DEFINITY® Extender
1100 Switch Module

System Administrator's Guide

555-025-114
Comcode 407974831
Issue 2.0
October 1999

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 the Lucent Technologies National Customer Care Center at 1 800 643-2353.

Federal Communications Commission 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 instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. For further FCC information, see "Customer Support Information" below.

Industry Canada (IC) 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 Numérique 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 ministère le ministère des Industrie Canada.

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Write: Lucent Technologies BCS Publications Center
2855 N. Franklin Road
Indianapolis, IN 46219

Order: Document No. 555-025-114
Comcode 407974831
Issue 2.0 October 1999

For more information about Lucent Technologies documents, refer to the section entitled "Related Documents" in "About This Book"

Support Telephone Number

In the continental US, Lucent Technologies provides a toll-free customer helpline 24 hours a day. Call the Lucent Technologies Helpline at 1 800 242-2121 or your Lucent Technologies authorized dealer if you need assistance when installing programming, or using your system. Outside the continental US, contact your local Lucent Technologies representative.

Warranty

Lucent Technologies provides a limited warranty on this product. Refer to "Limited Warranty" in "Customer Support Information."

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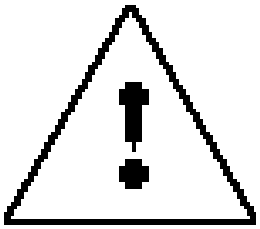

The exclamation point in an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

IMPORTANT SAFETY INSTRUCTIONS

To reduce the risk of fire, electrical shock, and injury to persons when installing telephone equipment, always follow basic safety precautions including:

- Read and understand all instructions.
- Follow all warnings and instructions marked on or packed with the product.
- Never install this unit or the telephone wiring for it during a lightning storm.
- Never install a telephone jack in a wet location unless the jack is specifically designed for wet locations.
- Never touch uninsulated telephone wires or terminals unless the telephone wiring has been disconnected at the network interface.
- Use caution when installing or modifying telephone lines.
- Use only Lucent Technologies-manufactured DEFINITY® Enterprise Communications Server (ECS) circuit packs, carrier assemblies, and power units in the DEFINITY® ECS control unit.

- Use only Lucent Technologies-recommended/approved DEFINITY ECS accessories.
- Do not install this product near water, for example, in a wet basement location.
- Do not overload wall outlets, as this can result in the risk of fire or electrical shock.
- Do not attach the power supply cord to building surfaces. Do not allow anything to rest on the power cord. Do not locate this product where the cord will be abused by persons walking on it.
- Unplug the product from the wall outlet before cleaning. Use a damp cloth for cleaning. Do not use cleaners or aerosol cleaners.
- Do not operate the system if chemical gas leakage is suspected in the area. Use telephones located in some other safe area to report the trouble.

WARNING:

DO NOT open the Office Module. There are no user serviceable parts inside the unit. Only an authorized technician should open the unit for required maintenance or upgrading purposes.

SAVE THESE INSTRUCTIONS

Customer Support Information

Support Telephone Number

In the USA only: If you need assistance when installing, programming, or using your system, call Lucent Technologies or your Lucent authorized representative. Customers who are installing the system themselves should call 800/225-7585. To report problems with the unit call 800/242-2121.

Outside the USA, if you need assistance when installing, programming, or using your system, contact your Lucent Technologies authorized representative.

Security of Your System: Preventing Toll Fraud

As a customer of new telephone equipment, you should be aware that there is an increasing problem of telephone toll fraud. Telephone toll fraud can occur in many forms, despite the numerous efforts of telephone companies and telephone equipment manufacturers to control it. Some individuals use electronic devices to prevent or falsify records of these calls. Others charge calls to someone else's number by illegally using lost or stolen calling cards, billing innocent parties, clipping on to someone else's line, or breaking into someone else's telephone equipment physically or electronically. In certain instances, unauthorized individuals make connections to the telephone network through the use of remote access features.

Common carriers are required by law to collect their tariffed charges. While these charges are fraudulent charges made by persons with criminal intent, applicable tariffs state that the customer of record is responsible for payment of all long-distance or other network charges. Lucent Technologies cannot be responsible for such charges and will not make any allowance or give any credit for charges that result from unauthorized access.

To minimize the risk of unauthorized access to your DEFINITY® ECS:

- When possible, restrict the off-network capability of off-premises callers, using calling restrictions, Facility Restriction Levels, and Disallowed List capabilities.
- When possible, block out-of-hours calling.
- Frequently monitor system call detail reports for quicker detection of any unauthorized or abnormal calling patterns.
- Limit Outcalling to persons on a need-to-have basis.

The DEFINITY® Extender system, through proper administration, can help you reduce the risk of unauthorized persons gaining access to the network. However, telephone numbers and authorization codes can be compromised when overheard in a public location, lost through theft of a wallet or purse containing access information, or when treated carelessly (writing codes on a piece of paper and improperly discarding them).

Additionally, hackers may use a computer to dial an access code and then publish the information to other hackers. Substantial charges can accumulate quickly. It is your responsibility to take appropriate steps to implement the features properly, to evaluate and administer the various restriction levels, and to protect and carefully distribute access codes.

Under applicable tariffs, you will be responsible for payment of toll charges. Lucent Technologies cannot be responsible for such charges and will not make any allowance or give any credit resulting from unauthorized access.

Lucent Technologies Fraud Intervention

If you *suspect you are being victimized* by toll fraud and you need technical support or assistance contact your Lucent Technologies authorized representative, or in the USA, call Lucent Technologies at **1 800 642-2353**.

Limited Warranty

Lucent Technologies Inc. warrants this equipment to be free of defects in materials and workmanship for a period of one year from date of shipment. All defects within this time will be repaired without charge upon notification of Lucent Technologies or its authorized reseller.

This warranty is null and void if the manufacturer determines that any modifications have been made to the unit or the unit has been subjected to physical or electrical stress.

This warranty covers parts and labor only and does not include shipping costs, travel expenses, or travel time.

Installation of the equipment is the sole responsibility of the purchaser. The manufacturer, its agents, or its distributors accept no responsibility for malfunction or damage caused by improper treatment or connection of the unit.

The manufacturer, its agents, or its distributors are not liable for any losses incurred through use or malfunction of the equipment or any losses or damages incurred by the use of the equipment in any means whatsoever.

This warranty is limited to the repair of the equipment to its normal functioning capability.

This warranty is complete as stated and all other warranties, expressed or implied, are invalid.

The Analog Definity Extender should be installed only by qualified personnel. No user-serviceable parts are contained within the units. Installation or programming should not begin prior to review of all sections of this manual.

FCC Notification and Repair Information

This equipment is registered with the FCC in accordance with Part 68 of its rules. In compliance with those rules, you are advised of the following:

- **Means of Connection.** Connection of this equipment to the telephone network shall be through a standard network interface jack, USOC RJ11C. These USOCs must be ordered from your telephone company.

