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communication

INTUITY™ Messaging Solutions
Integration with Centrex Switches

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INTUITY Messaging Solutions Integration with Centrex Switches
585-310-253, Issue 1, October 1997, Comcode 108099607

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About This Book

Purpose

This book, *INTUITY™ Messaging Solutions Integration with Centrex Switches,* 585-310-253, contains instructions for integrating the Lucent™ INTUITY system with the following Centrex switches:

- Lucent 5ESS® switch

- Northern Telecom (Nortel) DMS-100 switch

- Nortel SL-100 switch

It includes high-level guidelines and requirements for switch administration and procedures for administering the Lucent INTUITY system for switch integration.

Intended Audiences

This book is intended primarily for on-site technical personnel who are responsible for installing the Lucent INTUITY system and performing initial administration and acceptance testing. Secondary Lucent audiences include:

- Field support — Technical Service Organization (TSO)

- Helpline personnel

- Sales support

- Design support

- Factory assemble, load, and test (ALT) personnel

- Provisioning project managers — Sales and Technical Resource Center (STRC)

We assume that the primary users of this book have completed the Lucent INTUITY hardware installation training course (see "Related Resources" below).

Release History

This is the first release of this book.

How to Use This Book

Although this book is designed to step you through the switch integration process, you can also use it as a quick reference to obtain specific information you may need on a topic.

For Complete Installation Instructions

Read Chapter 1, "Overview of Centrex Switch Integration", first for background information and a checklist of tasks necessary to complete the integration (Table 1-1). Use the information in the other chapters in the book in the appropriate order as directed by the checklist.

For an Integration Checklist

If you want a quick reference, see "Centrex Switch Integration Checklist" in Chapter 1, "Overview of Centrex Switch Integration". Procedures required for switch integration are listed in the order in which you must perform them. Also included are references to where you will find the complete procedures in this book or other books for the Lucent INTUITY product.

For Troubleshooting Information

For troubleshooting information, see Chapter 10, "Integration Validation and Troubleshooting".

For Connectivity and Pinout Information

For pinout and connectivity information in addition to that provided in this book in Chapter 4, "Hardware Installation for 5ESS Switch Integration with the 3A Translator", and Chapter 7, "Hardware Installation for Centrex Switch Integration with the 202T Modem", see Appendix E, "Cable Connectivity", in the *System Installation* book for your platform.

To Locate Specific Topics

This book includes an alphabetical index at the end.

Conventions Used in This Book

This section describes the conventions used in this book.

Terminology

- The word "type" means to press the key or sequence of keys specified. For example, an instruction to type the letter "y" is shown as

    Type **y** to continue.

- The word "enter" means to type a value and then press the ($\boxed{\text{ENTER}}$) key. For example, an instruction to type the letter "y" and press $\boxed{\text{ENTER}}$ is shown as

    Enter **y** to continue.

- The word "select" means to move the cursor to the desired menu item and then press $\boxed{\text{ENTER}}$. For example, an instruction to move the cursor to the start test option on the Network Loop-Around Test screen and then press $\boxed{\text{ENTER}}$ is shown as

    Select `Start Test.`

- The words "subscriber" and "user" are interchangeable terms that describe a person administered on the Lucent INTUITY system. The word "user" is the preferred term in the text; however, "subscriber" appears on most of the screens and is the command word you must type at the command line, for example, **change subscriber "Jane Doe"**.

- The Lucent INTUITY system displays *windows, screens, and menus*. Windows show and request system information (Figure 1 and Figure 2). Screens request that you enter a command at the `enter command:` prompt (Figure 3). Menus (Figure 4) present options from which you can choose to view another menu, or a screen or window.

```
╔══════════════════ Voice Equipment ══════════════════╗

  Card  0 is IVC6    O.S.Index:  0        Function: TipRing
                     State: Inserv
  CD.PT CHN STATE    STATE-CHNG-TIME  SERVICE-NAME PHONE   GROUP   TYPE
   0.0  0   Inserv   Jan 09 11:17:29  *DNIS_SVC    3001    2       IVC6
   0.1  1   Inserv   Jan 09 11:17:29  *DNIS_SVC    3002    2       IVC6
   0.2  2   Inserv   Jan 09 11:17:29  *DNIS_SVC    3003    2       IVC6
   0.3  3   Inserv   Jan 09 11:17:29  *DNIS_SVC    3004    2       IVC6
   0.4  4   Inserv   Jan 09 11:17:29  *DNIS_SVC    3005    2       IVC6
   0.5  5   Inserv   Jan 09 11:17:29  *DNIS_SVC    3006    2       IVC6

  Card  1 is IVC6    O.S.Index:  1        Function: TipRing
                     State: Inserv
```

Figure 1.   Example of a Lucent INTUITY Window Showing Information

```
╔══════════════════ Serial Interface ══════════════════╗

             5ESS  Integration


      Data Bits   :  7              Baud Rate    : 1200

      Stop Bit(s) :  1              Parity [O/E/N]: E

      Start Bit(s):  1              Flow Control  : N
                                              [Y/N]

         Serial Ports

      1. �          2. ▀▀▀▀▀▀▀▀▀▀▀
      3.             4.
      5.             6.
      7.             8.
```

Figure 2.   Example of a Lucent INTUITY Window Requesting Information

```
AUDIX                 Active           Alarms:   w                        Logins: 2
change machine                                                           Page 1 of 1
                              MACHINE PROFILE

Machine Name: local          Type: local              Location: local

  Voiced Name? n                                    Extension Length: 4
     Voice ID: 0                                   Default Community: 1

ADDRESS RANGES
     Prefix                    Start Ext.   End Ext.          Warnings
  1: _____        0000         9999         _____
  2: _____        _____     _____     _____
  3: _____        _____     _____     _____
  4: _____        _____     _____     _____
  5: _____        _____     _____     _____
  6: _____        _____     _____     _____
  7: _____        _____     _____     _____
  8: _____        _____     _____     _____
  9: _____        _____     _____     _____
 10:

 enter command: change machine
```

Figure 3.   Example of a Lucent INTUITY Screen

```
      Switch Interface Administration

 Call Data Interface Administration
 Switch Selection
 Telephony Interface Administration
```

Figure 4.   Example of a Lucent INTUITY Menu

Keyboard and Telephone Keypad Representations

- Keys that you press on your terminal or PC keyboard are represented as rounded boxes. For example, an instruction to press the Enter key is shown as

  Press (ENTER).

- Two keys that you press at the same time on your terminal or PC keyboard (that is, you hold down the first key while pressing the second key) are represented as a series inside a rounded box. For example, an instruction to press and hold (ALT) while typing the letter "d" is shown as

  Press (ALT-D).

- A combination keystroke is a series of keystroked that combines the two key function described above plus a third key, that is, you press and hold down the first key, then press the second key, then release those keys and press a third key. A combination keystroke is represented as an equation. For example, an instruction to press and hold (ALT) while typing the letter "d" and then typing the number "1" is shown as

  Press (ALT-D) + [1]

- Function keys on your terminal, PC, or system screens (also known as soft keys) are represented as rounded boxes followed by the function or value of that key enclosed in parentheses. For example, an instruction to press function key 3 is shown as

  Press [F3] (CHOICES).

- Keys that you press on your telephone keypad are represented as square boxes. For example, an instruction to press the first key on your telephone keypad is shown as

  Press [1] to record a message.

Screen Displays

- Values, system messages, field names, and prompts that appear on the screen are shown in typewriter-style `Courier` type, as shown in the following examples:

  Example 1:

  Enter a switch number in the `Switch Number` field.

  Example 2:

  `You need to restart the voice System to make these changes active.`

- The sequence of menu options that you must select to display a specific screen or submenu is shown as follows:

Start at the Lucent INTUITY Main menu and select

```
> Switch Interface Administration
```
```
   > Switch Selection
```

In this example, you first access the Switch Interface Administration menu. From that menu you select the Switch Selection window.

■ Windows and screens shown in this book are examples only. The ones you see on your system will be similar, but not exactly the same.

Data Entry Conventions

■ Commands and text you type in or enter appear in **bold type**, as in the following examples:

Example 1:

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

Example 2:

Enter **Y** in the Remote [Y/N] field.

■ Command variables are shown in **bold italic** type when they are part of what you must type in and *regular italic* type when they are not, for example:

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

Safety and Security Alert Labels

The Lucent INTUITY document set uses the following symbols to call your attention to potential problems that could cause personal injury, damage to equipment, loss of data, service interruptions, or breaches of toll fraud security:

⚠ CAUTION:
Indicates the presence of a hazard that if not avoided can or will cause minor personal injury or property damage, including loss of data.

⚠ WARNING:
Indicates the presence of a hazard that if not avoided can cause death or severe personal injury.

⚠ **DANGER:**
Indicates the presence of a hazard that if not avoided will cause death or severe personal injury.

⚠ **SECURITY ALERT:**
Indicates the presence of a toll fraud security hazard. Toll fraud is the unauthorized use of a telecommunications system by an unauthorized party.

Trademarks and Service Marks

The following trademarked products are mentioned in books in the Lucent INTUITY document set.

- 5ESS is a registered trademark of Lucent Technologies.

- AT is a trademark of Hayes Microcomputer Products, Inc.

- AUDIX is a registered trademark of Lucent Technologies.

- cc:Mail is a registered trademark of cc:Mail, a subsidiary of Lotus Development Corporation.

- COMSPHERE is a registered trademark of Paradyne Corp.

- CONVERSANT is a registered trademark of Lucent Technologies.

- DEFINITY is a registered trademark of Lucent Technologies.

- DMS-100 is a trademark of Northern Telecom Limited.

- Dterm is a trademark of NEC Telephones, Inc.

- Equinox is a trademark of Equinox Systems, Inc.

- INTUITY is a registered trademark of Lucent Technologies.

- Lotus Notes is a registered trademark of Lotus Development Corporation.

- Lucent is a trademark of Lucent Technologies.

- MEGAPORT is a trademark of Equinox Systems, Inc.

- MEGAPLEX is a trademark of Equinox Systems, Inc.

- Meridian is a trademark of Northern Telecom Limited.

- MERLIN LEGEND is a registered tradesman of Lucent Technologies.

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- Netware Loadable Module is a trademark of Novell, Inc.
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- Phillips is a registered trademark of Phillips Screw Company.
- Rolm is a registered trademark of International Business Machines.
- SL-1 is a trademark of Northern Telecom Limited.
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- VoiceBridge is a registered trademark of Voice Technologies Group, Inc.
- VOXEM is a registered tradesman of VOXEM, Inc.
- VT100 is a trademark of Digital Equipment Corporation.
- Windows is a trademark of Microsoft Corporation.

Related Resources

This section describes additional resources available for you to learn more about installation of the Lucent INTUITY product.

Documentation

> ⟹ **NOTE:**
> The *Lucent INTUITY Messaging Solutions Release 4 Documentation Guide*, 585-310-016, contains a detailed description of all books included in the Release 4 Lucent INTUITY documentation library. Always refer to the appropriate book for specific information on planning, installing, administering, or maintaining a Lucent INTUITY system.

This book is designed to be used in conjunction with the appropriate installation and maintenance books for your platform:

- *INTUITY Messaging Solutions Release 4 MAP/40P System Installation*, 585-310-196

- *INTUITY Messaging Solutions Release 4 MAP/100 System Installation*, 585-310-173

- *INTUITY Messaging Solutions Release 4 MAP/5P System Installation*, 585-310-185

- *INTUITY Messaging Solutions Release 4 MAP/40 Maintenance*, 585-310-171

- *INTUITY Messaging Solutions Release 4 MAP/40P Maintenance*, 585-310-197

- *INTUITY Messaging Solutions Release 4 MAP/100 Maintenance*, 585-310-174

- *INTUITY Messaging Solutions Release 4 MAP/5P Maintenance*, 585-310-186

You may also need the following book:

- *INTUITY Messaging Solutions Release 4 Administration*, 585-310-564

See the inside front cover of this book for information on how to order Lucent INTUITY documentation.

Training

Lucent Technologies recommends the following training class as a prerequisite to installing a Lucent INTUITY system:

- Course No.BTT 506H, INTUITY Messaging Solutions Installation and Maintenance

- Course No. BTC 102H, INTUITY AUDIX™ System Administration

The following training classes are recommended for account teams who interact with customers integrating a Lucent system with a non-BCS switch.

- Course No. BSP 014L, Multimedia Sales Seminar

- Course No. BSP 029CC, Multimedia Solutions "Electronic Tutor"

For more information on Lucent INTUITY training, call the BCS Education and Training Center at one of the following numbers:

- Organizations within Lucent: (904) 636-3261

- Lucent Technologies customers and all others: (800) 255-8988

Technical Assistance

The following resources are available for technical assistance with Centrex switch integration:

- Within the United States

  — Call 1-800-242-2121, extension 85474.

