Service or Automatic Call Distribution group availability.
- Remote-access trunks provide off-premises users with access to DEFINITY ECS features and networking.

Digital Interfaces

E1 Interface

DEFINITY ECS 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.

Used to connect switches to the public network or to other switches in a private network, DS1 also delivers high-speed, end-to-end digital connectivity. Voice and data calls are completed at transmission speeds of up to 64 kbps.

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.

Answer Detection

For purposes of call-detail recording, it is important to know when the called party answers a call. DEFINITY ECS 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.

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.

Automatic Routing Features

DEFINITY ECS 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 ECS 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 ECS 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 ECS 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 ECS 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.

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.

Facility Restriction Levels and Traveling Class Marks

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.

Alternate Facility Restriction Levels

Allows DEFINITY ECS 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.

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 ECS 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.

Extension Number Portability

Gives you the ability to assign any extension to any system in a subnetwork. Stations can be moved across systems while retaining the original extension number, as long as the systems are part of a defined subnetwork. This feature is used in conjunction with Automatic Alternate Routing and Uniform Dial Plan.

Alarm Assignments

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.

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.

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.

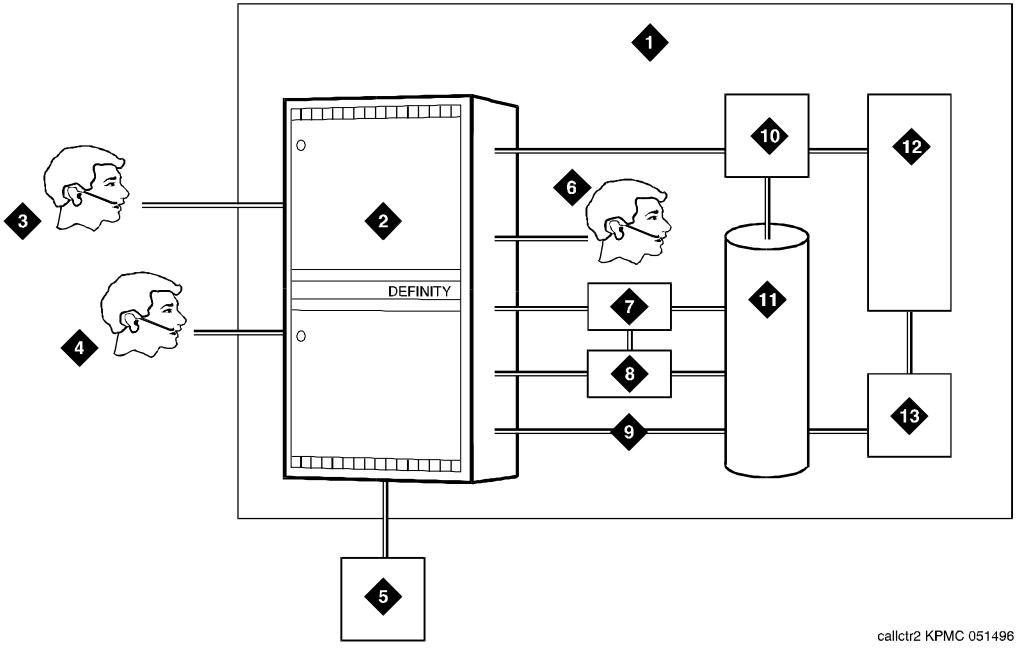
Call Center Features

7

DEFINITY Call Center applications are designed to efficiently connect each caller with the representative best suited to serve that caller. The DEFINITY ECS begins the process by capturing information about the caller even before the call is routed. That information is integrated with existing databases and the combined data is used to match caller to agent. Additional DEFINITY features politely keep callers 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 agents and supervisors.

Calls coming into your DEFINITY ECS call center 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. Using CONVERSANT voice response software, the system can even respond appropriately to spoken information.

Figure 7-1 summarizes how you might set up a DEFINITY Call Center.



1) Your Office Building
2) DEFINITY ECS
3) Remote Agents Using DEFINITY Extender
4) Remote Agents Using Home Agent
5) Remote Call Center Using Look Ahead Interflow
6) Local Agents Organized By Skill
7) CentreVu Call Management System
8) CentreVu Supervisor
9) CallVisor Adjunct Switch Applications Interface
10) INTUITY Conversant Voice Response System
11) Local Area Network
12) Host Computer
13) Computer-Telephone Interface Server

Figure 7-1. A DEFINITY Call Center

Automatic Call Distribution

ACD is the basic building block for call center applications. ACD offers you a method for distributing incoming calls efficiently and equitably among available agents. With ACD, incoming calls can be directed to the first idle or most idle agent within a group of agents.

Agents in an ACD environment are assigned to a hunt group, a group of agents handling the same types of calls. A hunt group is also known as a split. Each DEFINITY ECS can support and measure up to 5,200 agents.

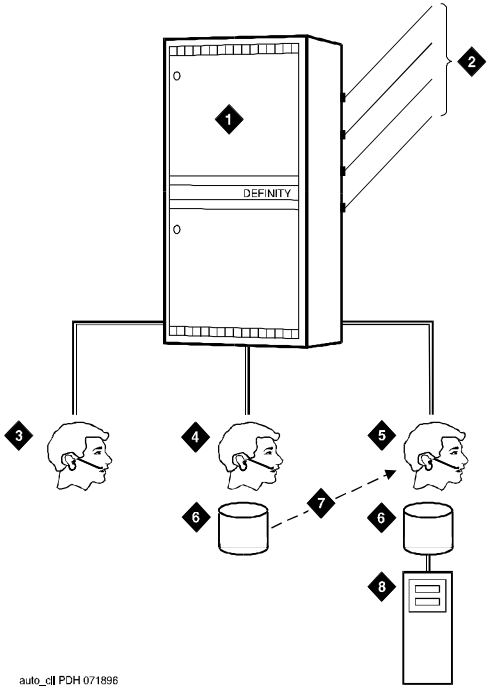
A hunt group is especially useful when you expect a high number of calls to a particular phone number. A hunt group might consist of people trained to handle calls on specific topics. For example, the group might be:

- 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 modem pool
- A group of data-line circuit ports
- A group of data modules

In the Figure 7-2 example, Hunt Group A receives calls only when agents are available since it has no queue. Calls to Hunt Group B can be queued while agents 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 not answered within an administrable time.