- **Party Lines and Coin Telephones.** This equipment can not be used with party lines or coin telephone lines.

- **Notification to the Telephone Companies.** Before connecting this equipment, you or your equipment supplier must notify your local telephone company's business office of the following:

  — The telephone number(s) you will be using with this equipment.

  — The appropriate registration number and ringer equivalence number (REN). The REN for the Analog Definity Extender is 2.

  — For each jack, the sequence in which lines are to be connected, the line types, the Facility Interface Code (FIC), and the Ringer Equivalence Number (REN) by position when applicable.

- **Ringer Equivalence Number (REN).** The REN is used to determine the number of devices that can be connected to the telephone line. Excessive RENs on the line can result in the devices not ringing in response to an incoming call. In most, but not all, areas the sum of the RENs should not exceed five (5.0). The Analog Definity Extender REN is 2.

- **Disconnection.** You must also notify your local telephone company if and when this equipment is permanently disconnected from the line(s).

Installation and Operational Procedures

This manual contains information about installation and operational procedures.

- **Repair Instructions.** If you experience trouble because your equipment is malfunctioning, the FCC requires that the equipment not be used and that it be disconnected from the network until the problem has been corrected. Repairs to this equipment can be made only by the manufacturers, their authorized agents, or others who may be authorized by the FCC. In the event repairs are needed on this equipment, contact your authorized Lucent Technologies dealer or, **in the USA only**, contact Lucent Technologies at 1 800 242-2121.

- **Rights of the Local Telephone Company.** If this equipment causes harm to the telephone network, the local telephone company may discontinue your service temporarily. If possible, they will notify you in advance. But if advance notice is not practical, you will be notified as soon as possible. You will also be informed of your right to file a complaint with the FCC.

- **Changes at Local Telephone Company.** Your local telephone company may make changes in its facilities, equipment, operations, or procedures that affect the proper functioning of this equipment. If they do, you will be notified in advance to give you an opportunity to maintain uninterrupted telephone service.

- **New Network Area and Exchange Codes.** The DEFINITY ECS software does not restrict access to any new area codes or exchange codes established by a local telephone company. If the user has established toll restrictions on the system that could restrict access, then the user should check the lists of allowed and disallowed dial codes and modify them as needed.

- **Equal Access Codes.** This equipment is capable of providing users access to interstate providers of operator services through the use of access codes. Modifications of this equipment by call aggregators to block access dialing codes is a violation of the Telephone Operator Consumers Act of 1990.

Federal Communications Commission (FCC) Electromagnetic Interference Information

The Analog Definity Extender 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 instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

About This Book

Intended Audience

This book is intended to help in the installation, system administration, and maintenance of the Analog DEFINITY Extender 1100 Office Module. It is intended for use as a reference by anyone needing such information, including system managers, support personnel, sales representatives, account executives and customers. It is also intended for technicians who are responsible for system installation, maintenance, and troubleshooting.

Terms and Conventions

The DEFINITY Extender 1101 unit is henceforth referred to as the "Remote Module**{** XE "Remote Module" **}**."

The DEFINITY Extender 1100 unit is henceforth referred to as the "Office Module**{** XE "Office Module" **}**."

Throughout this document, toll fraud security hazards are indicated by an exclamation point inside a triangle and the words Security Alert.

Security Alert:

Security Alert indicates the presence of toll fraud security hazard. Toll fraud is the unauthorized use of your telecommunications system by an unauthorized party (e.g., persons other than your company's employees, agents, subcontractors, or persons working on your company's behalf). Be sure to read "Your Responsibility for Your System's Security" on the inside front cover of this book and "Security of Your System: Preventing Toll Fraud" in About This Book.

Typographical Conventions

Certain type fonts and styles act as visual cues to help you rapidly understand the information presented:

Example	Purpose
Do *not* recycle old passwords.	Italics indicate emphasis.
If you do not want to disconnect, *go to Step 3.*	Italics also tell you instructions about what to do next in a procedure.
2:OK 3:Next	Italics indicate text that appears on the telephone display.
Press the **DROP** button four times.	The names of fixed-feature, factory-imprinted buttons on a telephone appear in bold.
At the *Go Online* screen, press **3** until the following screen appears.	A number in bold print is used to designate a key on your telephone.

How to Use This Book

This book is organized into chapters that give information on procedures necessary for the proper installation and administration of your Analog Office Module.

If you have problems with your Office Module, contact your system administrator. If the problem can not be solved, the system administrator should contact Lucent Technologies or your local Authorized Dealer. Within the continental US, assistance is available 24 hours a day, by calling 1 800 242-2121. Fees may apply during hours not covered by warranty or maintenance agreements.

Product Safety Labels

Throughout this document, hazardous situations are indicated by an exclamation point inside a triangle and the word *Caution* or *Warning*.

WARNING:

Warning indicates the presence of a hazard that could cause death or severe personal injury if the hazard is not avoided.

CAUTION:

Caution indicates the presence of a hazard that could cause minor personal injury or property damage if the hazard is not avoided.

Related Documents

You may need copies of Definity ECS documentation, especially information on voice terminal installation and use. Documentation is available at URL https://www.lucent.com or can be ordered from the Lucent Technologies Publications Center.

Call: Lucent Technologies Publications Center

Voice 1 800 457-1235
Fax 1 800 457-1764

International Voice 765 361-5353
International Fax 765 361-5355

Write: Lucent Technologies Publications Center
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DEFINITY Enterprise Communications Server (ECS)

Title: **DEFINITY® Extender 1100 System Administrator's Guide**

Document No.: **555-025-114** Issue: **2** Date: **December 1999**

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Clarity					
Completeness					
Accuracy					
Organization					
Appearance					
Examples					
Illustrations					
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2. Please check ways you feel we could improve this book:

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- ❑ Add more step-by-step procedures
- ❑ Improve the table of contents
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Introduction

1

An overview of the functions and specifications of the Analog DEFINITY® Extender-Models 1100/1101.

The Analog DEFINITY® Extender enables DEFINITY® Enterprise Communications Server (ECS) telephone users, located any distance off-premise, to be a fully functional part of the DEFINITY ECS telephone system. The Analog Definity Extender is transparent to the user and retains access to the features and functions of the DEFINITY ECS. In addition, a data port is incorporated, allowing the user to connect off-premise RS-232D equipment to data equipment at the DEFINITY ECS location.

System Operation and Configuration

The Analog Definity Extender is designed for use with a DEFINITY ECS Version 3 or later. The Analog Definity Extender consists of two modules. Module 1100, identified as the Office Module, connects to your DEFINITY ECS. Module 1101, identified as the Remote Module, connects to your DEFINITY ECS digital telephone at your off-premise location. Figure 1-1 shows the Analog Definity Extender configuration.