- Within Canada

  — For all systems, call 1-800-242-1234.

- Within any other country

  — For all systems, call your local distributor.

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Please mention the name and order number of this book:

INTUITY Messaging Solutions Release 4 Centrex Switch Integration, 585-310-253.

Overview of Centrex Switch Integration

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Overview of Centrex Switch Integration

1

Overview

Switch integration refers to the sharing of information between a voice messaging system and a switch to provide a seamless interface to callers and system users. A fully integrated voice messaging system answers each incoming telephone call with information taken directly from the switch.

Purpose

This chapter provides background information necessary to understand how a Centrex switch is integrated with the Lucent™ INTUITY™ system.

Method of Integration

Integration of the Lucent 5ESS®, Northern Telecom (Nortel) DMS-100, and Nortel SL-100 Centrex switches with the Lucent INTUITY system requires an RS-232 serial interface and auxiliary switch integration hardware. When the call is forwarded to the Lucent INTUITY system, a packet of information is sent via the serial interface that provides the integration data for the channel the call arrives on.

The Lucent INTUITY system exchanges analog voice information with the Centrex switches through analog telephone lines. Voice links connect callers from a compatible switch port to a Lucent INTUITY voice port. The switch directs internal or external callers to a hunt group of analog ports associated with the Lucent INTUITY system. These ports connect the callers to an appropriate mailbox on the Lucent system. A Lucent INTUITY system can have as many as 64 voice ports. These ports are connected to an equivalent number of analog ports on the switch and are administered as a uniform call distribution (UCD) group.

Lucent 5ESS Switch Integration — Standard Configurations

To create an integrated environment between the Lucent INTUITY system and a Lucent Technologies 5ESS switch, Lucent supports the following options:

- 3A simplified message service interface (SMSI) translator

- 202T modem

NOTE:
For the 5ESS switch, a direct connection to the Lucent INTUITY system is not a supported option. Either the 3A translator or the modem must be used. Check with the local service company for the supported options.

Integration with the 3A Translator

An SMSI link provides digital call information, such as called party and calling party, to the Lucent INTUITY system. The 3A SMSI translator converts the 5ESS switch applications processor interface (API) format to SMSI format so that the Lucent INTUITY system can be used with the 5ESS switch. The 3A translator receives message service system (MSS) messages from the 5ESS switch through the D-channel of an integrated services digital network (ISDN) line and translates the message into SMSI format The SMSI output port is RS-232-compatible (EIA-232), asynchronous, and supports baud rates up to 9600; however, Lucent recommends a baud rate setting of 1200.

The 3A translator can be connected (through an adapter) to a multi-port circuit card on any Lucent INTUITY multi-application (MAP) platform. See Chapter 4, ''Hardware Installation for 5ESS Switch Integration with the 3A Translator'', for details about the hardware for the interface.

Distance Requirements

The configuration for the integration with a 3A translator depends on the distance between the switch and the 3A translator. If the distance is greater than 1 km (0.62) miles, a NT1U-220,or NT1L-230 network terminator unit must be used with the 3A translator. In an upgrade of the Lucent INTUITY software with existing software, the NT1U-200 network terminator unit, which is an older version, can be used.

> **NOTE:**
> At distances of 9.7 km (6 mi) or more, the 3A translator *cannot* be used. A modem must be used instead.

Integration with the 202T Modem

A 5ESS integration may also use a 202T modem for integration and connect into a 3002 data circuit. See "Nortel DMS-100 and SL-100 Switch Integration — Standard Configurations" below for information on the 202T modem.

Distance Requirements

At distances of 9.7 km (6 mi) or more, a modem *must* be used. This constraint is based on requirements for the 3002 data circuit.

Nortel DMS-100 and SL-100 Switch Integration — Standard Configurations

The INTUITY system interfaces with the DMS-100 or SL-100 switch using the simplified message desk interface (SMDI) over an RS-232 link. The SMDI interface is a Bellcore standard equivalent of the SMSI interface used for 5ESS integration. The SMDI link transfers call information, such as called party and calling party, to the Lucent INTUITY system.

> **NOTE:**
> Integration with the Lucent INTUITY system supports the SMDI interface as defined in Bellcore Technical Reference TR-TSY-000283, July 1995, and the later standard as defined in Bellcore Technical Reference TR-NWT-000283, May 1991.

Distance Requirements

The configuration for the integration depends on the distance between the switch and the Lucent INTUITY system.

202T Modem (or Customer-Supplied Modem)

At distances greater than 15.2 m (50 ft), a 202T modem is used to complete the SMSI link. The 202T modem can be connected to a multi-port circuit card on any MAP. See Chapter 7, "Hardware Installation for Centrex Switch Integration with the 202T Modem", for details about the hardware for the interface.

Direct Connection

At distances of 15.2 m (50 ft) or less, a modem is not required, and a direct-connect configuration can be used to the multi-port serial circuit card. See Chapter 8, "Hardware Installation for Integration with Direct Connection or Customer- Supplied Modem" for details about the hardware for the interface.

Other Configurations

The 5ESS, DMS-100, and SL-100 switches can be integrated by the use of a customer-supplied modem other than the 202T modem. This book does not provide installation instructions for such configurations. However, guidelines for integrating with a nonstandard modem are provided in Chapter 7, "Hardware Installation for Centrex Switch Integration with the 202T Modem".

Demarcation Points

Service technicians dispatched for Lucent INTUITY system installation are not responsible for making any connections directly to switches not maintained by Lucent Technologies.

The demarcation point for integration of Centrex switches not maintained by Lucent depends on the configuration.

- For integrations using a Lucent-supplied modem, the point of demarcation is the equalization device (829 loopback device or equivalent) on the immediate far side of the modem.

- For integrations using a Lucent-supplied 3A translator, the point of demarcation is the connecting block on the immediate far side of the translator.

- For direct-connect integrations, and for integrations using a modem not supplied by Lucent Technologies, the point of demarcation is the adapter at the end of the modular cable that is connected to the Lucent INTUITY system (or the RS-232 mini-tester, if it remains in line after testing).

Lucent services personnel may:

- Administer the translator or modem for operation with the switch

- Connect the translator or modem to the Lucent INTUITY system

For additional information concerning the extent of the installation, see the contract between the customer and Lucent Technologies.

Joint Acceptance Testing

Joint acceptance testing is to be executed by both the customer representative and the INTUITY AUDIX® on-site installer when the installation includes Lucent Technologies products and customer-provided equipment. Acceptance testing is performed at the end of an installation to demonstrate to the customer that the installation is operational. The purpose of joint acceptance testing is to have knowledgeable people available to test and resolve issues before final completion of the service order. Joint acceptance testing is required for Centrex switch integrations.

Features and Functionality

The following features and functionality limitations apply for integrations with Centrex switches.

5ESS Switch

Lucent INTUITY system integration with the 5ESS switch does *not* support the following Lucent INTUITY features due to switch interface limitations:

- Leave word calling (LWC)

- High-speed digital networking

- Enhanced call transfer

    ⇒ **NOTE:**
    Transfer to 0 is a blind transfer.

- Transfer into the INTUITY AUDIX system

DMS-100 and SL-100 Switches

Lucent INTUITY system integration with the DMS-100 and SL-100 switches does *not* support the following features due to switch interface limitations:

- Leave word calling (LWC)

- Port logins and logouts (in service/out of service)

- Day/night service change initiated by the switch

- High-speed digital networking

The Call Request Retrieval access code feature *is* supported. In addition to the standard procedure for retrieving mailbox messages, INTUITY AUDIX subscribers using a DMS-100 or SL-100 integration can use this feature. Some Call Request Retrieval interactions are listed below:

- Call Request Activate (CRA) — When a switch user with Call Forwarding active requests CRA through a feature button or access code, the switch places a "please call" message in the Call Request Retrieval queue. The message might be from the INTUITY AUDIX system (if the system has new messages) or from another switch user (if another user places the CRA call).

- Call Request Retrieve (CRR) — When an entry is placed in the CRR queue, the system user's message waiting indicator (MWI) is activated. To retrieve the message, the user dials an access code and the switch places a call to the first entry in the queue. This is either the INTUITY AUDIX system or another switch user, depending on the origination of the entry. (Multiple INTUITY AUDIX system messages create only one please call request for the INTUITY AUDIX system in the queue.) When the last CRR queue is accessed, the user's MWI is turned off. If a user has no entries in the queue and dials a CRR access code, the switch returns a fast-busy signal.

- Call Request Delete All (CRDA) — A user can dial an access code to erase all entries in the Call Request Retrieval queue and turn the MWI off. In this case, a subscriber's MWI turns off as requested, even if the INTUITY AUDIX system has new messages for that user. A new CRA message or an MWI update from the AUDIX system turns the MWI back on.

Centrex Switch Integration Checklist

The following checklist (Table 1-1) outlines the process of integrating the Lucent INTUITY system with a Centrex switch. It is assumed that:

- The switch integration software package is already installed on your system. (If you need to install the software, see Chapter 9 (for MAP/5P) or Chapter 8 (for all platforms), "Installing the Switch Integration Software Packages," in the maintenance book for your platform.)

- You are performing the integration as part of installation of the Lucent INTUITY system and completing the procedures as specified in the system installation book for your platform.

➡ **NOTE:**
When using this checklist, be sure to complete the tasks for the appropriate type of integration (3A translator, 202T modem, direct connection, other nonstandard option).

Table 1-1. **Centrex Switch Integration Checklist**

Task	Description	Reference	✓
1.	Administer the switch.	Chapter 3, ''Centrex Switch Requirements and Administration''. (Information in Chapter 2, ''Planning for Centrex Switch Integration'' is also needed.	
2.	Complete Chapters 1 through 4 up to the section, "Powering Up the System" in the system installation book.	Chapters 1 through 4 in the system installation book for your platform.	
3.	**Integration with 202T modem *only*:** Set the switch options on the 202T modem. ⇒ **NOTE:** For the Nortel DMS-100 and SL-100 switches, the 202T modem is required only if the distance between the Lucent INTUITY system and the switch is greater than 15.3 m (50 ft), per RS-232 standard. For the 5ESS switch the 202T modem is not required if the 3A translator is used, but is required in all other cases regardless of the separation distance.	Chapter 6, ''Setting the 202T Modem''.	
4.	Install the integration hardware.	■ **Integration with 3A translator (5ESS switch *only*):** Chapter 4, "Hardware Installation for 5ESS Switch Integration with the 3A Translator". ■ **Integration with 202T modem *only*:** Chapter 7, "Hardware Installation for Centrex Switch Integration with the 202T Modem". ■ **Integration with direct connection (DMS-100 and SL-100 switches *only*):** Chapter 8, "Hardware Installation for Integration with Direct Connection or Customer- Supplied Modem". ■ **Integration with a modem not supplied by Lucent *only*:** Chapter 8, "Hardware Installation for Integration with Direct Connection or Customer- Supplied Modem".	

Continued on next page

Table 1-1. Centrex Switch Integration Checklist — *Continued* — *Continued*

Task	Description	Reference	✓
5.	Complete the remainder of Chapter 4 in the system installation book.	Chapter 4, "Powering Up the System," in the system installation book for your platform.	
6.	Complete the appropriate procedures for your switch type in Chapters 5 and 6 of the system installation book up to the section in Chapter 6 titled "Administering Channels."	Chapters 5 and 6 in the system installation book for your platform.	
7.	**Integration with 3A translator (5ESS switch *only):*** Program the 3A translator.	Chapter 5, ''Programming the 3A Translator''.	
8.	Verify that the correct switch integration package is installed.	See information on the View Installed Software window in the maintenance book for your platform.	
9.	Administer the Lucent INTUITY switch integration windows.	Chapter 9, ''Lucent INTUITY Administration for Centrex Switch Integration''. Information in Chapter 2, ''Planning for Centrex Switch Integration'', is also needed.	
10.	Ensure that the switch has been administered by the CO (central office) to perform acceptance tests for the two test subscribers.	Chapter 3, ''Centrex Switch Requirements and Administration''.	
11.	Return to the "Administering Channels" section in Chapter 6 of the system installation book and complete all required tasks through Chapter 16.	Chapters 6 through 16 in the system installation book for your platform.	
12.	Validate and, if necessary, troubleshoot the integration.	Chapter 10, ''Integration Validation and Troubleshooting''.	
13.	Cut to service by notifying the CO or your project manager to change the system users' call forwarding coverage path to the Lucent INTUITY system.	None.	