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

Figure 7-2. A Basic Example of Automatic Call Distribution

Agent Call Handling

Allows you to administer functions that Automatic Call Distribution agents use when handling incoming calls. You define specific agent capabilities and can plan capacities based on those capabilities. The same list of agent capabilities are also supported through the CallVisor Adjunct/Switch Applications Interface (ASAI).

Multiple Call Handling

Allows agents to receive an ACD call while other types of calls are alerting, active, or on hold.

Auto-Available Split

Allows members of an ACD split to be in Auto-In work mode continuously. An agent 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-split members back into Auto-In work mode after a system restart. Although not restricted to such, this feature is intended to be used for splits containing only recorders or voice-response units.

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 agent, 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 split's oldest call.

Reason Codes

Allows agents to enter a numeric code that describes their reason for entering Auxiliary (AUX) work mode or for logging out of the system. Reason codes give call center managers detailed information about how agents spend their time. You can use this data to develop more precise staffing forecasting models or

use it with schedule-adherence packages to ensure that agents are performing scheduled activities at the scheduled time. You must have Expert Agent Selection (EAS) enabled to use reason codes.

Redirection on No Answer

Redirects a ringing ACD split or skill 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 split or skill to be answered by another agent or to a vector directory number (VDN) for alternative call handling. Direct Agent Calls route to the agent's coverage path, or to a VDN if no coverage path is administered. You must have ACD enabled to use this feature.

Intraflow and Interflow

Intraflow and Interflow allow you to redirect ACD calls from one split to another split. Intraflow redirects calls to other splits within the system using Call Coverage or Call Forwarding All Calls. Interflow redirects calls to an external split or location using Call Forwarding All Calls. You can have calls redirected from one split to another *conditionally*, according to the coverage path's redirection criteria. For example, you can define a split's coverage path to automatically redirect incoming ACD calls to another split when a terminal is busy or unanswered.

Look-Ahead Interflow

Balances the load of ACD calls across multiple locations. With Look-Ahead Interflow, you can optionally route a call to a backup location based on your system's ability to handle the call within parameters defined in a vector. In turn, the backup system can accept or deny the call also based on defined parameters.

Lookahead Interflow allows interflowing only for the call(s) at or near the head of the queue to provide First In/First Out (FIFO) or FIFO-like call distribution and significantly reduce call and trunk processing for LAI.

Enhanced LAI ISDN Support

Enhanced Look Ahead Interflow information is passed transparently over several public networks and QSIG private networks using the envelopes that are part of the QSIG Manufacturers Specific Information (MSI) and the ISDN platform enhancement.

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.

Call Vectoring

Call Vectoring is a versatile method of routing incoming calls that can be combined with Automatic Call Distribution for maximum benefit and call center 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 skill or 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 ECS can route incoming callers to up to 512 different vectors. Each vector can have up to 32 commands. DEFINITY ECS also allows vectors to be linked via the “Go to Vector” command.

Vector Directory Numbers

Calls access DEFINITY ECS vectors using vector directory numbers (Vector Directory Numbers). 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.

A Vector Directory Number can be accessed in almost any way that an extension can be accessed.

When answering a call, the answering agent 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 agent to identify the purpose of the incoming call.

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.

VDN of Origin Announcement

VDN of Origin Announcement provides agents with a short message about a caller’s city of origin or requested service based on the VDN used to process the call. VOA messages help agents respond appropriately to callers. For example, if you have two 800 numbers, one for placing orders and one for technical support, you can administer two VDNs to route calls to the same set of agents. When an incoming call is routed to a VDN with a VOA assigned (for example, “new order” or “tech help”), the VDN routes the call to a vector, which can place the call in an agent queue. When an agent answers the call, he or she hears the VOA message and can respond appropriately to the caller’s request.

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. Other common applications include:

- Special Treatment for Selected Callers
- Night Treatment
- Off-loading of Periodic Excess Calls
- Information Announcements for the Calling Party

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.

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.

- Call center messaging — Gives the calling party the option of leaving a message or waiting in queue for an agent. This may be used for an online order entry system or to further automate an incoming-call center operation.

Expert Agent Selection

Enables certain Expert Agent Selection skill types to be assigned to a call type or a Vector Directory Number. Routing calls via vectoring then allows the system administration to direct calls to agents who have the particular agent skills required to complete the customers' inquiries successfully.

Call Distribution Based on Skill

Calls that require certain agent skills (such as "speaks Spanish" or "knowledgeable about Product X") can be matched to an agent who matches the required skill. You can assign one of up to 600 skill numbers to each need or group of needs. The skills are administered and associated for each of the following:

- Vector Directory Numbers
- Agent Login IDs
- Callers

This refined skill definition capability allows you to organize call handling based on customer, product, and language, for example.