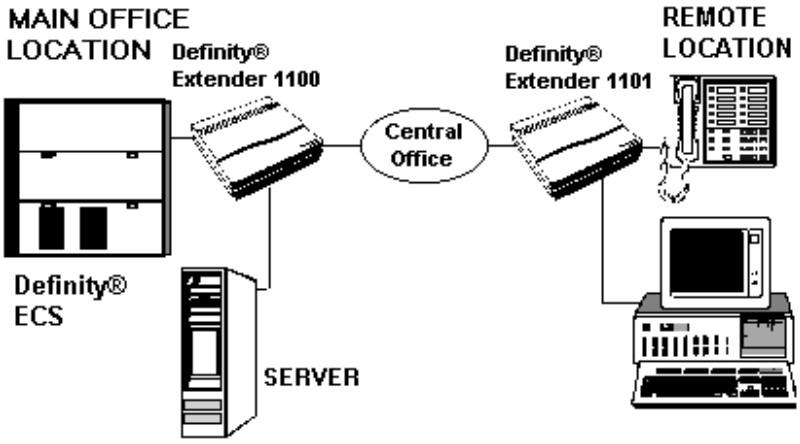

Figure 1-1. System Configuration

The modules communicate via a single two-wire voice-grade circuit that can extend your DEFINITY ECS digital telephone to virtually unlimited distances. See “Specifications” later in this chapter for detailed circuit specifications.

Each module features a modem with V.34 modulation for the transmission of all signals between the two modules. With the use of Lucent Technologies' Analog Definity Extender, the features and capabilities of your on-premise telephones are extended to the off-premise location.

Security Alert:

Using the Remote Module gains access to the features of the DEFINITY ECS, including access to WATS lines, FX lines, etc., which are subject to toll fraud. Guard passwords carefully!

Equipment List

The Office Module comes with most of the necessary equipment. However, some additional items are required.

Office Module

Your Office Module package should include:

- One Office Module (identified on the top of the unit)
- One AC adapter
- 7-ft. line cord
- 7-ft. D8W cord to connect to the DEFINITY ECS
- *DEFINITY® Extender 1100 System Administrator's Guide*

NOTE:
DEFINITY ECS telephones are not supplied with either the Office Module or the Remote Module and must be ordered separately. Contact your Lucent Technologies representative for information. Remote Modules are also ordered and shipped separately.

Customer-Supplied Equipment

You must supply the following for installation:

- DEFINITY ECS two-wire, 24-port TN-2224 circuit pack or the older TN2181.
- Any additional DEFINITY ECS circuit packs needed.
- An adapter to convert to 120 VAC if you are connecting the Office Module to a 240 VAC outlet.
- Power and central office line suppressers. For more information see URL http://www.lucentdirect.com/direct/owa/search_frame_h or contact your Lucent Technologies representative.

NOTE:
Save your packing materials. Even though the Office Module is a reliable product, it may be necessary to return it for maintenance. When returning the module, use the original package.

Compatibility

The Analog Definity Extender is compatible with the following commercial two-wire DEFINITY ECS display telephones: **{** XE "telephones" \t "*See* compatible display telephones" **}{** XE " compatible display telephones" **}**

- 8410DR
- 8434D
- 8410D
- 6408D+
- 6424D+
- 6416D+
- 8434DX
- 9031DCP
- CALLMASTER® III
- CALLMASTER® IV
- CALLMASTER® V
- CALLMASTER® VI

NOTES:

1. The Class B 8410DR is identical to the 8410D but is certified as a FCC Class B product for residential use. The CALLMASTER® VI and the CALLMASTER® IV are also FCC Class B.

2. The 6400 series telephones and the CALLMASTER® VI require DEFINITY Version 6 or later.

3. The Analog Definity Extender is NOT compatible with older Definity Extender 845/846 modules.

4. The 9031DCP is not recommended for administrative purposes.

Options

You can order a wall-mounted metal bracket with a slide-in style sleeve for use with the Office Module. Contact your Lucent Technologies representative to order Price Element Code (PEC) 2174-MTG.

Specifications

The Analog Definity Extender has been tested under transmission line conditions specified in TSB-37A. The specification calls for checking modem operation over the equivalent of 95% of the identified analog line types in North America. This means that the Analog Definity Extender should operate properly over nearly all telephone line conditions. However, the actual connect rate will vary based on the quality of the telephone line.

A 21.6 KBPS connect rate is more than adequate to sustain proper audio quality and can be sustained on most line conditions. Any connect rate greater than 21.6 KBPS improves data performance through the RS-232D port of the Analog Definity Extender, but has no impact on voice quality. Connecting at rates greater than 21.6 KBPS over a lesser quality line will cause a high bit error rate which could result in breakups in the audio. If you are not using the Analog Definity Extender for data, there is no reason to connect at a rate higher than 21.6 KBPS.

If you are still having audio breakup problems when you connect at 21.6 KBPS, you can lower the connection as low as 16.8 KBPS with little or no impact on audio quality. If you are still getting a high bit error rate even after lowering the connect speed to 16.8 KBPS, you should contact the provider of your telephone line for support.

The Analog Definity Extender uses an internal V.34 modem. Network configurations that support V.34 modems should work well. Your network manager will need to verify your corporate network is compatible with DEFINITY Extender.

LUCENT TECHNOLOGIES IS NOT RESPONSIBLE FOR MAKING THESE CONFIGURATIONS WORK.

Table 1-1 shows the specifications of the Analog Definity Extender.

NOTE:
Specifications are subject to change without notice as technological or manufacturing changes warrant.

Table 1-1. Office Module Specifications

Specification	Description
Size	8” x 8” x 1 ½” (205 mm x 205 mm x 40 mm)
Weight	1.5 pounds (0.68 kilograms)
Power Requirements	12 vdc supplied by 120 VAC adapters. 800 mA maximum
Approvals	UL CSA FCC Class A
Communication	
Data Type	V.34 modulation
Data Impedance	600 Ohms
Data Tx Level	–15 dBm (+1 dBm/–3 dBm)
Data Rx Sensitivity	–40 to 0 dBm

User Data Port	
Data Type	RS-232D
Data Rate Setting	115.2 kbps, 57.6 kbps, 38.4 kbps, 19.2 kbps, 9.6 kbps, 4.8 kbps, 2.4 kbps
Parity Setting	None, Even, Odd
Data Bits Setting	7, 8
Stop Bits Setting	1 or 2

Considerations

Keep the following in mind when you use the Analog Definity Extender:

- The Analog Definity Extender is to be used with a DEFINITY ECS Version 3 or later.

- No custom calling features, such as Call Waiting or Call Forwarding, should be ordered from your local telephone company for the line to which you connect the Office Module.

NOTE:
A Call Waiting tone causes an interruption in the call, and the Analog Definity Extender will begin the reconnect sequence.

- Sessions can be established only from the Remote Module.