Planning for Centrex Switch Integration

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Planning for Centrex Switch Integration

2

Overview

Planning for the integration requires the customer to:

- Obtain information needed during the integration process, including parameters to administer on the Lucent™ INTUITY™ windows used for switch integration.

- Provide site-specific information to the service provider central office (CO) and obtain information from the CO.

- Work closely with the CO to ensure that the switch is properly administered.

Purpose

This chapter contains information needed to plan the integration of the Lucent INTUITY system with the following Centrex switches:

- Lucent 5ESS® switch

- Northern Telecom (Nortel) DMS-100 switch

- Nortel SL-100 switch

Worksheets

This chapter includes worksheets to record information needed to complete the integration.

General Considerations

Consider the following information before the on-site installation of the Centrex switch integration hardware:

■ The 5ESS, DMS-100, and SL-100 switches can be integrated with the following Lucent INTUITY multi-application platforms (MAPs):

— MAP/40

— MAP/40P

— MAP/100

— MAP/5P

■ For all the Lucent INTUITY platforms, the customer must purchase a multi-port circuit card to be used for the serial connection

■ Before the installation, determine which system and hardware you will use. For information about cabling configurations to integrate the Lucent INTUITY system with

— A 5ESS switch by use of a 3A translator, see Chapter 4, "Hardware Installation for 5ESS Switch Integration with the 3A Translator".

— A 5ESS, DMS-100, or SL-100 switch by use of a 202T modem, see Chapter 7, "Hardware Installation for Centrex Switch Integration with the 202T Modem".

— A DMS-100 or SL-100 switch by use of a direct connection or any Centrex switch by use of a customer-supplied modem (not a 202T modem), see Chapter 8, "Hardware Installation for Integration with Direct Connection or Customer- Supplied Modem".

■ The DMS-100 and SL-100 switches allow INTUITY AUDIX® subscribers to use an additional feature — the Call Request Retrieval access code feature. Determine if the customer will use this feature and inform them about the feature's capabilities. For more information about this feature, see "Features and Functionality" in Chapter 1, "Overview of Centrex Switch Integration".

■ You can use multiple hunt groups with the Lucent INTUITY system. See "Planning for Hunt Groups" below for more information on using multiple hunt groups.

Planning for Central Office Requirements

To ensure that the CO properly administers the switch for integration with the Lucent INTUITY system, the customer must provide site-specific information to the CO. The CO must also provide certain information to the customer.

Worksheet for Providing Central Office Requirements

Use the following worksheet (Table 2-1) to record information to be provided to the CO.

➡ **NOTE:**
This worksheet contains site-specific requirements only. For complete switch requirements, see Chapter 3, "Centrex Switch Requirements and Administration".

Table 2-1.   Worksheet for Providing Central Office Requirements

Information Needed by the CO	Information Provided to the CO
Amount of traffic expected.	
Number of voice ports being used.	
Type of message waiting indicator (MWI) used by the majority of INTUITY AUDIX subscribers. ■ Flashing light? ■ Stutter dial tone?	
Extension numbers for the two test subscribers for acceptance testing.	1. 2.
Expected use of the automated attendant and outcalling features. ■ Separate multi-line hunt group (MLHG) required ■ More than one hunt group required	

Continued on next page

Table 2-1.   Worksheet for Providing Central Office Requirements — *Continued*

Information Needed by the CO	Information Provided to the CO

Integration with 3A translator (5ESS switch *only*):
 	
■ The distance from the customer site to the switch.
 	
   — Over 1 km (0.62 mi) — network terminator unit needed
 	
   — 1 km (0.62 mi) or less — network terminator unit *not* needed
 	
■ Source of the customer's 3A translator and/or a network terminator unit (NT1U-200, NT1U-220 or NT1U-230).
 	
   — From the CO
 	
   — Purchased elsewhere
 	
Integration with 202T modem *only*:
 	
■ Source of 202T modem:
 	
   — Supplied by Lucent
 	
   — Not supplied by Lucent
 	
■ Modem settings (see Chapter 6, "Setting the 202T Modem") — to be checked against the settings provided by the CO (see Table 2-2).
 	
Integration with direct connection (DMS-100 and SL-100 switches *only)* or customer-supplied modem (any Centrex switch):
 	
Type of cable needed:
 	
■ Straight RS-232
 	
■ Null modem	

Worksheet for Obtaining Central Office Information

Use the following worksheet (Table 2-2) to record information received from the CO.

⇒ **NOTE:**

This worksheet contains site-specific requirements only. For complete switch requirements, see Chapter 3, "Centrex Switch Requirements and Administration".

Table 2-2.   Worksheet for Obtaining Central Office Information

Information Needed from the CO	Information Provided by the CO
All integrations:	
■ Multiline hunt group (MLHG) numbers being used. If more than one hunt group is being used, the message desk numbers (MDNs) associated with each hunt group.	
■ The range of extensions (for example, 0000-9999).	
■ The number of digits in the dial plan.	
Integration with 202T modem *only*: Modem settings — to be checked against the settings provided to the CO (see Table 2-1).	
Integration with 3A translator (5ESS switch *only*):	
■ Version number of the switch.	
■ Number of digits being sent by the switch: — 7 — 10	
■ 2B1Q encoding usage: — Yes — No	
■ The business customer ID (BCID).	
■ The LCEN (line card equipment number).	

Planning for the Electrical System

The electrical system supplying power to the Lucent INTUITY system 3A translator (if used), and 202T modem must meet the standard electrical requirements and local building codes. The circuit must be on a 20-ampere breaker and be dedicated to the Lucent INTUITY system and associated devices.

Outlets must be grounded in accordance with local and National Electrical Code (NEC) standards. Ground AC units to a solid, stable, single-point ground via the third wire of a 3-prong grounded receptacle that is free from random connections to foreign unstable ground current surges.

When you are connecting to an AC outlet, note the following precautions:

- Do not use an extension cord to connect a device to an outlet.
- Do not use an outlet connected to a wall switch or one subjected to scheduled downtimes.

Electrical Requirements for the 202T Modem

The 202T modem requires a power outlet easily accessible to the modem. This outlet should not share power with other electrical devices that may cause noise, and should not be under the control of a switch. For further information about the operating environment for the 202T modem, see *User's Manual 202T Modem*, 999-102-1421S, or the equivalent for the shipped modem.

Electrical Requirements for the 3A Translator

An electrical outlet must be within 1.8 m (6 f). of the 3A translator. An uninterruptible 60 Hz 120 VAC power supply is recommended, but not required.

Planning for the 202T Modem

Connectivity options for integration with a 202T modem depend on how the local service provider delivers the 3002 data circuit required for integrations with a modem. The options include:

- Direct connection with an M8K (or M13F) adapter cable to an equalization unit, such as an 829 channel interface device or equivalent
- A 4-wire connection through an adapter

See Chapter 7, "Hardware Installation for Centrex Switch Integration with the 202T Modem" for more information about connectivity.

Planning for the 3A Translator

Consider the following specifications when preparing a site to install the 3A translator (5ESS switch only) and auxiliary hardware.

Physical Specifications

The 3A translator weighs 0.8952 km (2.4 lbs) and has the following dimensions:

- Height (6.4 cm (2.56 in.)
- Width 26.04 cm (10.25 in.)
- Depth 4.89 cm (9.80 in.)

Additional space is required at the rear of the unit for cables and connectors. Although the 3A translator does not require special air conditioning systems, it does generate some heat. Ensure that the site allows for heat generated by this unit and additional sources.

The power supply weighs 0.7087 km (1.9 lbs) and has the following dimensions:

— Height 5.99 km (2.36 in.)

— Width 7.62 km (3.00 in.)

— Depth 11.99 cm (4.72 in.)

Preparation for Programming

The 3A translator must be programmed with site-specific information, some of which the customer must obtain from the CO.

The following tasks must be completed before programming the 3A translator:

- Ensure that all hardware connections have been made. For information about the connections, see Chapter 4, "Hardware Installation for 5ESS Switch Integration with the 3A Translator".
- Collect the following information to set the specified options on the 3A translator:

    — The baud rate you are using (SMSIBAUD). This rate must correspond with the setting for the `Baud Rate:` field on the Serial Interface window. (For information about setting this field, see "Setting the Serial Interface Parameters" in Chapter 9, "Lucent INTUITY Administration for Centrex Switch Integration".)

    ⇒ **NOTE:**
      A baud rate of 1200 is recommended.

— The 5-digit business customer ID (BCID) provided by the CO.

— The line card equipment number (LCEN) provided by the CO. This 8-digit number identifies the integrated services digital network (ISDN) connection to the switch. The number should be broken down as follows:

■ 3-digit switch module number (000-192)

■ 1-digit line unit number (0-7)

■ 2-digit line group controller (00-15)

■ 2-digit line card number (00-31)

➡️ **NOTE:**
The digits might be preceded by an alphabetic character. That character is part of the LCEN and must be included when the 3A translator is programmed.

■ Determine whether 7 or 10 digits is provided by the switch (DN SIZE). For the 5ESS switch, 10 digits are provided with switch version 5. With earlier versions, 7 digits are provided.

Planning for Call Forwarding

A call forwarding path (also called a call coverage path) directs the switch to transfer unanswered calls to a hunt group or to another extension. When a call is covered, the switch forwards the called number to the Lucent INTUITY system. The system detects that the called number is administered as a specific system user's extension and treats the call as one to be answered and recorded. Depending on how the extension is configured, the call may be answered by either the INTUITY AUDIX® or the Lucent INTUITY Lodging application.

The switch must be administered to assign call forwarding for each subscriber's extension to the appropriate Lucent INTUITY system number.

Planning for Hunt Groups

A *hunt group* is a set of extension numbers assigned to another telephone number. This number is called the *start hunt number*, the leading member of the hunt, or the pilot hunt group number. When a call is received by this telephone number, a programmed search of the hunt group is made and the call is forwarded to a member of the hunt group that is not busy. For example, when two calls are made to the start hunt number, both are forwarded to two free extensions in the hunt group. Each number in the hunt group corresponds to a channel on the Lucent INTUITY system.

To configure a hunt group for calls being received by the Lucent INTUITY system:

■ The switch must be administered to create a hunt group for the Lucent INTUITY system.

■ The hunt group must be administered on the Lucent INTUITY system.

■ The switch ports that terminate the hunt group extensions must be wired to the voice ports on the Lucent INTUITY platform.

■ The voice ports must be administered on the Lucent INTUITY system.

There are three possible configurations for hunt groups:

■ Single use (single hunt group)

■ Shared use (single hunt group)

■ Dedicated use (multiple hunt groups)

Single Hunt Group

In the simplest integrations, only one hunt group is administered for all calls. For example, the start hunt number may be administered as the INTUITY AUDIX message retrieval number (the telephone number system users call to retrieve voice mail messages). All calls through the Lucent INTUITY system are ultimately forwarded to the one hunt group. The channels in the system have single usage for that hunt group.

It is also possible for the channels in the one hunt group to have shared use for coresident applications. For this to occur:

■ A *phantom* or *dummy* extension number that is not associated with a switch port or a telephone station must be administered on the switch.

■ A *call forwarding path* must be administered for the phantom number.

Calls to the phantom number are forwarded to the hunt group. For example, the start hunt number may be administered for INTUITY AUDIX message retrieval, but a phantom number is set up for the Lucent INTUITY Lodging application. When the phantom number is dialed, the switch forwards the call to a channel in the hunt group.

From there the Lucent INTUITY system service assignment determines the correct application to start for the call. In this example, that would be the Lodging application.

There must be two numbers administered in a coresident system, a start hunt number for one application, and a phantom number for the coresident application.

⚠ CAUTION:
All phantom numbers must be assigned to switch 0 in the INTUITY AUDIX database. If switch 0 is not used for these extensions, which do not have real stations, the system will try to turn message waiting indicators (MWIs) on and off and continually fail. This condition can seriously impede system performance.

Multiple Hunt Groups

Multiple hunt groups containing channels with dedicated usage groups are typically configured for the purposes of traffic management. This feature enables a set of channels to always be reserved for a specific application only. These channels are always available for that application regardless of other traffic demands on the system. For example, separate hunt groups may be administered on a system for INTUITY AUDIX message retrieval and the Lucent INTUITY Lodging application. The number of hunt groups that can be administered depends on the channel capacity of the Lucent INTUITY system. A separate hunt group can be administered for each channel.