Add/Remove Skills

Allows an agent using Expert Agent Selection to add or remove skills. A skill is a numeric identifier that refers to an agent's specific ability. For example, an agent who speaks English and Spanish could be assigned a language -speaking skill with an identifier of 20. The agent then adds skill 20 to his or her set of working skills. If a customer needs a Spanish-speaking agent, the system routes the call to an agent with that skill. Each agent can have up to four active skills, and each skill is assigned a priority level.

Best Service Routing

Best Service Routing (BSR) distributes the call to the best local or remote split/skill among the resources to be considered, based on Expected Wait Time (EWT).

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.

User-to-User Information Over the Public Network

Provides the mechanism to pass information across several key public networks, including information that is originated or destined for one of several application on DEFINITY.

Call Center Reporting Systems

Basic Call Management System

The Basic Call Management System helps you fine tune your call-center operation by providing reports with the data necessary to measure your call center agents' performances.

This feature offers call management control and reporting at a low cost for call-centers of up to 2000 agents. The Basic Call Management System collects and processes DEFINITY ECS's ACD call data (up to seven days) within the system; an adjunct processor is not required to produce call management reports.

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

- Real-time reports
  - Agent Status
  - System Status
  - Vector Directory Number Status
- Historical reports
  - Agent
  - Agent Summary
  - Split
  - Split Summary
  - Trunk Group
  - Vector Directory Number report

CentreVu Call Management System

See "CentreVu CMS" on page 9-6.

VuStats

VuStats presents Basic Call Management System (BCMS) statistics on telephone displays. Agents, supervisors, call center managers, and other users can press a button and view statistics for agents, splits or skills, VDNs, and trunk groups. These statistics can help agents monitor their own performance or respond appropriately to the caller's request.

Voice Response Integration

Integrates Call Vectoring with the capabilities of voice response units such as the Lucent Technologies CONVERSANT Voice Information System. You can also integrate a voice response unit with ACD. All this provides a variety of advantages. For example, while a call is queued, a caller can listen to product information via an audiotext application or can complete an interactive voice-response transaction. It may be possible to resolve the caller's questions while the call is queued, which helps reduce queuing time for other callers during peak times.

Call Charge Information

DEFINITY ECS 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.

Private Networking Features

8

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.

Node Number Routing

Allows you to specify the route pattern associated with each node in a private network. It is a required capability for Extension Number Portability and is used in conjunction with Automatic Route Selection, AAR and ARS Partitioning, Private Networking, and Uniform Dial Plan. Uniform Dial Plan extensions can be routed to a specified node using its associated pattern. Node Number Routing allows a Uniform Dial Plan route pattern based on node numbers or on location codes. On the AAR and ARS Digit Analysis Tables, you also can specify a Node Number instead of a Route Pattern.

ATM PNC

Port network connectivity (PNC) provides an alternative to either the direct connect or center stage switch configurations for connecting the processor port network (PPN) to one or more expansion port networks (EPNs). ATM PNC

replaces the center stage switch in a DEFINITY R6r network with an asynchronous transfer mode (ATM) switch. ATM PNC is available with all three DEFINITY ECS reliability options — standard, high, and critical.

ATM PNC integrates delivery of voice, video, and data via ATM over a common large bandwidth LAN, providing reduced infrastructure cost and improved network manageability. ATM PNC uses standards-based open interfaces that can be provisioned with either new or existing DEFINITY ECS systems and is ATM-ready for future expansion.

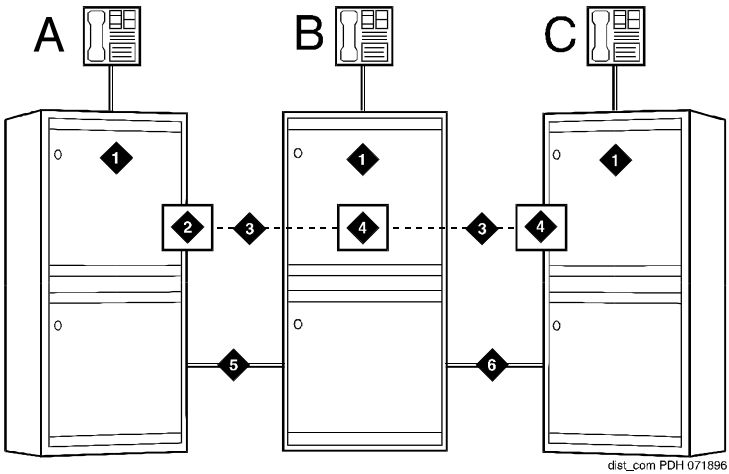
In the next phase of DEFINITY ECS ATM offers, ATM circuit emulation service (CES) will provide integrated trunk access for use as an access, tandem, or tie trunk. ATM CES will be available for use with DEFINITY ECS R6csi, R6si, and R6r systems.

Distributed Communications System

Distributed Communications System (DCS) allows you to configure 2 or more switches as if they were a single, large DEFINITY ECS. DCS provides attendant and voice-terminal features between these switch locations. DCS simplifies dialing procedures and allows transparent use of some of the DEFINITY ECS features. (Feature transparency means that features are available to all users on DCS regardless of the switch location.)

See also, ‘‘Centralized Attendant Service’’ on page 3-8.

See also, ‘‘Inter-PBX Attendant Calls” on page 3-9.



1) DEFINITY ECS: DCS node
2) Processor Interface
3) Data links (BX.25 protocol)
4) Packet Gateway
5) Tie Trunk: DS1
6) Tie Trunk: ISDN-Primary Rate Interface switched network or private line

Figure 8-1. DEFINITY ECS as Part of a DCS

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, DEFINITY ECS enhances the standard uniform dial plan with the unrestricted 5-digit uniform dial play, which allows up to five digits to be parsed for call routing.