- Only one Remote Module at a time can be “on-line” with the Office Module.

- Order a separate central office (CO) line for each Office Module and each Remote Module. Sharing lines or bridging the line on another station causes problems. For example, picking up an extension telephone causes the Analog Definity Extender call to drop.

- Be sure that the DEFINITY ECS port to which the Office Module is connected is programmed correctly for the telephone being used.

- Authorized connections require that a password 8 to 10 digits in length be entered from the Remote Module. You should always use the full 10 digits.

Security Alert:

Using the Remote Module gains access to the features of the DEFINITY ECS, including access to WATS lines, FX lines, etc., which are subject to toll fraud. Passwords should be as long as allowed. Passwords should be hard to guess and therefore should not contain:

- *all the same numbers (for example, 88888888)*
- *sequential characters (for example, 987654321)*
- *character strings associated with you or with the remote user or with your business. These include:*
  - *Names*
  - *Birthdays*
  - *Business name*
  - *Telephone number*
  - *Social security number*
- *Words and commonly used names*

Passwords should use as wide a variety of characters as possible. Passwords should be changed regularly, at least on a quarterly basis. Do not recycle old passwords.

Configuration

2

How to configure the Definity Extender Office Module

Programming the Office Module

The Office Module is programmed using a terminal emulation program, such as HyperTerminal available on all Windows PCs.

The following Office Module features can be programmed or viewed from the PC terminal using the *Enhanced Terminal Interface{* XE "Enhanced Terminal Interface" *}* (ETI):

- Passwords
- COM Port Settings
- Show Settings
- Restore EPROM Software
- Remote Unit Forced Upgrade

- Software Upgrade

The Enhanced Terminal Interface

The *Enhanced Terminal Interface**{*** XE "Enhanced Terminal Interface" ***}*** (ETI**{** XE "ETI" \t "*See* Enhanced Terminal Interface" **}**) provides you with a user-friendly interface with which to configure your Office Module through the serial port. The ETI menu is the default menu that appears after powering up your module.

You must set up a terminal emulation package, such as HyperTerminal, in order to gain access to the ETI. To set up HyperTerminal, click on **Start,** then **Programs,** then **Accessories,** then **HyperTerminal,** then **HyperTerminal** icon. Configure as follows: 9600 bps, no parity, 8 bits, 1 stop bit, and hardware flow control. Pull down the **File** menu, click on **Properties** and then on the **Settings** tab and then on the **Emulation** window. Set **Emulation** to **VT100** and click **OK.**

To access the ETI:

1. Plug in the Office Module RS-232D serial port to a PC running a terminal application (such as HyperTerminal).

   When the Office Module is powered-up, the module undergoes hardware tests demonstrated by a series of yellow, green and red blinks. After a 6 second period of very fast red blinks followed by one green blink, the LED blinks three green flashes, followed by another series of yellow and red blinks. The LED then blinks 3 sets of 8 yellow flashes.

2. Anytime during the first two sets of 8 yellow flashes, type the word "*MENU."*

   The following ETI menu is displayed:

   1) *Configure System*

   2) Exit

3. Press the **Enter** key, or **1**.

   The following menu is displayed on the screen*:*

   1) Passwords

   2) COM port settings: 38.4 kbps N, 8, 1

   3) Show Settings

   4) Additional Modem Initialization

   5) Restore EPROM Software

   6) Remote Unit Forced Upgrade

   7) Software Upgrade

   8) Exit

Setting Passwords

Before a Remote Module user can communicate with the Office Module, the system administrator must program a password for each remote user. By default, all passwords are disabled.

Up to 100 passwords can be programmed into the Office Module. This allows a number of different users to access the Office Module at different times. However, only one Remote Module user can be connected to an individual Office Module at any one time.

The first two digits of each password identify each one of the 100 passwords (00–99). When you assign each remote user a two-digit user number, this user number becomes the first two digits of the user's password.

The third digit of the password determines whether the user can change his or her password. If you want to prevent the user from changing the password, assign a 9 as the third digit of the password. If you want the user to be able to change the password, assign a digit from 0-8 as the third digit. Users with a password that contains a 9 as the third digit are instructed to contact the system administrator for assistance in changing the password. A user that does not have a 9 as the third digit of the password is permitted to change only his or her own password.

If the first two digits of the new password do not correspond to the user number, the new password is not accepted. An exception to the above is password "00," which is used by the system administrator.

NOTE:
If more than one Office Module is connected to the DEFINITY ECS in a hunt group configuration, you should disable the remote users' capability of changing passwords by setting the third digit at "9". The reason for this action is that if the user changes a password, the change is stored only in the Office Module to which the user is connected and not in all the Office Modules in the hunt group.

Security Alert:

All information about passwords should be considered proprietary and should not be given to Remote Module users.

Users can change passwords by entering the old password and then the new password. As the system administrator, you can disable any password, except password “00,” by changing the password to the two-digit code which represents the user whose password is to be disabled.

Security Alert:

A correct password permits the remote user access to the full DEFINITY ECS, including those areas, such as WATS lines, most liable to toll fraud. Passwords should be as long as allowed. Passwords should be hard to guess and therefore should not contain:

- *all the same numbers (for example, 88888888)*
- *sequential characters (for example, 987654321)*
- *character strings associated with you or with the remote user or with your business. These include:*
  - *Names*
  - *Birthdays*
  - *Business name*
  - *Telephone number*
  - *Social security number*
- *Words and commonly used names*

Passwords should be changed regularly, at least on a quarterly basis. Do not recycle old passwords.

Considerations

Consider the following when programming the Office Module:

- Up to 100 passwords can be programmed into each Office Module.
- Only one Remote Module at a time can be “on-line” with an individual Office Module.
- Passwords are retained in non-volatile memory and are not affected by power outages.
- All passwords must contain 8 to 10 digits.
- To prevent a user from changing a password, assign a 9 as the third digit of the password.
- Each password begins with two digits (00–99). The “00” password is reserved for the system administrator and can be used to change any of the remaining passwords.

Security Alert:

Change your system administrator password as soon as possible, and store the new password in a secure place.

Programming Passwords Procedure

Follow these steps to program passwords for the Remote Module users:

1. If you are already in the Analog Definity Extender programming menu, skip to Step 2. If you are not in the programming menu but the unit is powered, simply power down unit, and type "MENU" while the LED flashes yellow to access the programming menu from your PC.

   When you type "MENU," the Main Menu appears:

2. Select *Configure System* from the Main Menu.

   The Configure System Menu appears.

3. Select *Password* from the Configure System Menu, and press **Enter**.

   The screen prompts you to enter your administrator password.

4. Type your system administrator password (the default is 00000000) and press **Enter**.

   The Password Menu is displayed.

5. Do one of the following:

   To check a password:

   1. Select *Display Password* from the Password Menu, and press **Enter**.

   The system prompts you to enter the user's two-digit user number.