MDN and Channel Mapping

The multiple hunt group feature allows the Lucent INTUITY system to recognize and use the message desk number (MDN) field provided by the switch in the SMSI (simplified message service interface) protocol and the SMDI (simplified message desk interface) protocol. MDNs are also called:

- Main directory numbers
- Message service center numbers
- Multi-line hunt groups (MLHGs)
- Hunt – multi-lines (HMLs)

An MDN is a series of digits, from 001 to 999, that the switch transmits as part of the call information to the Lucent INTUITY system. Each start hunt member number is associated with an MDN. Within each MDN, each member of the hunt is associated with a logical terminal number (LTN), for example LTN1, LTN2, LTN3, etc., and a telephone number.

For each hunt group, the MDN, LTNs, and telephone numbers are mapped to voice card ports and channel numbers on the Lucent INTUITY system. The configuration rules for hunt groups are:

- Any unique MDN/LTN can be mapped to any Lucent INTUITY channel in any order.

- Each unique MDN/LTN can be mapped to only one channel.

- An MDN can have any number of channels mapped to it (up to the maximum of 64 channels supported on a Lucent INTUITY system).

- As many hunt groups can be configured as there are channels on the Lucent INTUITY system (up to a maximum of 64).

Installing the Lucent INTUITY system with a single hunt group or multiple hunt groups requires:

- The MDN mapping and the extension numbers to call to test the system (see the worksheets in Table 2-3 and Table 2-4).

- A telephone to place test calls for validation. This telephone should be located so that the installer can view the system monitor while placing the calls. If this is a new system installation, one of the two test telephones for the INTUITY AUDIX application or the test telephone for the Lucent INTUITY Lodging application can be used.

- The appropriate translations on the switch so that calls can be forwarded to the Lucent INTUITY system and the appropriate MWI indication (stutter tone or MWI lamp) can be turned on or off.

Before the installation, review with your project manager the extent of your responsibilities and when administration will be performed on the switch. Complete the worksheets that will be needed for installation.

Recording Channel Mapping and MDNs

Fill in the worksheet for channel mapping and MDN test (Table 2-3). You will need this information to administer the Hunt Group Translation window (see ''Setting the Hunt Group Translations'' in Chapter 9, ''Lucent INTUITY Administration for Centrex Switch Integration'').

If you are:

- Installing a new Lucent INTUITY system or adding the feature to an existing system and changing the channel mapping (assigning different channels to Lucent INTUITY ports), fill in the worksheet with information from the CO.

- Adding the multiple hunt group feature to an existing system that will retain its existing channel mapping, use the windows on the Lucent INTUITY system to provide current information. Complete the following procedure to get the information from the windows.

1. Start at the Lucent INTUITY System Main Menu (Figure 9-1) and select

> Voice System Administration

> Voice Equipment

The system displays the Voice Equipment window (Figure 2-1).

```
                            Voice Equipment


  Card   0 is IVC6    O.S.Index:  0         Function: TipRing
                      State: Inserv
  CD.PT CHN STATE     STATE-CHNG-TIME  SERVICE-NAME  PHONE    GROUP    TYPE
   0.0   0   Inserv   Jan 09 11:17:29  *DNIS_SVC     3001     2        IVC6
   0.1   1   Inserv   Jan 09 11:17:29  *DNIS_SVC     3002     2        IVC6
   0.2   2   Inserv   Jan 09 11:17:29  *DNIS_SVC     3003     2        IVC6
   0.3   3   Inserv   Jan 09 11:17:29  *DNIS_SVC     3004     2        IVC6
   0.4   4   Inserv   Jan 09 11:17:29  *DNIS_SVC     3005     2        IVC6
   0.5   5   Inserv   Jan 09 11:17:29  *DNIS_SVC     3006     2        IVC6

  Card   1 is IVC6    O.S.Index:  1         Function: TipRing
                      State: Inserv
```

Figure 2-1.   Voice Equipment Window

2. Record the telephone number for the Lucent INTUITY system card and port in the PHONE field on the worksheet (Table 2-3). See the following example (Figure 2-2) if necessary.

3. When you finish recording the channel numbers, press F6 (CANCEL) twice to return to the Lucent INTUITY Main menu.

4. Use information from the CO to record the MDN and LTN for each channel.

Worksheet for Channel Mapping and MDN Test

The worksheet (Table 2-3) contains the following fields.

- CD.PT is the voice card port.

- CHN is the channel number on the Lucent INTUITY system. For example, the following listing indicates the 11th channel connected to the system through the second Tip/Ring circuit card, fifth port on the card:

  CD.PT 1.4 CHN 10

- PHONE is the telephone number associated with the MDN and LTN.

➡ **NOTE:**
The switch numbers its channels starting with 1. The Lucent INTUITY system starts with 00.

For channels not in use, leave all field blank.

Table 2-3.   Worksheet for Channel Mapping and MDN Test

MDN	LTN	CD.PT	CHN	PHONE	MDN	LTN	CD.PT	CHN	PHONE
		0.0	00				5.2	32	
		0.1	01				5.3	33	
		0.2	02				5.4	34	
		0.3	03				5.5	35	
		0.4	04				6.0	36	
		0.5	05				6.1	37	
		1.0	06				6.2	38	
		1.1	07				6.3	39	
		1.2	08				6.4	40	
		1.3	09				6.5	41	
		1.4	10				7.0	42	
		1.5	11				7.1	43	
		2.0	12				7.2	44	
		2.1	13				7.3	45	
		2.2	14				7.4	46	
		2.3	15				7.5	47	
		2.4	16				8.0	48	
		2.5	17				8.1	49	
		3.0	18				8.2	50	
		3.1	19				8.3	51	
		3.2	20				8.4	52	
		3.3	21				8.5	53	
		3.4	22				9.0	54	
		3.5	23				9.1	55	
		4.0	24				9.2	56	
		4.1	25				9.3	57	
		4.2	26				9.4	58	
		4.3	27				9.5	59	
		4.4	28				10.0	60	
		4.5	29				10.1	61	
		5.0	30				10.2	62	
		5.1	31				10.3	63	

Example

In this example (Figure 2-2), 3 hunt groups are configured for 16 Lucent INTUITY channels, 00 through 15. MDN 200 has 6 hunt members, MDN 311 has 4 hunt members, and MDN 612 has 6 hunt members.

MDN	LTN	CD.PT	CHN	PHONE
200	1	0.0	00	6427
200	2	0.1	01	6428
200	3	0.2	02	6429
311	4	0.3	03	5900
311	5	0.4	04	5901
311	9	0.5	05	5903
311	10	1.0	06	5904
200	27	1.1	07	6430
200	28	1.2	08	6432
200	29	1.3	09	6433
612	1	1.4	10	8856
612	2	1.5	11	8857
612	3	2.0	12	8858
612	9	2.1	13	8892
612	10	2.2	14	8893
612	11	2.3	15	8894

Figure 2-2.   Example of a Completed Worksheet for Channel Mapping and MDN Test

Determining the Telephone Numbers for Test

NOTE:

If the administration has not been done on the switch at the time of installation, the integration cannot be tested.

Determine the telephone numbers for the acceptance test and fill in the following worksheet (Table 2-4). There should be one telephone number for each MDN.

Table 2-4. Worksheet for Extension Numbers for Test

Telephone Number Type	Associated MDN	Telephone Number(s)
Message retrieval numbers		
Call answer numbers		
Automated Attendant numbers		
Others		

Planning for the Lucent INTUITY Lodging Application

Calls to the Lucent INTUITY Lodging application can be handled in any of several ways that impact the hunt group planning and administration for the integration.

■ A Lodging-only system can be administered as a single hunt group.

   See the information on single hunt group, single usage in ''Planning for Hunt Groups'' above.

■ On a system with INTUITY AUDIX coresident with Lucent INTUITY Lodging (or another application), a single hunt group is administered along with a phantom number for the coresident application. For this configuration, you must administer the phantom numbers to be forwarded to the hunt group.

   See the information on single hunt group, shared usage in ''Planning for Hunt Groups'' above.

■ On a system with multiple hunt groups, one hunt group can be administered for the Lodging application. All calls to the Lodging start hunt number go to the voice channels in the Lodging hunt group.

In all cases you must:

1. Administer the switch to assign call forwarding for each guest's extension to the associated Lucent INTUITY system hunt group number.

2. Provide the appropriate message retrieval numbers to the system users.

Cut to Service

A cut to service of the INTUITY Lodging application amounts to changing the call forwarding path for each guest extension to the Lucent INTUITY system hunt group. The associated system must be completely installed before you cut the INTUITY Lodging application into service. Furthermore, all Lucent INTUITY system initial administration, associated switch administration, and acceptance tests must be completed. Some switching systems make it possible to group these extensions as a set, allowing the call forwarding path to be changed simultaneously. Most switching systems permit changing the call forwarding path for guest extensions one extension at a time. You may use either method.

Planning for Lucent INTUITY Administration

Fill in the following worksheet (Table 2-5) with the parameters necessary to administer the fields in the Lucent INTUITY windows for switch integration. For full information on these fields, see the references in Table 2-5.

Table 2-5. Worksheet for Lucent INTUITY Administration Windows

Window	Fields
Serial Interface For full information, see "Setting the Serial Interface Parameters" in Chapter 9, "Lucent INTUITY Administration for Centrex Switch Integration"	`Data Bits:` (default=7) `Stop Bit(s):` (default=1) `Start Bit(s):` (default=1) `Baud Rate:` (default=1200) `Parity:` (default=E) `Flow Control [Y/N]:` (default=N) `Serial Ports:` 1. 2. 3. 4. 5. 6. 7. 8. ⇒ **NOTE:** The defaults provided on the Serial Interface window will be correct for most integrations.

Continued on next page

Table 2-5. **Worksheet for Lucent INTUITY Administration Windows** — *Continued*

Window	Fields			
Device Assignment For full information, see "Setting the MWI Device Assignments" in Chapter 9, "Lucent INTUITY Administration for Centrex Switch Integration"	`Link Test [Y/N]:` `Link Test Interval` (seconds): ⇒ **NOTE:** For Nortel DMS-100 and SL-100 switches, the link test field must be set to n (no). The Link Test Interval and Link Test Number fields are not used.			

	Switch Number	Device ID	Link Test Number
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			
17.			
18.			
19.			
20.			

Continued on next page

Table 2-**5.** **Worksheet for Lucent** INTUITY **Administration Windows** — *Continued*

Window	Fields

MWI Parameters
 	
For full information, see "Setting MWI Parameters" in Chapter 9, "Lucent INTUITY Administration for Centrex Switch Integration"
	```MWI On Prefix:```
	```MWI On Suffix:```
	```MWI Off Prefix:```
	```MWI Off Suffix:```
	```MWI Updates [Y/N]:```
	```Background Refresh:```
	```Background Interval:```
	```Background Updates:```
	```Broadcast Interval:```
	```Broadcast Updates:```
	```Block Start Time:```
	```Block End Time:```

Hunt Group Translation For full information, see "Setting the Hunt Group Translations" in Chapter 2, "Planning for Centrex Switch Integration"	⇒ **NOTE:** Use the worksheet for channel mapping and MDN test (Table 2-3).

Table 2-5. **Worksheet for Lucent INTUITY Administration Windows** *— Continued*

Window	Fields					
Dial Plan Translation For full information, see "Setting the Dial Plan Translations" in Chapter 9, "Lucent INTUITY Administration for Centrex Switch Integration"	INTUITY Extension Length: Switch Network Access Code:					
		Switch Prefix	Switch Start Ext.	Switch End Ext.	INTUITY Prefix	Switch Number	Remote [Y/N]
	1.						
	2.						
	3.						
	4.						
	5.						
	6.						
	7.						
	8.						
	9.						
	10.						
	11.						
	12.						
	13.						
	14.						
	15.						
	16.						
	17.						
	18.						
	19.						
	20.						
	21.						
	22.						
	23.						
	24.						
	25.						
	26.						
	27.						

Table 2-**5.** **Worksheet for Lucent** INTUITY **Administration Windows** — *Continued*

Window	Fields						
Dial Plan Translation (*Continued*)		Switch Prefix	Switch Start Ext.	Switch End Ext.	INTUITY Prefix	Switch Prefix	Remote [Y/N]
	28.						
	29.						
	30.						
	31.						
	32.						
	33.						
	34.						
	35.						
	36.						
	37.						
	38.						
	39.						
	40.						
	41.						
	42.						
	43.						
	44.						
	45.						
	46.						
	47.						
	48.						
	49.						
	50.						

Centrex Switch Requirements and Administration

3

Contents

Contents

Centrex Switch Requirements and Administration

3

Overview

This chapter includes general software and hardware requirements for administering Centrex switches for integration with the Lucent™ INTUITY™ system and specifies information the customer must provide to and obtain from the central office (CO). Separate sections are provided for the:

■ Lucent 5ESS® switch

■ Northern Telecom (Nortel) DMS-100/SL-100 switch

Purpose

This chapter provides high-level guidelines for ensuring that the switch is administered properly for integration with the Lucent INTUITY system.