Attendant Features That Work Over the Network

- Attendant Control of Trunk Group Access
- Attendant Direct Trunk Group Selection
- Phone Displays
- DCS Busy Verification of Terminals and Trunks
- DCS Trunk Group Busy/Warning Indication

Phone Features That Work Over the Network

- DCS Alphanumeric Display for Terminals
- DCS Attendant Display
- DCS Automatic Callback
- Coverage Callback
- Call Coverage
- DCS Distinctive Ringing
- DCS Leave Word Calling
- DCS Multiappearance Conference/Transfer
- Attendant Crisis Alert
- Emergency Access to the Attendant
- DCS Call Waiting

System Management Features That Work Over the Network

- Calling/Connected Party Number (CPN) Restriction
- Automatic Circuit Assurance

DCS Over ISDN-PRI D-channel

Enhances DCS by allowing access to the public network for DCS connections between DCS switch nodes. With this feature, DCS features are no longer restricted to private facilities. The ISDN-PRI B-channel is used for voice communications, and the ISDN-PRI D-channel is used to transport DCS control information.

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 features developed for PRI in R6 are supported on BRI trunks: QSIG VALU, Call Offer, Call Completion, and Path Retention.

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.

Call Completion

Call Completion utilizes the QSIG Platform enhancement Call Independent Signaling Connections and is functionally equivalent to the Distributed Communications System (DCS) feature: AutoCallback.

Call Independent Signaling Connections

Call Independent Signaling Connections are used to pass QSIG Supplementary Service information that is independent of an active call between two QSIG compliant nodes. Implementation is based on the ISO standard for Call Independent Signaling Connections.

NT QSIG Peer Protocol

The NT side of the QSIG Peer Protocol has been added.

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.

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.

Queue to Best ISDN Support

Queue to Best information is passed transparently over several public networks and QSIG private networks using the envelopes that are part of the QSIG Manufacturers Specific Information (MSI) and the ISDN platform enhancement.

Path Replacement

DEFINITY ECS provides QSIG Additional Network Feature Path Replacement as defined in ISO/IEC 13863 and 13874. With this feature, a call's connections between switches in a private network can be replaced with new connections while the call is active. This feature is invoked when a call is transferred and improvements may be made in costs. For example, after a call is transferred, the two parties on the transferred call can be connected directly and the unnecessary trunks are dropped off the call. The routing administered at the endpoints may allow for a more cost-effective connection.

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.

Call Forwarding (Diversion)

QSIG Call Forwarding (Diversion) is based on the DEFINITY ECS 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.

Call Transfer

When you use this feature, you see no difference between QSIG Call Transfer and the standard DEFINITY ECS Transfer or Trunk-to-Trunk Transfer features. QSIG Call Transfer differs from the standard DEFINITY ECS 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.

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.

Called NAME ID

The QSIG Called Name feature presents the called party's name on the calling party's display while the call is ringing. It then reverts to "connected name" when answered.

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

Enhanced LAI ISDN Support

See "Enhanced LAI ISDN Support" on page 7-7.

Adjunct Systems

9

Voice Messaging and Response

DEFINITY AUDIX

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

Each DEFINITY AUDIX system supports up to 2000 mailboxes and stores up to 100 hours of recorded messages. It can be configured with 2 to16 ports (in two-port increments).

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 voice-processing features include Voice Mail, Call Answering, Outcalling, Multi-Level Automated Attendant, and Bulletin Board. The following is a summary of DEFINITY AUDIX capabilities:

- *Shared Extensions* provide personal mailboxes for each person sharing a phone

- *Multiple Personal Greetings* allows you to prepare a pool of up to nine personal greetings to save time and provide more personal customer service. Separate messages can indicate you are on the phone, away from the desk, on vacation, etc. You can assign different messages to internal, external, or after-hours calls
- *Priority Messaging* places important messages ahead of others
- *Outcalling* automatically dials a prearranged phone number or pager when you have messages in your voice mailbox
- *Priority Outcalling* automatically dials a prearranged phone number or pager when you have *priority* messages in your voice mailbox
- *Broadcasting* allows you to send a single message to multiple recipients or to all users on the system
- *System Broadcast* allows you to send broadcast messages as regular voice messages, or as messages that recipients hear as they log in
- *AUDIX Directory,* allows you to look-up the extension number of any other user by entering their name on the telephone keypad
- *Personal Directory* allows you to create a list of nicknames for quick access to telephone numbers
- *Call Answering for Nonresident Subscribers* provides voice mailboxes for users who do not have an extension number on the DEFINITY ECS
- *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 you record your own name on the system
- *Automatic Message Scan* can play all new messages in part or in their entirety without requiring you to press additional buttons, which is particularly useful when you are getting messages from your mobile phone
- *Sending Restrictions by Community* enables you to limit the communities of callers who can communicate via AUDIX Voice Messaging

- *Group Lists* allows you to create mailing lists of up to 250 people to use for broadcasting messages
- *Message Forwarding* allows you to forward messages with or without attached comments
- *Name Addressing* allows you to address messages by name if you don't know the extension
- *Private Messaging* is a special coding feature that prevents recipients from forwarding messages
- *Leave Word Calling* allows you to press a button on your telephone in order to leave a standard *call me* message on any extension
- *Online Help* provides you with instant access to voiced instructions at any time when you are using the system

INTUITY AUDIX

INTUITY Messaging Solutions essentially offers the same user features as the DEFINITY AUDIX System, plus the following features:

- *Fax Messaging* allows you to handle faxes as easily as you handle voice mail. You can send, receive, store, scan, delete, skip, or forward faxes. This feature is fully integrated with voice messaging, so you can attach faxes to voice messages, for example. You can also create special mailboxes for each of your fax machines. These 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
- *Turn off AUDIX Call Answering* allows you to turn off call answering in order to conserve system resources. You can create a message that tells callers they cannot leave a message, giving them another number to call, for example
- *Pre-Addressing* allows you to address a message before recording it
- *Integrated Messaging* allows you access and manage incoming voice, fax, and e-mail messages and file attachments from your personal computer or your telephone. A voice message will thus appear in your

e-mail mailbox, for example, and vice versa. You can also set options to have just the message headers appear in the alternate mailbox. You can also create a voice or fax message by telephone and send it to an e-mail recipient

- *Text-to-Speech* allows you listen to a voice rendering of text messages sent from a supported e-mail system and/or Message Manager
- *Print Text* allows you to print messages sent from a supported e-mail system and/or Message Manager
- *Enhanced Addressing* allows you to send a message to up to 1500 recipients
- *Transfer Restrictions* allow you to control toll fraud by restricting transfers going through the voice messaging system

Mode Code Interface

DEFINITY ECS 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 ECS without using a data link. Other adjunct vendors can engineer their products to use this interface.

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.

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.

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.

INTUITY Conversant

The INTUITY CONVERSANT Voice Information System is an interactive voice-response system that automates phone-call transactions from simple tasks like routing to the right department to complex tasks such as registering college students or providing bank balances. It communicates with customers in natural-sounding, digitally recorded speech. And it performs — 24 hours a day and without the services of an operator.

The system can handle single or multiple voice-response applications simultaneously, and can serve up to 48 callers at once. It can operate by itself to dispense information or collect data, or it can work with a host computer to access a large database such as bank account records. With its speech-recognition capability, even rotary telephone users can have access to sophisticated phone-based services. Advanced telephone features provide intelligent call-transfer capabilities and allow you to use the system in your existing telephone environment.

INTUITY Call Accounting System

If you are using any of the INTUITY voice messaging products, the INTUITY Call Accounting System is probably best call-accounting solution for you. The system works exclusively with INTUITY products, which reside on MAP/40 or

MAP/100 computers. 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 INTUITY applications.

Other Supported Systems

AUDIX Voice Power

The AUDIX Voice Power (AVP) System from Lucent Technologies is a cost-effective addition to your INTUITY CONVERSANT® or CONVERSANT INTRO system, providing 24-hour-a-day voice messaging communications to individuals or departments.

AUDIX Voice Power Lodging

AUDIX Voice Power Lodging (AUDIX VPL) is a voice mail system designed especially for lodging establishments such as hotels. It supplies guests with electronic mailboxes that store voice messages. AUDIX VPL is like having private answering machines that take messages for guests when they are unavailable.

Call Center

CentreVu CMS

The CentreVu Call Management System collects call traffic data, formats management reports, and provides an administration interface for Automatic Call Distribution on your DEFINITY ECS. It helps you manage the people, traffic load, and equipment in an ACD environment by answering such questions as:

- How many calls are we handling?
- How many callers abandon their calls before talking with an agent?
- Are all agents handling a fair share of the calling load?

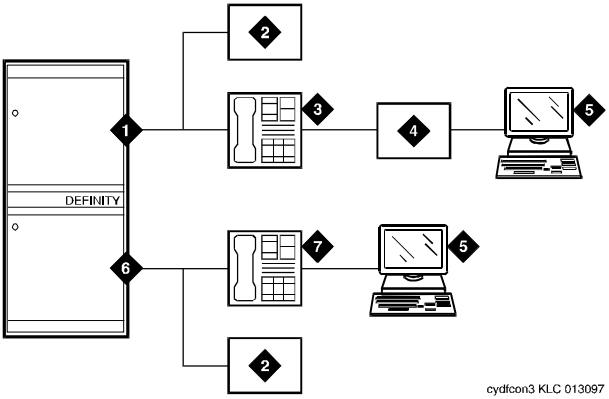
- Are our lines busy often enough to warrant adding additional ones?
- How has traffic changed in a given ACD hunt group over the past year?

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.

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 is well-suited for those users who are constantly conducting business using both the a Windows-based personal computer and an Lucent Technologies telephone and want to boost their efficiency.



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

Figure 9-1. PassageWay Direct Connect Configurations

CallVisor Adjunct-Switch Application Interface (ASAI)

Links DEFINITY ECS and adjunct applications. The interface allows adjunct applications to access DEFINITY ECS features and supply routing information to the system. CallVisor ASAI improves ACD agents' call handling efficiency by allowing an adjunct to monitor, initiate, control, and terminate calls on the switch. The CallVisor ASAI interface may be used for Inbound Call Management, Outbound Call Management, and office automation/messaging applications. It uses two transport types: ISDN-BRI transport (CallVisor ASAI-BRI) and LAN Gateway Transmission Control Protocol/Internet Protocol

transport (DEFINITY LAN Gateway). CallVisor ASAI messages and procedures are based on the ITU-T Q.932 international standard for supplementary services.

Direct Agent Announcement

Direct Agent Announcement (DAA) enhances Direct Agent Calling capabilities for CallVisor Adjunct-Switch Application Interface (ASAI) and Expert Agent Selection (EAS). It plays an announcement to Direct Agent callers waiting in a queue.

Flexible Billing

Allows DEFINITY ECS or an adjunct to communicate with the public network using ISDN PRI messages to change the billing rate for an incoming 900-type call. Rate-change requests to specify a new billing rate can be made anytime after a call is answered and before it disconnects.