2. Type the user's two-digit user number, and press **Enter**.

   The user number and the password assigned are displayed.

   NOTE:
   You cannot display the Administrator Password (user 00). "Admin Password Display Denied" is displayed if user 00 is selected.

To change a password:

1. Select *Change Password* from the Password Menu, and press **Enter**.

The system prompts you to enter the new password.

2. Enter the new password (8 to 10 digits), beginning with the remote user's two-digit code, and press **Enter**.
3. Repeat for each password you change.

To disable a password:

1. Select *Change Password* from the Password Menu, and press **Enter**.

The system prompts you to enter the new password.

2. Enter the two-digit user number for the user whose password you want to disable, and press **Enter**. This action restricts the user's access to the system.

   NOTE:
   The system administrator password cannot be disabled. If you enter 00, "Admin Password must be at least 8 digits long" is displayed.

3. Repeat for each password you want to disable.

Configuring the COM RS-232D Port

The COM port is for serial data communications. *Configuring the COM RS-232D Port* describes how to program the RS-232D serial port. All COM port settings should be configured at one time.

Select *COM Port Settings* from the menu to access the following sub-menus.

- Data Rate
- Parity
- Data Bits
- Stop Bits

Setting the Data Rate

To set the Data Rate:

Highlight the Data Rate you want and press **Enter**. Data Rate options are: 2.4, 4.8, 9.6, 19.2, 38.4, 57.6, and 115.2 Kbps.

When you make your selection, the Parity Menu appears.

Setting Parity

To change Parity:

Highlight the Parity you want and press **Enter**. Parity options are None, Even, or Odd.

When you make your selection, the Data Bits Menu appears.

Setting Data Bit

To change the Data Bit setting:

Highlight the desired Data Bit and press **Enter**. Data Bit options are 8 or 7.

When you make your selection, the Stop Bits Menu appears.

Setting Stop Bits

To change Stop Bits:

- Highlight the Stop Bit format you want and press **Enter**. Stop Bit options are 1 or 2.
- You automatically return to the System Menu.

Show Settings

To display the current module settings:

1. Highlight Show Settings

2. Press **Enter**.

   All system settings are displayed.

3. Press any key to return to the System Menu.

Additional Modem Initialization

Select this menu item to enter additional AT command strings to initialize the modem. Your network administrator must provide this information.

Restore EPROM Software

Select this option if you have previously performed a software upgrade, but now wish to return to the software version originally shipped with the unit.

After selecting this option, the screen displays "*Load EPROM code into the FLASH? (Y/N)?*

This option erases the upgrade, loads the EPROM software back into FLASH memory, and runs that version.

Remote Unit Forced Upgrade

Once the Remote Module connects to the Office Module, the Office Module checks if both modules are running the latest version of the software. If the Remote Module is running an older software version,

this option enables you to force the user of the Remote Module to upgrade the software to the version running on the Office Module.

This feature will only work if the Remote Module is running software version 2 or later (V2.0X,X,X).

When a Remote Module connects to an Office Module with the forced upgrade flag set, the remote telephone will display the forced upgrade menu. The user can either upgrade now or connect to the PBX without upgrading. If the user decides not to upgrade, the menu will appear each time he or she goes online.

Configuring the Office COM RS-232D Port from the Remote Telephone

If the System Administrator has logged on to an Office Module from the Disconnect Menu, an additional menu option is displayed to allow configuration of the Office Module's COM port.

1. While online, press the **HOLD** button four times.

   Disconnect is displayed.

2. Press **3** until screen displays *Set Office COM port.*

3. Press **2** to change Office Module parameters. Selections available are: Data Rate, Data Bits, Parity, and Stop Bits.

NOTE:
Refer to the DEFINITY Extender 1101 System manual for more information on how to configure the Office Module's COM port while online with the Remote Module.

Installation

3

How to install the Analog Definity Extender

After you have programmed passwords for the Office Module, you can physically install it. Installing the Office Module involves choosing a proper location and connecting the appropriate cables to the Telco line and PHONE/SWITCH jacks, and the connecting power cord.

Location Requirements

To ensure successful operation of the Analog Definity Extender, place the Office Module within 500 feet (150 meters) of the DEFINITY ECS. The Office Module may be mounted in any position or may be wall-mounted by using the optional wall-mount bracket. Install the module's AC power adapter or power supply and cabling away from high-power/high-RF noise devices such as computers, fans, fluorescent ballasts, and power supplies.

Electrical Requirements

Use only the AC adapters provided with the Analog Definity Extender. The Extender has been designed to operate from 120 VAC, 60 Hz.

CAUTION:

Do not apply power to the Office Module until specifically instructed in the installation procedures.

NOTE:

Lucent Technologies strongly recommends that you supply both power and central office line surge protections for the PBX location and the remote location. For information on Lucent surge protectors see URL http://www.lucentdirect.com/direct/owa/search_frame_h.

Wiring Requirements

Use twisted-pair cable for all connections.

NOTE:
Before attaching your Analog Definity Extender to the DEFINITY ECS, do the following:

- Verify the station has been administered in the DEFINITY ECS system.

  Considerations:

  - Administer the station port as you would any other on-premise station.

  - If Direct Inward Dialing (DID) is to be used, the Office Module is connected to a DEFINITY ECS analog circuit pack.

- Connect an identical model telephone to the DEFINITY ECS port that will be used for connecting to the Office Module.

- Test that the telephone works as intended.

Connecting the Office Module

All connections to the Office Module are done via the back panel (see Figure 3-1). The back panel elements are:

- **Telco Line{** XE "Telco Line" **}:** This is the connection between the Office Module and the DEFINITY ECS analog circuit pack or the central office line for transmission of the signaling information. The circuit packs to which the Office Module can be connected are the 8-port TN742 and the 16-port TN746.

- **Phone/Switch{** XE "Phone/Switch" **}:** This is the connection between the DEFINITY ECS 2-wire, 24-port circuit pack (TN2224) or the 16-port, (TN2181) and the Office Module.

- **RS-232D{** XE "RS-232D" **}:** This connector provides for data communication between equipment at the off-premise site and the on-premise site.

- The DIP switch under **Option Switch** is used for system configuration.

- The connection for the AC adapter is marked **+12VDC**.

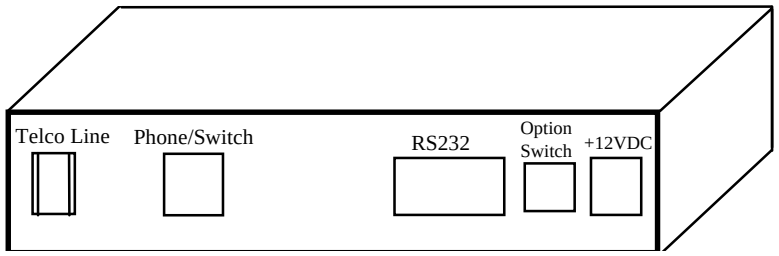

Figure 3-1. Office Module Back Panel

In addition to the back panel connections, a three-color light-emitting diode (LED) is visible through the top of each unit and provides information about the status of the equipment. See “LED Sequences” in Chapter 5 for more information.