Lucent 5ESS Switch

This section provides the following information for 5ESS switch integrations:

- Hardware and software requirements
- Switch administration requirements

5ESS Switch Hardware and Software Requirements

The customer must ensure that the CO provides the hardware and software listed below.

5ESS Switch Integration with a 3A Translator

The following are required:

- 5E4(2) generic software load (version 4.2 or later)
- A basic rate interface (BRI) line set up in office-dependent data (ODD) as an applications processor interface (API). This BRI/API link should be a OB+D link (data only) with D-channel packet switching. The CO can provide this service in one of two ways:

    — A BRI/API 4-wire T-interface is used if a 3A translator is located less than 1 km (0.6 miles) from the switch. This interface requires a D8W-87 8-pin modular cord (RJ45 to RJ45) leading to a 4-wire, T-interface jack. The modular jack is usually the demarcation point; the CO is responsible for any equipment beyond this point. A 5ESS switch module can provide an integrated services line unit-T card (ISLU-T) connection if the customer site is located near the CO.

    — A 2-wire BRI/API U-interface is used if a 3A translator is located more than 1 km (0.6 miles) from the switch. The U-interface allows the 3A translator to be located up to about 10 km (6.25 miles) from the switch (if 19-gauge wire is used); a U-interface often uses 25-gauge wire, allowing the connection to extend up to 3.6 km (2.25 miles). However, the 3A translator can connect only to 4-wire T-interface cabling.

    Converting the 2-wire BRI/API U-interface from the switch to the 4-wire T-interface wiring needed by the 3A translator requires a network terminator unit (NT1U-200 or NT1U-220). The CO may provide the unit or the customer may be required to obtain it, depending on the local service provider procedures.

    ### ⇒ NOTE:
    Brite cards are required on the switch if the network terminator unit is more than 5 km (3 miles) away from the switch.

- Business and residence custom services (BRCS) feature package I, II, or III

- Integrated services digital network (ISDN) feature package I

- An ISDN SM, optical remote module (ORM), or remote switching module (RSM) to support the BRI/API link

- The ISDN Message Service, also called deluxe MSS

- Up to 64 analog station lines in a multi-line hunt group (MLHG), with one 2-way Centrex line for each voice messaging port. The number of queue slots in the group should be based on traffic.

  ⮕ **NOTE:**
    If multiple hunt groups are to be configured, the same requirements apply to each hunt group. The Lucent INTUITY system can support a configuration with up to 64 different MLHGs.

  The number of analog lines must match the number of INTUITY AUDIX® voice ports.

- One 2-way analog station line for reporting INTUITY AUDIX alarms to a remote services site. Remote services personnel or systems will use this line to perform remote maintenance.

- Optional: One 2-way analog station line if the customer will be using remote access for administration

5ESS Switch Integration with a 202T Modem

The following is required:

- A 202T modem (or equivalent) at the switch

- A baud rate setting of 1200

⮕ **NOTE:**
  Further requirements are site-specific. Contact your service provider and your remote support center.

5ESS Switch Administration Requirements

The customer and the service provider are responsible for administering the CO to accept the INTUITY system. The local operating company must administer the 5ESS switch before you begin the installation.

This list summarizes the switch administration necessary for all integrations, whether the 3A translator or the 202T modem is used:

■ The voice messaging station lines must be assigned to a message service center (MSC) MLHG. The hunt group must use uniform call distribution (UCD) and be associated with a Deluxe MSS group. There may be 2 to 64 lines in the group.

⇒ **NOTE:**

The Lucent INTUITY system can support a configuration with up to 64 different MLHGs.

— The voice ports must be configured to allow calls to originate from INTUITY AUDIX® ports. This is required for outcalling functions such as fax and audio interchange interface specification (AMIS).

— Queuing (including optional music or recorded announcements) can be assigned to the hunt group if desired.

— Optional: Some voice messaging ports can be assigned to a separate hunt group on the switch to support the INTUITY AUDIX automated attendant feature (for example, if heavy automated attendant use is expected). Outside callers can then be directed to the automated attendant MLHG, while INTUITY AUDIX system users can dial directly into the main MLHG.

— If desired, other voice messaging ports can be set aside on the switch to support the INTUITY AUDIX outcalling feature. By default, outcalling occurs on channel group 2 on the Lucent INTUITY system. Through administration of the Voice Equipment window, outcalling can be made to occur on the highest numbered ports, such as ports 59 to 63, by assigning them to another channel group. These ports can be administered as individual station lines on the switch that are not in the hunt group.

— For the purpose of evaluating traffic on the system, any ports that are set aside for specific automated attendant or outcalling use are subtracted from the total number of ports available in the main voice messaging hunt group. For example, if a 32-port system has 6 ports in a MLHG for automated attendant calls and 4 station lines set aside for outcalling, 22 ports are available in the main voice messaging MLHG for direct voice mailbox calls and redirected call answer calls.

■ The following line assignments are needed for all INTUITY AUDIX station (user telephone) lines, depending on customer requirements:

— BCID (business customer ID) (shows the message group to which INTUITY AUDIX system users belong). One INTUITY AUDIX system can support more than one company, for example, if each company has a different customer group ID. The business customer group ID does not affect INTUITY AUDIX operation at this time.

— Call forwarding in ODD, with forwarding to the voice messaging MLHG (called the MSC MLHG on the switch). The 5ESS switch bases internal call forwarding on the terminal group.

— Deluxe MSS feature with the following:

■ Attendant coverage (required; set to **yes**).

■ Message waiting indicator (MWI), either a lamp, stutter tone, or both.

— The analog lines to the voice messaging system must be assigned to a MSC MLHG. This hunt group must use UCD and must be assigned to a Deluxe MSS group (ISDN messaging service).

■ An individual analog port is required for reporting INTUITY AUDIX alarms to a remote location.

■ To test the INTUITY system, the CO must set up two test telephones to be connected through the switch. These telephones should match the majority of telephones that the customer will use on the system. If the MWI will be a flashing light, the test telephones must also be equipped with a flashing light. If the MWI is a stutter tone, the test telephones must be able to give the stutter notification.

For the system to be tested and cut to service, the customer must provide the CO with two test user extensions and all user extensions on the system. Once the integration is complete, the CO must perform acceptance tests for the two test users, which includes:

— Administering the coverage path

— Administering the test subscriber stations

Nortel DMS-100 and SL-100 Switches

This section provides the following information for DMS-100 and SL-100 switch integrations:

- Hardware
- Software requirements
- Switch administration requirements

DMS-100 and SL-100 Switch Hardware Requirements

The customer must ensure that the CO provides the following hardware for the SMDI link:

- A 202T modem at the switch (if distance requires)

- A 3002 data circuit between the two modems (for example, an 829 channel interface unit, OMNI port, or equivalent)

- If an 829 channel interface unit is used, an appropriate cable (such as a B25A) between the unit and the modem in the CO (central office)

- Data communications card:

  — NT1X67FA or higher vintage IOC card for 1200-baud rate link

  — NT1X89AA/AB or high vintage MPC card for 2400 baud rate link (used for direct connection configurations or configurations with a customer-supplied modem)

- An SMDI link cable between the IOC/MPC port on the switch and the 25-pin adapter connected to the Lucent INTUITY serial port cable.

  ### ⊫ NOTE:
  If the NT1X67 IOC card is used at the switch, the connection must be programmed for port 0 on the data communication card and the card must be dedicated for the Lucent INTUITY system.

⚠ CAUTION:
The nt1x67bc or the nt1x67bd circuit cards are NOT compatible with the Lucent INTUITY system.

The hardware interface to the IOC/MPC port varies with different switch models. For direct connection (without a modem) or for connection through a customer-supplied modem (not a 202T modem), see the DTE serial port adapter pin configuration in Chapter 8, "Hardware Installation for Integration with Direct Connection or Customer- Supplied Modem". Use an RS-232 mini-tester (or breakout box) to determine the correct connection. An integration does not require the installation of a 202T modem if the distance between the Lucent INTUITY

system and the switch is less than or equal to 15.3 m (50 ft), which is an RS-232 standard. If the distance is greater than 15.3 m (50 ft), a modem is required.

In addition, a loop start (not a ground start) interface for the voice connection (UCD) agents is required.

DMS-100/SL-100 Switch Software Requirements

The customer must ensure that the CO provides the following software:

- BCS24 through BCS28 and BCS32 or later software releases are required on the DMS-100/SL-100 switch to support the Lucent INTUITY system SMSI data link.

    ⇒ **NOTE:**
    Nortel calls this link the simplified message desk interface (SMDI) link.

- The following SMSI feature packages are required:
    — NTX100: Meridian Digital Centrex - Basic (IBN)
    — NTX101: Meridian Digital Centrex - enhanced business services (IBN)
    — NTX119: Message Service
    — NTX730: ASCII Driver
    — NTX732: Simplified Message Desk Interface (SMDI)

    ⇒ **NOTE:**
    NTX100 and NTX101 contain the uniform call distribution (UCD) features required for basic message-desk operation. NTX119 allows the Lucent INTUITY system to request message waiting updates. NTX730 and NTX732 enable the DMS-100/SL-100 to send call setup information to the Lucent INTUITY system.

- Plain Old Telephone Service (POTS) — For customers to use the message desk, either NTX220 (Vertical Services I) or NTX806 (Enhanced Call Forwarding - POTS) packaging must be available *in addition* to the packages listed previously.

Serial Port Settings

For the serial port settings on the switch, see Nortel NTP 297-3501-316.

DMS-100 and SL-100 Switch Administration Requirements

The customer and the local operating company are responsible for administering the CO to accept integration with the Lucent INTUITY system. The local operating company must administer the DMS-100 or SL-100 switch before you begin the integration.The information provided here is for reference only.

The following high-level procedures are needed on the switch:

■ Define the UCD (uniform call distribution) agent for each voice port that connects to the Lucent INTUITY system.

⇒ NOTE:
The Lucent INTUITY system requires a loop start (not a ground start) interface for the voice ports.

■ Define the UCD group.

■ Configure the SMDI link.

■ Activate the SMDI link.

See information on service order procedure 0081 in Nortel NTP 297-3401-311 for the SMDI link configuration on the DMS-100 and SL-100 switches. See Nortel NTP297-2001-104 for information on how to administer the switch tables.

In addition, MWI must be enabled on the switch, and two telephones must be set up for testing.

Configuring the SMDI Link

The following procedures are required to assign parameters to configure the SMDI link. Ensure that the switch administrator has made these assignments.

1. Parameters for the terminal devices must be set in the appropriate tables, as described in Steps a and b below:

    a. The TERMDEV table is required for the NT1X67FA circuit card. Table 3-1 lists the fields in the TERMDEV table.

    b. The MPC table and MPCLINK table are required for the NT1X89 circuit card. Table 3-2 lists the fields for the MPC table, and Table 3-3 lists the fields for the MPCLINK table.

2. Parameters for the datalink characteristics must be set in the SLLNKDEV table. Table 3-4 lists the fields for the SLLNKDEV table.

3. In addition, ensure that the proper buffer allocation is made for SMDI records such as call information and MWI traffic in the OFCENG table per the requirements defined in Nortel NTP 1001-455.

Table 3-**1.   TERMDEV Table Definitions (for the NT1X67 Circuit Card)**

Field	Description	Values
TERMDES	The SMDI link device name.	1-8 characters.
IOCNO	The I/O (input/output) controller number.	
CKTNO	The I/O controller number to which the link is assigned as outgoing and incoming dateline.	
TERMTYPE	Terminal type.	SMDI
BAUDRT	Baud rate of the terminal device.	Set the appropriate baud rate: ■ 1200 ■ 2400 (for direct connection configurations only or configurations with a customer-supplied modem).
GUARINTYP	Interface type.	If a modem is used, set this value to EIA.
EQPEC	Product engineering code of the circuit card.	Example: 1X67FA
PRTY	Parity of the terminal device.	■ e (even) ■ o (odd) ■ n (none) Normally this value is set to **n** (none).
MODEM	Type of modem.	NONE
COMCLASS	Command classes for the link.	ALL

Table 3-2. MPC Table Definitions for the NT1X89 Circuit Card

Field	Description	Values
MPCNO	The MPC number used for the SMDI link.	Range 0-255. The value used here must also be used in the MPCNO field in the MPCLINK table.
MPCIOC	The shelf number of the MPC I/O controller (SMDI link).	Range 0-12.
IOCCCT	The IOC circuit number.	To derive this value, multiply the slot position on the IOC shelf by 4. 0, 4, 8, 12, 16, 20, 24, 28, or 32.
EQ	The product engineering code for the MPC circuit card.	1X89AA or 1X89BA.
DLDFILE	The download file name for SMDI.	8 characters in the format MPCA*xxyy*.