Flexible Billing is available in the U.S. for use with AT&T MultiQuest® 900 Vari-A-Bill™ Service. Flexible billing requires a CallVisor Adjunct-Switch Application Interface and other application software.

Wireless

The DEFINITY Wireless Business System relies on the DEFINITY ECS system to manage mobility. It uses Personal Wireless Telecommunications technology, which is a leading protocol in the United States. This standard, which has the primary advantage of permitting up to 12 simultaneous conversations per base station, defines the radio interface between the portable telephones and the base stations in the system.

The DEFINITY Wireless Business System is fully integrated with the DEFINITY ECS, and offers users full access to the DEFINITY ECS features. The system has the following maximum capacities:

- 260 wireless telephones

- 60 base stations
- 7,000 to 40,000 calls per busy hour (depending on DEFINITY ECS configuration)
- 4 million square foot (1.2 million square meter) coverage area

Forum Personal Communications Manager

Forum's System Manager provides superior system administration capabilities. The Forum Personal Communications Manager can accommodate even the largest businesses. It has the following maximum capacities:

- 500 wireless telephones
- 126 base stations
- 6 PRI interfaces
- 1 Sun workstation
- 4 million square foot (1.2 million square meter) coverage area

DEFINITY System Management

TERRANOVA ECS Administration

TERRANOVA ECS Administration is a software package for your personal computer that allows you to use the computer as an administration terminal. Advanced capabilities allow you to retrieve configuration and traffic information and generate reports.The software includes the following modules:

- ECS Communication emulates several common terminal types, allowing you to access multiple systems from a single personal computer.
- ECS Reports Generator provides graphic displays of system configurations 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 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 gathers usage information and provides tools for conducting what-if and grade-of service analysis for traffic performance across the system.
- ECS Auto Transfer 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.

G3-MA

A PC-based tool for station provisioning and for ongoing administration of switches and adjuncts. The G3-MA software is available in both an MS-Windows version and a UNIX version.

DEFINITY Network Management

Graphically monitors DEFINITY switch status, converts the data's format, and transmits the data to management programs. The system administrators use the data to resolve problems as they occur.

DEFINITY Network Administration

Enables multiple-switch administrators to remotely administer the same switch at the same time.

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.

You can generate reports that identify:

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

INTUITY Call Accounting System

You can use the INTUITY Call Accounting System to optimize DEFINITY ECS system resources, detect toll fraud, and allocate costs. More creative applications of the system's reporting capabilities include:

- Measuring response of advertising campaigns by assigning an account number for the media (radio, television, etc.) that prompted incoming calls
- Increasing productivity by tracking the costs of telemarketing and customer service calls
- Detecting and finding the cause of abandoned calls

The system can handle up to 500 extensions.

References

A

This section contains a list of user documents for the DEFINITY Enterprise Communications Server (ECS) Release 6.

To order these or other DEFINITY documents, contact the Lucent Technologies Publications Center at the address and phone number on the back of the title page of this document. A complete catalog of Business Communications Systems (BCS) documents, including previous issues of the documents listed here, is available on the World Wide Web. Ask your account team for the web address.

Basic DEFINITY ECS Documents

These documents are issued for all new and upgrade DEFINITY ECS Release 6 systems.

CD-ROM Documentation Library

DEFINITY ECS Release 6 — Documentation Library, Issue 2, **555-230-833**

Provides the entire DEFINITY library text files and the software to browse them.

Administration

***DEFINITY ECS Release 6 — Overview, Issue 6*, 555-230-024**

Provides a detailed overview of the ECS including descriptions of many of the major features, applications, hardware, system capabilities, and the support provided with the system. This document is available in the following languages: English, German (DE), Dutch (NL), Brazilian Portuguese (PTB), European French (FR), Latin Spanish (SPL), Italian (IT), Russian (RU), and Japanese (JA). To order, append the language suffix to the document number; for example, 555-230-894DE for German. No suffix is needed for the English version.

***DEFINITY ECS Release 6.3 — Change Description, Issue 1,* 555-230-476**

Gives a high-level overview of what is new in DEFNITY ECS Release 6. Describes the hardware and software enhancements and lists the problem corrections for this release.

***DEFINITY ECS Release 6 — System Description Pocket Reference, Issue 3,* 555-230-211**

Provides hardware descriptions, system parameters, listing of hardware required to use features, system configurations, and environmental requirements. This compact reference combines and replaces Release 6 *System Description and Specifications* and Release 6 *Pocket Reference*.

***DEFINITY ECS Release 6 — Administration and Feature Description, Issue 4*, 555-230-522**

Provides descriptions of system features. Also provides step-by-step procedures for preparing the screens that are required to implement the features, functions, and services of the system. Includes the applications and benefits, feature interactions, administration requirements, hardware requirements, and procedures for voice terminal, data module, and trunk group administration.

DEFINITY System's Little Instruction Book, Issue 3, **555-230-727**

Provides step-by-step procedures for performing basic switch administration tasks. Includes managing phones, managing features, generating reports, enhancing system security, and troubleshooting.

DEFINITY ECS Release 5 — System Monitoring and Reporting, Issue 4, **555-230-511**

Provides detailed descriptions of the measurement, status, security, and recent change history reports available in the system and is intended for administrators who validate traffic reports and evaluate system performance. Includes corrective actions for potential problems. Issue 2 of this document was titled *Traffic Reports*. The Release 5 version of this document applies to Release 6 as well.