Installation Procedure

Follow these steps to install the Office Module:

1. Ensure that the module has the proper DIP switch configuration (see Table 3-1).

Table 3-1. DIP Switch Configuration

Switch #	OFF	ON
1	μ-Law companding	A-Law companding
2	Normal operation	Reserved
3	Normal operation	Reserved
4	Normal operation	Test mode

NOTE:
The unit is shipped with all DIP switches set at *OFF*. This setting should work for all μ-law countries (United States is a μ-law country.) but may need to be changed in areas using A-law. Check with your system administrator before making changes.

CAUTION:
Do not plug the A/C adapter into the electrical outlet until instructed to do so in the following procedure.

CAUTION:

Connecting the Remote Module to the DEFINITY ECS can result in damage to the module. Prior to installation, check that you have the Office Module by looking at the name on the top of the unit.

2. Connect the wiring from the DEFINITY analog circuit pack or a dedicated central office line to the TELCO LINE jack of the Office Module.

3. Connect the Office Module PHONE/SWITCH jack to the 2-wire, DCP port pack on the DEFINITY ECS.

CAUTION:

Do not plug the line cord into the PHONE/SWITCH jack of the Office Module. Damage to circuits may result.

4. Connect the AC adapter, provided with your system, to the Office Module. Plug the adapter into a standard 120 VAC electrical outlet**.**

CAUTION:
Do not plug the A/C adapters into a 240 VAC outlet because you will damage the adapter and the module. You must first obtain an adapter to convert 240 VAC to 120 VAC.

Connections for Data Transmission

The RS-232 port on the Remote Module can be used for data communications with the RS-232 port on the Office Module. Your system administrator must provide you with information about the computer connections at the Office Module. At the Remote Module, you will need to connect your personal computer (PC) or data terminal to the RS-232 port on the Remote Module. A 9-pin straight through cable will work for many PCs. You will need an adapter if your equipment does not have a 9-pin connector. Figure 3-2 lists the pin-outs for the 9-pin female connector on the back of the Remote Module.

Female Connector on Module
DCD 1
DSR 6
CTS 8
DTR 4
RXO 2

Female Connector on Module
TXI 3
GND 5
RTS 7

Figure 3-2. RS-232D Cable Pin Connections

The data settings for the Office Module's COM port and the Remote Module's COM port must be the same. The factory settings of the Office Module's COM port are the following:

- Data rate – 38.4 kbps
- Data bits – 8
- Parity – None
- Stop bits - 1

NOTE: For more information on RS-232D, please refer to the Glossary.

Hardware Flow Control

The Switch and Remote Modules use the CTS line for flow control. If hardware flow control is not enabled on the PC, or if a cable without the CTS line connection is used, characters can be lost when the buffer is full.

NOTE:
The Analog Definity Extender uses the CTS lead for flow control. When the internal buffer is 1024 characters from full, the CTS lead is turned off. While CTS is off, up to an additional 1024 characters can be transmitted without any loss of data. If hardware flow control is not enabled or if a cable without the CTS lead is used, characters will be lost when this buffer overflows.

The Analog Definity Extender uses the DCD lead to indicate whether or not the modules have made a connection. When this lead is on, the modules have made connection.

Software Upgrading

4

How to upgrade the software of the DEFINITY Extender Office Module

The Office Module is field upgradeable by loading the latest version of software.

The two software upgrade methods are:

1. The Serial Port Upgrade**{** XE "Serial Port Upgrade" **}**, which requires obtaining a softcopy of the newest software.

2. The Online Upgrade**{** XE "Online Upgrade" **}**, which requires a Remote or Office Module with the latest software connecting with another Remote or Office Module with a lower revision software.

The latest software upgrade is stored internally in non-volatile FLASH memory.

Obtaining the Upgrade File

To download new software using the serial port of the system, you need a soft file that contains the latest software release. This file is in a special format called S-Record.**{** XE "S-Record upgrade file" **}**

The file name should end with the extension .hex. (e.g. 3pV102r1.hex).

1. Save this file locally on your computer and note its location.

2. This is the file you will use to upload (upgrade) your Office or Remote Module.

Upgrading by the Serial Port

This upgrade process applies to both the Office and Remote Modules and should be initiated when they are offline and powered-down.

1. Connect your PC to the COM port on the module to allow access to the configuration menu.

2. Using a terminal emulation package, such as HyperTerminal, configure as follows: 9600 bps, no parity, 8 bits, 1 stop bit, and hardware flow control. Pull down the **File** menu, click on **Properties** and then on the **Settings** tab and then on the **Emulation** window. Set **Emulation** to **VT100** and click **OK**.

3. Power-up the module. The module's LED will perform a series of yellow, green and red blinks.

4. During the first of three sets of 8 yellow flashes, type MENU (do not press RETURN).

The configuration Main Menu will appear on the terminal screen.

5. From the Main Menu select the *Configure System?* menu option.

6. From the System Menu select *Software Upgrade*

The command will initiate the upgrade process. The module will display the following messages:

Last chance to stop... will force restart after upgrade.
Do you want to continue?

Enter 'Y' to continue, any other key to abort.

7. Enter 'Y' to continue. The following message will be displayed:

Please wait while flash memory is being erased…

The erase process takes about 15 seconds. The module should then display:

Successfully erased

The PC screen should display the following message:

Please upload the upgrade file using ASCII transfer protocol.

Waiting for upload file...

8. You will have 60 seconds to click on **Transfer** and then on **Send Text File** and select the S-record file to upload to the module. The module will then display the following message:

Starting upload, have received and written up to line...

100

200

The line count continues in increments of 100 lines. The total file size ranges from 9000 to 14000 lines. The process can take 10 or more minutes. When completed successfully, the display will show the following message:

The file was captured and stored to flash with no errors.

Upgrading From Version 1.XX to Version 2.XX

Upgrading Version 1xx code to Version 200+ code will fail using the normal process described above. The upgrade can be accomplished using a “two – step” upgrade.

To upgrade version 1xx to version 200+:

1. Start a terminal session with the unit running the old software (i.e. type MENU during the power up led sequence of 8 yellow blinks).

2. From the Main Menu enter the Configure System menu.

3. Select Software Upgrade. Type Y to confirm the upgrade.

4. When prompted, use the ASCII protocol to upload the upgrader software UP200U1.hex

5. When the upgrade has successfully completed, press RETURN when prompted to restart the unit.

6. When the unit restarts, it will now be running the upgrader code and will automatically enter the terminal mode. From the *Main Menu* enter the *Configure System* menu.