Table 3-3. MPCLINK Table Definitions for the MPC Circuit Card

Field	Description	Values
LINKKEY	Key composed of the MPCNO and LINKNO subfields.	See the fields below.
MPCNO	The MPC number used in the SMDI link.	Enter the same value as in the MPCNO field in the MPC table.
LINKNO	The MPC link for SMDI application with ASYNC protocol.	2 or 3.
PROTOCOL	This value must be consistent with the download file specified in the MPC table (see the DLDFILE field in Table 3-2 above).	ASYNC
LINKNABL	The amount of time a link is enabled before it is busied.	The number of minutes in multiples of 5.
APLDEFN	Application definition.	SMDI

Table 3-4.   SLLNKDEV Table Definitions for Datalink Characteristics

Field	Description	Values
DEVNAME	Device name entered in the TERMDEV table.	Use the device name entered in the TERMDEV table.
DEVTYPE	Device type.	■ For BCS29 and earlier releases, use RS232. ■ For BCS30 and later releases, use HS1X67 (for the 1X67F circuit card).
XLATION	Translations used for incoming and outgoing calls.	Usually set to NONE.
PROTOCOL	Protocol used for the datalink.	Set to NONE for the serial link.
DIRECTION	Specifies the direction that data travels through the link.	Set the direction as INOUTLK (for two-way).
XFERS	Report type currently allowed on the datalink.	Set to SMDIDATA.

Activating the SMDI Link

The SMDI link must be assigned to the voice ports. This is done by using the service order (SERVORD) procedure to assign the SMDI option for each voice port by setting SMDI_AUTOLOG to **y** for all voice ports.

Defining the UCD Agent for Each Voice Port that Connects to the Lucent INTUITY System

The UCD group setup requires defining settings for each UCD agent (analog line) using the service ordering (SERVORD) table. Each voice port (Tip/Ring line) coming into the Lucent INTUITY system must be defined as a UCD agent. The directory numbers assigned to each voice port (UCD agent) must also be assigned in the Voice Equipment window on the Lucent INTUITY system.

Each voice port connecting to the Lucent INTUITY system must be configured as a loop-start interface. The status must be set to WORKING in the Line Circuit Inventory (LNINV) table. There must be a sufficient number of DS-30A links between the LCGs (Line Group Controllers) and the LCMs (Line Concentrator Modules) to support traffic to the Lucent INTUITY system. See Nortel NTP-297-1001-103 for more information. The following parameters should be set for each line connected to the Lucent INTUITY system:

- ■ DM — directory number

- ■ LCC — line class code of service (usually set to IBN)

- ■ GROUP — name of the IBN customer group to which the line belongs

- SUBGRP — subgroup number

- NCOS — network class of service

- SNPA — Service numbering plan area

- LATANAME — local area transport access name (set to NILLATA)

- LEN_OR_LTID — line equipment number (also known as line terminal ID)

- OPTION — The following options must be enabled on the line:

    — COD (CUTOFF_ON_DISC) must be enabled and the setting verified as greater than 200 ms. (The default setting on the Nortel switches is usually 80 ms.

    — UCD must be specified to associate the line with a UCD.

    — SMDI must be specified to associated the line with a particular SMDI link.

    — 3WC (for 3-way calling) should be set on the line. More options may be required.

    — T (for transfer enabled) must be set.

Make sure that the cutoff-on-disconnect-time is set to 1 second in the OFCVAR table.

Defining the UCD Group

The UCDGRP (uniform call distribution group) table defines the MDN (message desk number) for the Lucent INTUITY system. The MDN is needed for the Lucent INTUITY system only if more than one hunt group (UCD group) is used in voice connection. Each voice channel has a corresponding UCD agent that is a member of the message desk. The UCDGRP (UCD group) table (Table 3-5) is used for these definitions.

A primary directory number must also be assigned for the UCD group:

- DNROUTE table is used in BCS 33 and higher releases.

- WRND table is used in BCS 32 or lower releases.

See (Table 3-6) for the fields in these tables.

Table 3-5.   UCD Group Table (UCDGRP)

Field	Description	Values
UCDNAME	Name assigned to a UCD group.	Range 1-16 characters.
ACDN	Specifies whether automatic call distribution is supported.	n
CUSTGRP	The name of the customer group to which the UCD group belongs	1-16 characters.
UCDRNGTH	The interval after which an answered call to a UCD agent is forwarded to the route specified in the THROUT field.	20
TABNAME	Specifies where overflow and timeouts are to be routed.	■ OFRT ■ IBNRTE
INDEX	The route list number assigned in the OFRT or IBNRTE table.	Range 1-1023.
PRIOPRO	The maximum amount of time a call can wait in the queue.	Digits representing the number of seconds.
MAXPOS	The number of Lucent INTUITY voice ports used.	Range 1-64.
DBG	Specifies when billing begins.	■ N — billing starts when the caller receives a recorded announcement. ■ Y — billing starts when the call is answered by a UCD agent.
DEFPRIO	The default priority treatment for local calls terminating on the primary UCD number.	0 (zero)
RLSCNT	The maximum number of calls that terminate on a UCD station but are not answered.	0 (zero)
MAXCQSIZ	The maximum number of calls that can be in the incoming queue. The queue size should be less than or equal to the maximum number of Lucent INTUITY voice ports.	Range 0-511.
MAXWAIT	The maximum time a call can wait in the incoming call queue before being answered.	Digits representing the number of seconds.
OPTIONS		UCD_SMDI

Table 3-5. UCD Group Table (UCDGRP) — *Continued*

Field	Description	Values
SMDI_ TERMDEV	The terminal designation defined in the TERMDEV and SLLNKDEV tables.	Use the value assigned in the TERMDEV and SLLNKDEV tables.
SMDI_DSK_ NO	MDN (message desk number).	Range 1-63.

Table 3-6. DNROUTE and WRDN Table Definitions for the UCD Group

Field	Description	Values
DNNM	Specifies the numbering plan.	■ SVGNPA ■ NXX ■ DEFGDIGS
DN_SEL	DN selector FEAT.	FEAT
FEATURE	Feature UCD.	UCD
UCDGRP	The UCD group name.	Use the name set for the UCDNAME field in the UCDGRP table.
DNTYPE	Directory number type.	Set this value to PRIM if the directory number is the primary UCD DN for the UCD group.
TOLLPRI O	The priority of toll calls terminating on the primary UCD directory number.	Normally set to 0 (zero).

Enabling MWI

For the subscriber extensions that will receive voice mail messages on the Lucent INTUITY system, the MWI (message waiting indicators) must be enabled. This is done by enabling either MWT (message waiting tone) or MWL (message waiting lamp). The subscriber extensions must be configured o define the Call Forward Busy number as the lead UCD number, and the Call Forward No-Answer number to the UCD.

Setting Up Test Telephones

Two telephones must be set up for testing the Lucent INTUITY system. These telephones must be connected through the switch and should match the majority of telephones that the customer will use on the system. If the MWI will be a flashing light, the test telephones must also be equipped with a flashing light. If the MWI is a stutter tone, the test telephones must be able to give stutter notification.

For the system to be tested and cut to service, the customer must provide the CO with two test user extensions and all user extensions on the system. Once the integration is complete, the CO must perform acceptance tests for the two test users. The following two tasks must be performed:

- Administer the coverage path.
- Administer the test user stations.

Hardware Installation for 5ESS Switch Integration with the 3A Translator

4

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Hardware Installation for 5ESS Switch Integration with the 3A Translator

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Overview

The connections required to integrate the Lucent™ INTUITY™ system with the Lucent 5ESS® switch using the 3A SMSI (simplified message desk interface) translator must be completed before programming the 3A translator. This chapter describes the:

- 3A translator

- NT1U-200, NT1U-220, and NT1L-230 network terminator units

- Power supply for the NT1U-200, NT1U-220, and NT1L-230 network terminator units

- Possible configurations for connecting to the multi-port serial circuit card

⇒ NOTE:
The NT1U-200 network terminator unit is a older version of the unit, no longer supplied. It can be used for some integrations in upgrade situations.

Hardware configurations differ, depending upon the distance between the 3A translator and the 5ESS switch.

Purpose

This chapter provides procedures to install the hardware necessary to integrate a 5ESS switch with any MAP (multi-application platform) of the Lucent INTUITY system using a 3A translator.

Configuration

The 5ESS switch supports the applications processor interface (API) protocol. Data must be converted from simplified message service interface (SMSI) to API protocol before it reaches the integrated services digital network (ISDN) switching module on the 5ESS switch. To translate API to SMSI protocol, a 3A SMSI translator is used. The 3A translator can be connected to the multi-port serial circuit card on any INTUITY multi-application platform (M AP).

Distance Requirements

Different hardware configurations are possible depending on the distance between the 3A translator and the switch. If this distance is over 1 km (0.62 mi), a network terminator unit (NT1U-200, NT1U-220, or NT1L-230) is required:

- NT1L-230 network terminator unit can be used in any configuration.

- NT1U-220 or NT1L-230 network terminator unit is required if the U-card on the 5ESS switch uses 2B1Q encoding (5ESS switch Version 6 or later). Under these conditions, do *not* use an older version NT1U-200 network terminator unit.

The following configurations are supported for connection to the multi-port serial circuit card with the 3A translator:

- Less than 1 km (0.62 mi) from the 5ESS switch

- 1 km (0.62 mi) or more from the 5ESS switch with NT1U-220 or NT1L-230 network terminator unit

- Less than 1 km (0.62 mi) from the 5ESS switch with NT1U-200 or NT1L-230 network terminator unit

> **NOTE:**
> At distances of 9.7 km (6 mi) or greater the 3A translator *cannot* be used. A modem must be used instead.

Hardware Devices

See the following illustrations when installing the 5ESS integration hardware:

- 3A translator (Figure 4-1 and Figure 4-2)

- NT1U-220 network terminator unit (Figure 4-3)

- NT1L-230 network terminator unit (Figure 4-4)

- Power supply for NT1U-220, NT1U-220, and NT1L-230 network terminator units (Figure 4-5)

> **NOTE:**
> The NT1U-200 network terminator unit is not illustrated. It resembles the NT1U-220 network terminator unit.
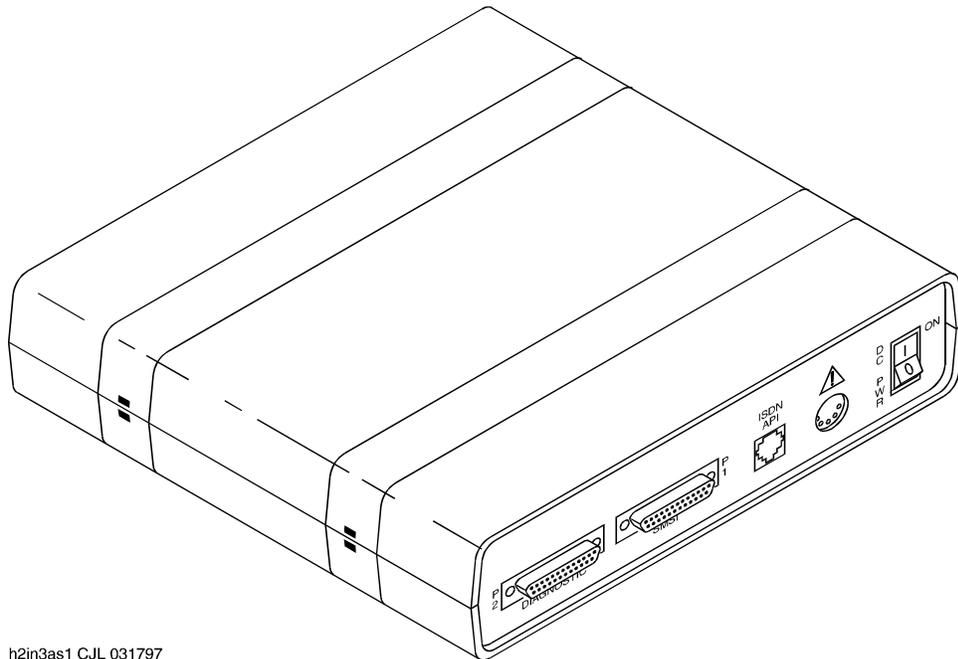
h2in3as1 CJL 031797