Installation and Maintenance

DEFINITY ECS Release 5 — Installation and Test for Single-Carrier Cabinets, Issue 3, **555-230-894**

Provides procedures and information for hardware installation and initial testing of single-carrier cabinets.The Release 5 version of this document applies to Release 6 as well.

This document is available in the following languages: English, German (DE), Dutch (NL), Brazilian Portuguese (PTB), European French (FR), Castillian Spanish (SP), Italian (IT), Russian (RU), and Japanese (JA). To order, append the language suffix to the document number; for example, 555-230-894DE for German. No suffix is needed for the English version.

DEFINITY ECS Release 5 — Installation and Upgrades for CSCC, Issue 1, **555-230-124**

Provides procedures and information for hardware installation, upgrades, and initial testing of compact single-carrier cabinets. The Release 5 version of this document applies to Release 6 as well.

DEFINITY ECS Release 6 — Installation and Test for Multi-Carrier Cabinets, Issue 4, **555-230-112**

Provides procedures and information for hardware installation and initial testing of multi-carrier cabinets.

DEFINITY ECS Release 6 — Installation and Test for Compact Modular Cabinets, Issue 3, **555-230-128**

Provides procedures and information for hardware installation and initial testing of compact modular cabinets.

DEFINITY ECS Release 6 — Installation for Adjuncts and Peripherals, Issue 4, **555-230-125**

Provides procedures and information for hardware installation and initial testing of ECS adjunct and peripheral systems and equipment.

DEFINITY ECS Release 6 — Upgrades and Additions for R6r, Issue 4, **555-230-121**

Provides procedures for an installation technician to convert an existing Generic 3 Version 4 DEFINITY Communications System to DEFINITY ECS and from DEFINITY ECS Release 5 to DEFINITY ECS Release 6.

Included are upgrade considerations, lists of required hardware, and step-by-step upgrade procedures. Also included are procedures to add control carriers, switch node carriers, port carriers, circuit packs, auxiliary cabinets, and other equipment.

DEFINITY ECS Release 6 — Upgrades and Additions for R6vs/si, Issue 4**, 555-230-120**

Provides procedures for an installation technician to convert an existing DEFINITY Communications System Generic 3 Version 4 to DEFINITY ECS and from DEFINITY ECS Release 5 to DEFINITY ECS Release 6.

Included are upgrade considerations, lists of required hardware, and step-by-step upgrade procedures. Also included are procedures to add

control carriers, switch node carriers, port carriers, circuit packs, auxiliary cabinets, and other equipment.

***DEFINITY ECS* Release 6 — *Maintenance for R6r, Issue 3*, 555-230-126**

Provides detailed descriptions of the procedures for monitoring, testing, troubleshooting, and maintaining the R6r ECS. 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 ECS Release 6 — Maintenance for R6vs/si, Issue 3*, 555-204-127**

Provides detailed descriptions of the procedures for monitoring, testing, troubleshooting, and maintaining the R6vs/si ECS. 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 ECS Release 6 — Maintenance for R6csi (Compact Modular Cabinets), Issue 3*, 555-204-129**

Provides detailed descriptions of the procedures for monitoring, testing, troubleshooting, and maintaining the R6csi ECS. Included are maintenance commands, step-by-step trouble-clearing procedures, the procedures for using all tests, and explanations of the system's error codes.

***BCS Products Security Handbook, Issue 6*, 555-025-600**

Provides information about the risks of telecommunications fraud and measures for addressing those risks and preventing unauthorized use of BCS products. This document is intended for telecommunications managers, console operators, and security organizations within companies.

***DEFINITY ECS* Release 6— *Terminals and Adjuncts Reference, Issue 9*, 555-015-201**

Provides descriptions of the peripheral equipment that can be used with System 75, System 85, DEFINITY Communications System, and DEFINITY ECS. This document is intended for customers and Lucent Technologies account teams for selecting the correct peripherals to accompany an ECS. The Release 5 version of this document applies to Release 6 as well.

Call Center Documents

These documents are issued for DEFINITY ECS Call Center applications.

DEFINITY

***DEFINITY ECS Release 6 — Call Vectoring/EAS Guide, Issue 2*, 585-230-521**

Provides information on how to write, use, and troubleshoot vectors, which are command sequences that process telephone calls in an Automatic Call Distribution (ACD) environment. This document applies to Release 6 as well as earlier DEFINITY systems.

It is provided in two parts: tutorial and reference. The tutorial provides step-by-step procedures for writing and implementing basic vectors. The reference includes detailed descriptions of the call vectoring features, vector management, vector administration, adjunct routing, troubleshooting, and interactions with management information systems (including the Call Management System).

***DEFINITY ECS Release 6 — Basic Call Management System (BCMS) Operations, Issue 2*, 555-230-706**

Provides detailed instructions on how to generate reports and manage the system. It is intended for telecommunications managers who wish to use BCMS (Basic Call Management System) reports and for system managers responsible for maintaining the system. This documentation applies to Release 6 as well as earlier DEFINITY systems.

CentreVu CMS

***CentreVu Call Management System Release 3 Version 6 — Administration, Issue 1,* 585-215-850**

***CentreVu Call Management System Release 3 Version 6 — Reports, Issue 1,* 585-215-851**

CentreVu Call Management System Release 3 Version 5 — Custom Reports, Issue 1, **585-215-822**

CentreVu Call Management System Release 3 Version 6 — Upgrades and Migrations, Issue 1, **585-215-856**

CentreVu Call Management System Release 3 Version 6 — External Call History Interface, Issue 1, **585-215-854**

CentreVu Call Management System Release 3 Version 5 — Forecast, Issue 1, **585-215-825**

Application-Specific Documents

These documents support specific DEFINITY applications.