7. Configure the COM PORT Settings to the fastest speed possible. Make sure hardware flow control is enabled in your terminal software.

8. Select *Re-initialize COM Port Now* to change the settings. Adjust your terminal software to the new settings.

9. Select *Software Upgrade*. Type Y to confirm the upgrade.

10. When prompted, use the ASCII protocol to upload the Version 200+ software.

When the upgrade has successfully completed, the unit will automatically restart.

The unit will now power up running the new software.

NOTE:
Version 200+ software can be downgraded to Version 1xx software directly without loading the upgrader first. The original software stored on EPROM can be restored to FLASH by selecting *Restore EPROM Software*.

Verifying the Upgrade

Once uploaded, the new code release is verified by checking the CRC (Cyclical Redundancy Check). The module then displays:

Verifying new code...

If the test passed, the terminal will show:

Code Verified. Upgrade Successful!

Press Return Key to Restart Unit.

Your module is still running the old code until you restart the Module.

Press the Return key to automatically restart your module and to begin executing the new software.

Upgrading from the Remote Module

This section explains how to perform a software upgrade on the Office Module from the Remote Module.

Please ensure your Remote Module is upgraded first before you proceed to upgrading your Office Module. Instructions for upgrading the Remote Module can be found in the DEFINITY Extender 1101 Remote Module User's Guide.

Procedure

1. Enter the Go Online? menu using the System Administrator's password.

2. Connect to a Remote Module that has been upgraded with the latest software.

3. While online press the **HOLD** button on the display telephone four times to enter the online menu. The *Disconnect?* message will appear.

4. Press **3** several times until the *Upgrade Office?* option appears. If you do not have this menu selection, your Remote is running the same software version as your Office Module.

5. If both modules do not have the same version, press **2** to start the Remote Module's software upgrade.

   The LCD will display the new software version. Enter **2** to continue with the upgrade. The Remote Module displays *Are You Sure?*.

6. Press **2** to start.

The LCD will display Starting REM Upgrade, followed by Erasing Flash at REM, and, finally, the upgrade status.

0% Completed

The percentage value will increase as the upgrade proceeds, and depending on the size of code release, will take a couple of minutes. The new software is being stored to the FLASH memory on your Remote Module. When the upgrade is 100% completed, the new code is downloaded.

Verifying the Office Upgrade

Your Office Module will now verify if the new code release was loaded successfully.

The remote telephone should display:

Verifying Upgrade

This process may take from 12 to 15 seconds depending on the code size. Your remote telephone will display:

Upgrade Successful

The remote telephone will then display *Restarting Unit*. The Remote Module then disconnects and automatically restarts. Even though the new code has been loaded into your Remote Module's FLASH memory, your Remote Module is still running your old code until you restart the Office Module.

Troubleshooting

5

Troubleshooting and LED Activity

As with all equipment of a sophisticated nature, occasionally an error in connection or transmission may occur. The Analog Definity Extender provides indication of any errors via light-emitting diodes (LEDs) on the Remote and Office Modules and by error messages on the display telephone connected to the Remote Module.

Troubleshooting

When an error occurs in the operation of the Office Module, you should check for malfunctions by using the following guidelines:

1. Check all interconnecting cables to ensure that they are properly seated.

2. Verify that the DIP switches are set correctly.

3. Check the circuits to ensure that they are free of noise and meet the specifications listed in Chapter 1, Introduction.

4. Verify that the LEDs on the top of each module are illuminated.

5. If you cannot locate the source of the problem, contact Lucent Technologies or your local Lucent authorized representative.

If a remote user reports a problem with the Remote Module, verify that the user has followed the appropriate troubleshooting steps:

1. Verify that the programmed telephone numbers are correct.

2. Check all interconnecting cables to ensure that they are properly seated.

3. Verify that the DIP switches are set correctly.

4. Check the circuits to ensure that they are free of noise and meet the specifications listed in Chapter 1, Introduction.

5. Verify that the LEDs on the top of the Remote Module are illuminated.

LED Sequences

The LEDs on the Office Module help to indicate problems that occur.

During the power-up sequence**{** XE "LED:power-up sequence" **}**, the Analog Definity Extender performs a self-test, loads FLASH code into DRAM, downloads EPLD image, and has a configuration menu access blink sequence. After power up, the LED on the Remote and Office modules flash to indicate the current status mode.

Table 5-1 and Table 5-2 illustrate a detailed description of the LED sequences. **Bold face print** indicates the normal power up LED blink sequence. The other table elements are hardware related failure events.

If your Office Module power up LED sequence repeats itself, the last sequence displayed represents the test failure that occurred. See Table 5-1 for failure description. Power down the unit, and retry. If error persists, contact Lucent Technologies or your local Lucent authorized representative.

Table 5-1. LED Power up Sequences

LED Sequence	Description
No LED blinks	Error with hardware or AC adapter.
First blink: Red or Green	LED is not functioning properly, as units should blink Yellow.
Yellow blinking light only	EPROM Checksum test failed. Faulty EPROM or Board problem.
1 Yellow & 1 Red only	SRAM, Data test failed
1 Yellow & 2 Red only	SRAM Address test failed
1 Yellow & 7 Reds & 1 Green	**Passed all hardware tests**

Table 5-2. LED Power up Verification Sequences

LED Sequence	Description
Rapidly blinking Red during process and then 1 Green to indicate process is complete.	**6 - 10 seconds. FLASH code is being verified and if valid will be executed.** 15-25 seconds FLASH code is invalid EPROM code copied to FLASH.
3 Reds or **3 Greens**	3 Red - Running EPROM code, FLASH write failed. Contact Lucent Technologies. **3 Green - FLASH load passed, running FLASH code.**
Yellow-Yellow-Red-Yellow	**Initial 4-blink EXTender status**
2 slow Red blinks	**Downloading EPLD code**
3 sets of 8 Yellow blinks	**Access terminal configuration menu by typing 'MENU' during the first two sets of 8 yellow blinks.**

Table 5-3 shows the LED flashes that may occur on the Office Module after the power-up LED sequence.

Table 5-3. Module LED Blink Sequence

		LED Color		
Blink	**Status**	**Green**	**Yellow**	**Red**
1st	Connection	Online or COD waiting (User connected)	Modules are offline (not connected)	Flagged unit has problems
2nd	DSP	Digital port is connected	Possible hardware error*	Digital port is not connected
3rd	Modem	OK	Modem never connected	Possible hardware error*
4th	Connection History	Received incoming call	No incoming call detected	More than two abnormal disconnects have occurred. Possible hardware error*

*If an error condition occurs, contact your system administrator.

If you do not receive one of the LED sequences, contact your system administrator. You may have a hardware error.

Error Messages

If a problem has been encountered during the connection process, an error message appears on the remote telephone. Table 5-4 shows the error messages and the suggested actions to take.