Figure 4-1.   Back View of the 3A SMSI Translator

1. SMSI port   3. DC power receptacle
2. ISDN data port   4. DC power ON/OFF switch
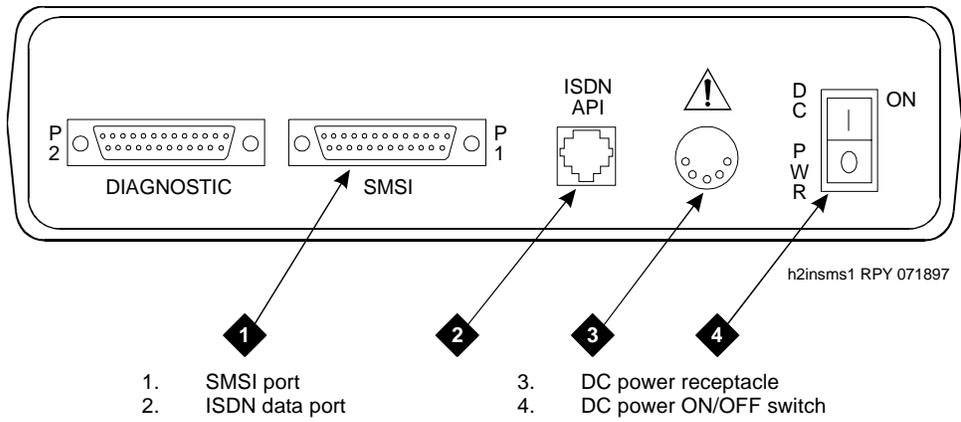
Figure 4-**2.   Back Panel of the 3A SMSI Translator**
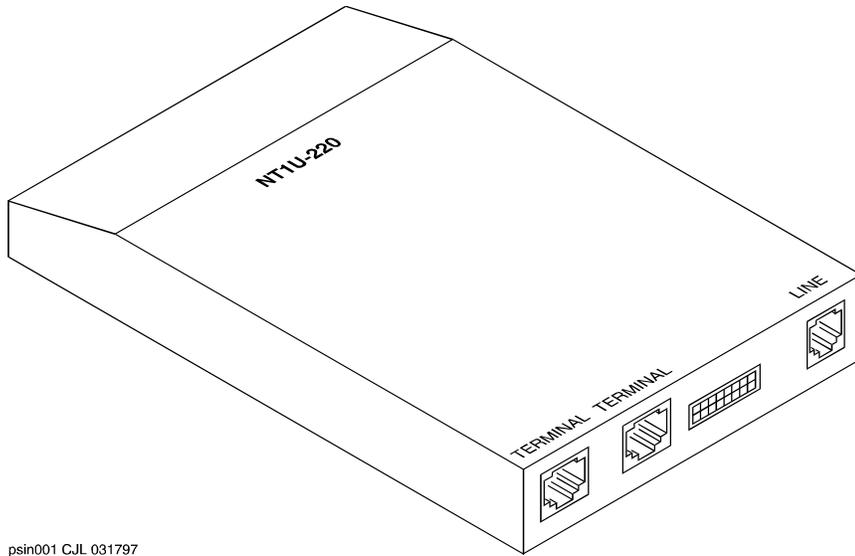
Figure 4-**3.   NT1U**-**220 Network Terminator Unit**

h1innt1l PDH 032197
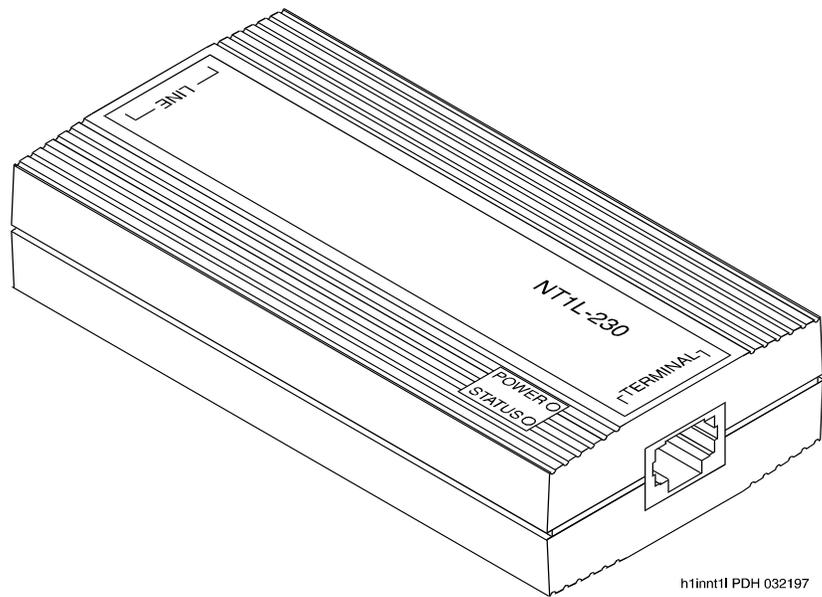
Figure 4-4.   NT1L-230 Network Terminator Unit

pwr_sup1 CJL 051496
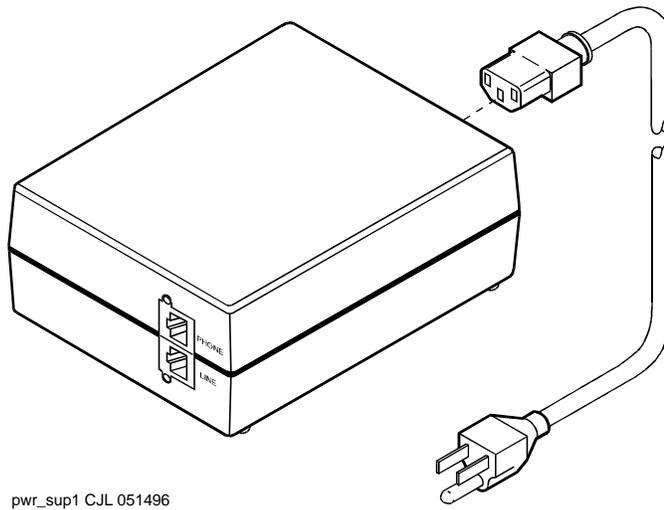
Figure 4-5.   Power Supply for NT1U-200, NT1U-220, and NT1L-230 Network Terminator Units

Connecting to the Multi-Port Serial Circuit Card

The procedure required to connect the 3A translator to the multi-port serial circuit card depends on the distance between the 3A translator and the 5ESS switch:

- 1 km (0.62 mi) or less

- More than1 km (0.62 mi) with NT1U-220 or NT1L-230 network terminator unit

- More than1 km (0.62 mi) with NT1U-200 or NT1L-230 network terminator unit

Distance of 1 km (0.62 mi) or Less

The following hardware is required when the 3A translator is connecting to the multi-port serial circuit card and is 1 km (0.62 mi) or less from the 5ESS switch (Figure 4-6):

- Multi-port serial circuit card (installed in any MAP)

- 4.3-m (14-ft) modular 6-wire cable (D6AP — provided with the multi-port serial circuit card)

- RS-232 6-25 pin terminal/printer adapter (DCE)

- 3A SMSI translator

- 60 Hz 120 VAC power supply/transformer (provided with the 3A translator)

- D8W modular cable

- 103A or 104A adapter or equivalent

In addition, a standard electrical outlet must be within 1.8 m (6 ft) of the 3A translator. Uninterruptible 60 Hz 120 VAC power is recommended.

cyin3at8 LJK 082897

1. Multi-port serial circuit card
2. 4.3-m (14-ft) modular cable (D6AP)
3. RS-232 6-25 pin adapter (DCE)
4. 3A SMSI translator
5. D8W modular cable

6. Demarcation point
7. 103A/104A connecting block or equivalent
8. 4-wire circuit
9. 5ESS switch
10. Distance ≤1 km (0.62 mi)
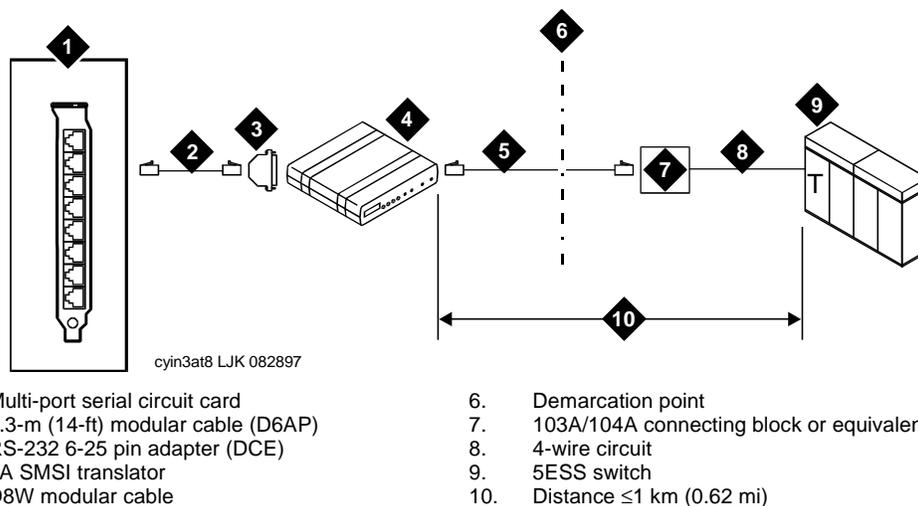
Figure 4-6. 3A Translator Connected to a Multi-Port Serial Circuit Card 1 km (0.62 mi) or Less from the 5ESS Switch

Installing the Hardware

Use this procedure to connect the hardware for the 5ESS integration when the 3A translator is connecting to the multi-port serial circuit card and is 1 km (0.62 mi) or less from the switch (Figure 4-6).

1. On the Lucent INTUITY system, connect one end of the 4.3-m (14-ft) modular cable into the port being used on the multi-port serial circuit card.

   ⇒ **NOTE:**
   The port used must correspond with the port indicated in the Serial Port field on the Serial Interface window. (See "Setting the Serial Interface Parameters" in Chapter 9, "Lucent INTUITY Administration for Centrex Switch Integration" for information on this window.)

2. Connect the other end of the 4.3-m (14-ft) modular cable to the RS-232 6-25 pin adapter.

3. In the back of the 3A translator (Figure 4-2), connect the RS-232 6-25 pin adapter into the SMSI port (P1). Secure the adapter to the back of the 3A translator.

4. Connect one end of the DC power cord from the power supply to the DC power receptacle in the back of 3A translator.

5. Connect the other end of the DC power cord to an AC electrical outlet.

6. In the back of the 3A translator, connect one end of the D8W modular cable
   to the ISDN data port.

7. Connect the other end of the D8W modular cable to the 103A or 104A
   connecting block leading to the 5ESS switch, or see Figure 4-7 for wiring
   information necessary for the connection.

➡ **NOTE:**
The CO will deliver a 4-wire circuit to the interconnection point where the
103A or 104A connecting block is shown in Figure 4-6. The following wiring
information (Figure 4-7) may be needed to complete the connection.

4-Wire Circuit from CO		D8W Modular Cable	
1	W/BL (white-blue) pair	4	W/BL (white-blue) pair
2		5	
3	W/GN (white-green) pair	3	W/GN (white-green) pair
4		6	

Figure 4-7.   Wiring Configuration for Connecting the 3A Translator

For information about CO requirements for interfacing with the switch, see
Chapter 3, "Centrex Switch Requirements and Administration".

Distance of More Than 1 km (0.62 mi) with NT1U-220 or NT1L-230 Network Terminator Unit

The following hardware is required when the 3A translator is connecting to the
multi-port serial circuit card and is more than 1 km (0.62 mi) from the 5ESS switch
(Figure 4-8):

- Multi-port serial circuit card (installed in any MAP)

- 4.3-m (14-ft) modular 6-wire cable (D6AP — provided with the multi-port
  serial circuit card)

- RS-232 6-25 pin terminal/printer adapter (DCE)

- 3A SMSI translator

- 60 Hz 120 VAC power supply/transformer (provided with the 3A translator)

- Two D8W modular cables

- D6 modular cable

- Network terminator unit (NT1U-220 or NT1L-230)

- Power supply for NT1U-220 or NT1L-230 network terminator unit

- 400B2 adapter

- 103A or 104A connecting block (or equivalent)

In addition, a standard electrical outlet must be within 1.8 m (6 ft) of the 3A translator. Uninterruptible 60 Hz 120 VAC power is recommended.