DEFINITY ECS Generic 2 to Release 5 — Transition Reference, Issue 1, **555-230-523**

Provides information on the differences in features and administration between the old and new systems when upgrading from a Generic 2 system to DEFINITY ECS Release 5.

ASAI

DEFINITY ECS Release 6 — CallVisor ASAI Planning Guide, Issue 4, **555-230-222**

Provides procedures and directions for the account team and customer personnel for effectively planning and implementing the CallVisor Adjunct/Switch Application Interface (ASAI) PBX-Host environment. The CallVisor ASAI is a communications interface that allows adjunct processors to access switch features and to control switch calls. It is implemented using an Integrated Services Digital Network (ISDN) Basic Rate Interface (BRI). Hardware and software requirements are included.

***DEFINITY ECS Release 6 — CallVisor ASAI Protocol Reference, Issue 7*, 555-230-221**

Provides detailed layer 3 protocol information regarding the CallVisor Adjunct/Switch Application Interface (ASAI) for the systems and is intended for the library or driver programmer of an adjunct processor to create the library of commands used by the applications programmers. Describes the ISDN message, facility information elements, and information elements.

***DEFINITY ECS Release 6 — CallVisor ASAI Technical Reference, Issue 7,* 555-230-220**

Provides detailed information regarding the CallVisor Adjunct/Switch Application Interface (ASAI) for the systems and is intended for the application designer responsible for building and/or programming custom applications and features.

***DEFINITY ECS Release 6 — CallVisor ASAI DEFINITY LAN Gateway over MAP-D Installation, Administration, and Maintenance of, Issue 1*, 555-230-114**

Provides procedures for installation, administration, and maintenance of the CallVisor Adjunct/Switch Application Interface (ASAI) Ethernet application over the DEFINITY LAN Gateway and is intended for system administrators, telecommunications managers, Management Information System (MIS) managers, LAN managers, and Lucent personnel. The ASAI-Ethernet application provides ASAI functionality using 10Base-T Ethernet rather than BRI as a transport media.

***DEFINITY ECS Release 6 — CallVisor ASAI PC LAN over MAP-D Installation, Administration, and Maintenance of, Issue 1*, 555-230-113**

Provides procedures for installation, administration, and maintenance of the CallVisor Adjunct/Switch Application Interface (ASAI) Ethernet application over the PC LAN and is intended for system administrators, telecommunications managers, Management Information System (MIS) managers, LAN managers, and Lucent personnel. The ASAI-Ethernet application provides ASAI functionality using 10Base-T Ethernet rather than BRI as a transport media.

***DEFINITY ECS Release 6 — Call Visor ASAI Overview, Issue 2,* 555-230-225**

Provides a general description of Call Visor ASAI.

This document is available in the following languages: English, German (DE), Dutch (NL), Brazilian Portuguese (PTB), European French (FR), Colombian Spanish (SPL), and Japanese (JA). To order, append the language suffix to the document number; for example, 555-230-894DE for German. No suffix is needed for the English version.

***DEFINITY ECS Release 6* — CallVisor PC ASAI Installation and Reference, Issue 3, 555-230-227**

Provides procedural and reference information for installers, Tier 3 support personnel, and application designers.

ACD

***DEFINITY ECS Release 6 — Automatic Call Distribution (ACD) Agent Instructions, Issue 5*, 555-230-722**

Provides information for use by agents after they have completed ACD training. Includes descriptions of ACD features and the procedures for using them.

***DEFINITY ECS Release 6 — Automatic Call Distribution (ACD) Supervisor Instructions, Issue 4*, 555-230-724**

Provides information for use by supervisors after they have completed ACD training. Includes descriptions of ACD features and the procedures for using them.

Call Detail Recording

***Call Detail Acquisition & Processing Reference*, Issue 2, 555-006-202**

Provides a general technical description of the ECS call detail recording feature and of the products that collect, store, poll, and process call records.

Console Operations

***DEFINITY ECS Release 6 Console Operations, Issue 3*, 555-230-700**

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 ECS Release 6 — Console Operations Quick Reference, Issue 3*, 555-230-890**

Provides operating instructions for the attendant console. Included are descriptions of the console control keys and functions, call handling, basic system-troubleshooting information, and routine maintenance procedures.

This document is available in the following languages: English, German (DE), Dutch (NL), Brazilian Portuguese (PTB), European French (FR), Colombian Spanish (SPL), and Japanese (JA). To order, append the language suffix to the document number; for example, 555-230-894DE for German. No suffix is needed for the English version.

Hospitality

***An Introduction to DEFINITY Communications System Generic 3 Hospitality Services, Issue 1*, 555-230-021**

Provides an overview of the features available for use by the lodging and health industries to improve their property management and to provide assistance to their employees and clients. Included are brief definitions of many of the system features, descriptions of the hardware, planning considerations, and list of the system capabilities. This documentation also applies to Release 6.

***DEFINITY ECS Release 6 — Hospitality Operations, Issue 4*, 555-230-723**

Provides step-by-step procedures for using the features available for the lodging and health industries to improve their property management and to provide assistance to their employees and clients. Includes detailed descriptions of reports.

Telephone

Guide Builder™ Software for DEFINITY ECS Telephones, Issue 4, **555-230-755**

Provides capability to produce laser-printed documentation for specific telephones. The software is supported by a comprehensive user's guide and online help. This product requires a 386 PC, minimum of 6MB disk space, minimum of 4MB RAM, a printer supported by Microsoft GDI printer drive, and Microsoft Windows 3.1 or higher. A mouse is recommended. This document applies to Release 6 as well as earlier DEFINITY systems.

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