Table 5-4. Error Messages

Message	Cause	Action
DSP Fatal Error	The module's DSP is not operating correctly.	Contact your system administrator.
Line Busy	When attempting to establish a connection to the Office module, the Office Phone number dialed returns a busy signal. The Office module is resetting after a connection or an attempted connection with another Remote module.	Check the Office Phone Number programmed into the Remote module; check for another user of that particular Office module
Modem Error	Error occurred while communicating with the modem. The modem is in an error state.	Power cycle the module.
No Answer	The Office module is not answering the Remote module modem call. Another source may have picked up the call	Check the Office Phone Number programmed into the Remote module

Message	Cause	Action
No Carrier	When trying to Connect the Remote and Office Modules, or when connected, the modem lost the receive signal or received too many bit errors. The modem line may have poor quality, or it has been disconnected.	Try a different modem line, or make sure the modem line is connected.
No Dial Tone	When attempting to go off-hook to place a modem call from the Remote to the Office module, no dial tone is detected by the modem. The line is a dedicated line and the module is set for dial operation	Connect a regular telephone to the telephone company jack, and listen for dial tone. Make sure the line is properly connected to the jack on the Remote Module. If you still do not hear dial tone, contact your system administrator.
Port Disconnected	The Remote Digital Port has been disconnected, then reconnected.	Verify the physical connection between the Remote Module's digital port and the Remote Phone. Ensure the digital phone cable is not damaged.
Unknown Error	Unknown	Contact your system administrator.

Message	Cause	Action
User Abort	The Remote user aborts the connection to the Office module.	N/A
V42 Connect Fail	After the Remote and Office modems have connected, the V42 connection process has failed to synchronize. This can be a result of poor analog lines, or the Digital port at the Office module being off line.	Test the quality of the analog line. Contact the system administrator to make sure the digital port at the Office module is online.

Specific Problems

Common problems that may occur with Office Modules are listed below. Follow the suggested steps to remedy the problem.

No Display on Telephone at the Remote Location

To correct this problem, check the following:

1. Is the correct module at each location?
2. If this is an existing installation, has the installation moved or has any new wiring been done? Verify the connections.
3. Does the Remote Module have power?
4. Compare the LED on the Remote Module to Table 5-3. Module LED Blink Sequence.
5. Is the telephone working properly?

No Connection/No Answer

To correct this problem, check the following:

1. Does the display on the telephone say “Go Online”? If so, press **2** to start the session. (A new user may never have seen the Remote Module off-line before.)
2. Is power connected to the Office Module?
3. Check the LED on the Office Module and compare it to the LED diagnostic sheet as in Table howie4-1.

4. Check that the DIP switches on the Switch and Remote Modules are set properly. Unless your system administrator tells you otherwise, all of the DIP switches should be OFF.

5. Have there been any electrical storms that may have popped the line fuses? If so, you will need to contact Lucent Technologies or your local Lucent authorized representative for assistance.

6. Attempt to go on-line and listen for call progress tones on the Remote Module speaker.

7. If there still is no dial tone, do the following:

    a. Use a regular telephone to verify there is dial tone on the CO line jack. If there is no dial tone, check the installation wiring or call the telephone company. If there is dial tone present, the cable to the Module or a popped line fuse is probably the problem.

    b. Check the cables on the Remote Module; replace if necessary.

8. If there is a ring but no answer, do the following:

    a. Check the telephone number.

    b. Check the power for the Office Module.

    c. Check the cables at the Office Module.

Flagging a Faulty Office Module

In a hunt group operation with multiple Office Modules being used by different remote users, it may be beneficial to flag a particular Office Module that has operational problems:

- audio quality issues (cut outs or breakup)
- connection problems
- poor analog line conditions (high 135A stat count, Frame Check sum errors).

If a user is experiencing such problems, they may contact the system administrator who can instruct the user to “Flag” the bad Office Module.

When the Remote user is online (connected) with a faulty Office Module, they should press the **HOLD** key four times to access the Disconnect menu. When the telephone screen displays the Disconnect menu, the user should press the “*” key. This operation will clear the Disconnect menu, and will replace it with “Switch Unit Flagged.” This message will remain on the LCD display for 1.5 seconds, and once it is cleared, the Remote Module will reconnect the user for normal operation.

If an Office Module has been flagged by a remote user, the LED blink on the Office Module changes to “Red Green Red Green.” The LED will blink “Red Green Red Green” whether the unit is online or offline.

To clear the Flagged state of a particular Office Module, you must reset the diagnostic statistics while online with a Remote Module, or power cycle the Office Module.

NOTE:
The problems may also be associated with a unique Remote Module. If only one user's Remote Module is experiencing problems, it may be the remote setup, the analog line, or the Remote Module that has operational problems.

Glossary

+12 vdc
12 volt direct current.

120 VAC
120 volt alternating current (North American standard electrical supply).

B

Baud Rate
The speed in kbps at which digital data can be transmitted.

C

COD
Call on Demand

D

Dedicated Subscriber Lines
Communication lines (usually twisted pair) that are used to connect on-premise telephone equipment (such as a PBX) to the Central Office. Also referred to as direct lines.

Dial Line
A telephone line which is part of the Public Switched Telephone Network and is accessed through the DEFINITY Extender System's automatic dial-up function.

F

Facility
Transmission facilities. Usually a two metallic pair set of cords, but can be telephone company carriers, T-1, microwave or dial-up telecommunications lines.

L

LED
Light-emitting diode. A semiconductor diode which emits light when a current is passed through it, indicating that the power is on.

O

Office Module
The DEFINITY Extender 1100 System that connects to the DEFINITY PBX.

On-premise Lines
Communication lines (usually twisted-pair) that are used to connect the DEFINITY ECS to the DEFINITY ECS telephone.

P

PBX
Private Branch Exchange.

R

Remote Module

The DEFINITY Extender 1100 System that connects to the remote DEFINITY ECS telephone.

RS-232D (EIA/TIA-574 Interface Circuits)

While the EIA/TIA-574 is the actual jack used, the RS-232D is used for the ease of communication.

PIN	EIA DESIG	CCITT DESIG	DESCRIPTION	DIRECTION
1	CF 9RLSD)	109	Received Line Signal Detector	Output
2	BB (RD)	104	Received Data	Output
3	BA (SD)	103	Transmitted Data	Input
4	CD (DTR)	108/2	DTE Ready	Input
5	AB (SG)	102	Signal Ground	Common
6	CC (DSR)	107	DCE Ready	Output
7	CA (RTS)	105	Request to Send	Input
8	CB (CTS)	106	Clear to Send	Output
9	CE (RI)	125	No Connection	NA

9 Position Non-Synchronous Interface Between Data Terminal Equipment and Data Circuit-Terminating Equipment Employing Serial Binary Data InterchangeANS/EIA/TIA-574-90)
(Sept., 1990)