⇒ NOTE:

An NT1U-220 or NT1L-230 network terminator unit is required if the U-card on the 5ESS switch uses 2B1Q encoding (5ESS switch version 6 or later). Otherwise, use an NT1U-200 or NT1L-230 network terminator unit. The CO (central office) may provide the unit or the customer may be required to obtain it, depending on the local operating company procedures. The demarcation point is adjusted accordingly (Figure 4-8).
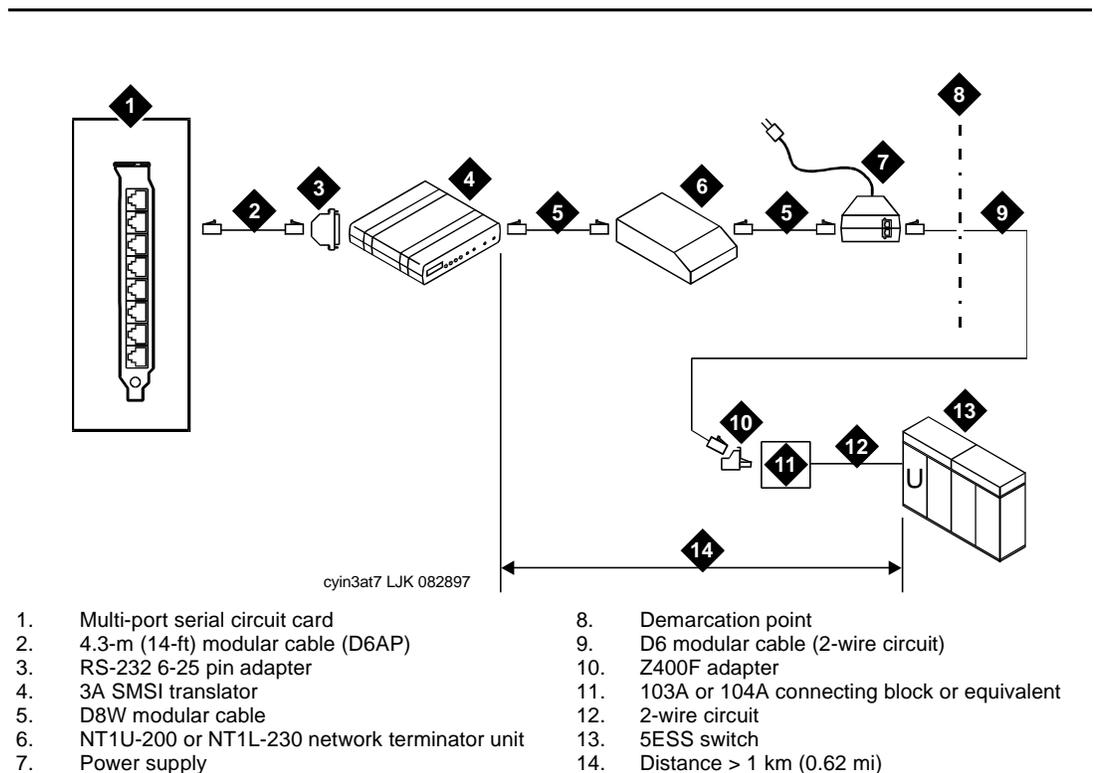
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1.	Multi-port serial circuit card	8.	Demarcation point
2.	4.3-m (14-ft) modular cable (D6AP)	9.	D6 modular cable (2-wire circuit)
3.	RS-232 6-25 pin adapter	10.	Z400F adapter
4.	3A SMSI translator	11.	103A or 104A connecting block or equivalent
5.	D8W modular cable	12.	2-wire circuit
6.	NT1U-200 or NT1L-230 network terminator unit	13.	5ESS switch
7.	Power supply	14.	Distance > 1 km (0.62 mi)

NOTE: If the customer provides the NT1U-200 or NT1L-230 network terminator unit, the demarcation point is the D8W cable from the back of the 3A translator.

Figure 4-8.   3A Translator Connected to a Multi-Port Serial Circuit Card More Than 1 km (0.62 mi) from the 5ESS Switch with NT1U-220 or NT1L-230 Network Terminator Unit

Installing the Hardware

Use this procedure to connect the hardware for the 5ESS integration when the 3A translator is connecting to the multi-port serial circuit card and is more than 1 km (0.62 mi) from the switch (Figure 4-8):

1. On the Lucent INTUITY system, connect one end of the 4.3-m (14-ft) modular cable into the port being used on the multi-port serial circuit card.

    ⇒ **NOTE:**
    The port used must correspond with the port indicated in the `Serial Port` field on the Serial Interface window. (See "Setting the Serial Interface Parameters" in Chapter 9, "Setting the Serial Interface Parameters" for information about this window.)

2. Connect the other end of the 4.3-m (14-ft) modular cable into the RS-232 DCE 6-25 pin adapter.

3. In the back of the 3A translator (Figure 4-2), connect the RS-232 DCE 6-25 pin adapter into the SMSI port (P1). Secure the adapter to the back of the 3A translator.

4. Connect one end of the DC power cord from the power supply to the DC power receptacle in the back of 3A translator.

5. Connect the other end of the DC power cord to an AC electrical outlet.

6. In the back of the 3A translator, connect one end of the first D8W modular cable to the ISDN data port.

7. Connect the other end of the D8W modular cable a TERMINAL port on the NT1U-220 or NT1L-230 network terminator unit (Figure 4-3 or Figure 4-4).

8. Connect one end of the second D8W modular cable to the LINE port of the NT1U-220 or NT1L-230 network terminator unit.

9. Connect the other end of the D8W modular cable to the TO PHONE port of the NT1U-220/NT1L-230 power supply (Figure 4-5).

10. Connect one end of the D6 modular cable to the TO LINE port of the NT1U/NT1L power supply (Figure 4-5).

11. Connect the other end of the D6 modular cable to the 400B2 adapter.

12. Connect the 400B2 adapter to the 103A or 104A connecting block leading to the 5ESS switch.

For information about CO requirements for interfacing with the switch, see Chapter 3, "Centrex Switch Requirements and Administration".

Distance of More Than 1 km (0.62 mi) with
NT1U-200 or NT1L-230 Network Terminator Unit

The following hardware is required when the 3A translator is connecting to the multi-port serial circuit card and is more than1 km (0.62 mi) from the switch (Figure 4-9):

- Multi-port serial circuit card (installed in any MAP)

- 4.5-m (14-ft) modular 6-wire cable (D6AP — provided with the multi-port serial circuit card)

- RS-232 6-25 pin terminal/printer adapter (DCE)

- 3A SMSI translator

- 60 Hz 120 VAC power supply/transformer (provided with the 3A translator)

- Two D8W modular cables

- D6 modular cable

- Network terminator unit (NT1U-200 or NT1L-230)

- Power supply for NT1U-200 or NT1L-230 network terminator unit

- 103A or 104A connecting block (or equivalent)

In addition, a standard electrical outlet must be within 1.8 m (6 ft) of the 3A translator. An uninterruptible 60 Hz 120 VAC power is recommended.

➡ NOTE:

Use an NT1U-200 or NT1L-230 network terminator unit for 5ESS switch Versions 5 or earlier. Otherwise, use an NT1U-220 or NT1L-230 network terminator unit, as described in the previous section. The CO may provide the unit or the customer may be required to obtain it, depending on the local operating company procedures. If the customer provides the unit, the demarcation point is adjusted (Figure 4-9).

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1.	Multi-port serial circuit card	8.	Demarcation point
2.	4.3-m (14-ft) modular cable (D6AP)	9.	D6 modular cable (2-wire circuit)
3.	RS-232 6-25 pin adapter	10.	400B2 adapter
4.	3A SMSI translator	11.	103A or 104A connecting block or equivalent
5.	D8W modular cable	12	2-wire circuit
6.	NT1U-220 or NT1L-230 network terminator unit	13.	5ESS switch
7.	Power supply	14.	Distance > 1 km (0.62 mi)

NOTE: If the customer provides the NT1U-200 or NT1L-230 network terminator unit, the demarcation
point is the D8W cable from the back of the 3A translator2

**Figure 4-9.   3A Translator Connected to a Multi-Port Serial Circuit Card More Than 1 km
(0.62 mi) from the 5ESS Switch with NT1U-200 or NT1L-230 Network
Terminator Unit**

Installing the Hardware

Use this procedure to connect the hardware for the 5ESS integration when the 3A
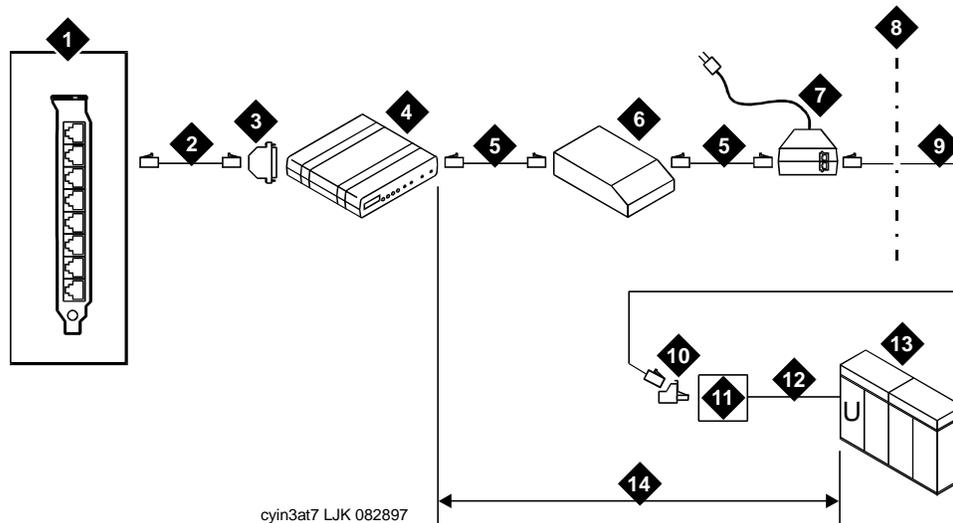translator is connecting to the multi-port serial circuit card and is more than 1 km
(0.62 mi) from the switch (Figure 4-9):

1. On the Lucent INTUITY system, connect one end of the 4.3-m (14 ft)
   modular 6-wire cable into the port being used on the multi-port serial circuit
   card.

   ⟹ **NOTE:**
   The port used must correspond with the port indicated in the Serial
   Port field on the Serial Interface window. (See "Setting the Serial
   Interface Parameters"in Chapter 9, "Lucent INTUITY Administration
   for Centrex Switch Integration" for information about this window.)

2. Connect the other end of the 4.3-m (14-ft) modular cable into the RS-232 DCE 6-25 pin adapter.

3. In the back of the 3A translator (Figure 4-2), connect the RS-232 DCE 6-25 pin adapter into the SMSI port (P1). Secure the adapter to the back of the 3A translator.

4. Connect one end of the DC power cord from the power supply to the DC power receptacle in the back of 3A translator.

5. Connect the other end of the DC power cord to an AC electrical outlet.

6. In the back of the 3A translator, connect one end of the D8W modular cable to the ISDN data port.

7. Connect the other end of the D8W modular cable to a TERMINAL port on the NT1U-200 or NT1L-230 network terminator unit.

8. Connect one end of the first D6 modular cable to the LINE port of the NT1U-200 or NT1L-230 network terminator unit.

9. Connect the other end of the D6 modular cable to the TO PHONE port of the NT1U/NT1L power supply (Figure 4-5).

10. Connect one end of the second D6 modular cable to the TO LINE port of the NT1U/NT1L power supply (Figure 4-5).

11. Connect the other end of the D6 modular cable to the Z400F adapter.

12. Connect the Z400F adapter to the 103A or 104A connecting block leading to the 5ESS switch.

For information about CO requirements for interfacing with the switch, see Chapter 3, ''Centrex Switch Requirements and Administration''.

Programming the 3A Translator

5

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Programming the 3A Translator

5

Overview

This chapter describes the 3A SMSI (simplified message desk interface) translator. It includes:

- Illustrations of the translator

- Listings of options and default settings

- Instructions for setting the required options

➡ **NOTE:**
Before programming the 3A translator, ensure that all hardware connections to the 3A translator have been made. For information about hardware connections for Lucent™ 5ESS® switch integrations, see Chapter 4, "Hardware Installation for 5ESS Switch Integration with the 3A Translator".

Purpose

This chapter provides the procedures necessary to program the 3A translator.

3A Translator Setup Switches

To program the 3A translator, use the setup switches on the front of the box. For a view of the 3A translator box, see Figure 5-1. For a closeup view of the front of the box, see Figure 5-2.

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1. 8-character LED display
2. Sanity pinwheel
3. Option setup switches
4. SMSI port status LED (P1)

5. Diagnostic port status LED (P2)
6. Tricolor ISDN link status LED
7. Power LED
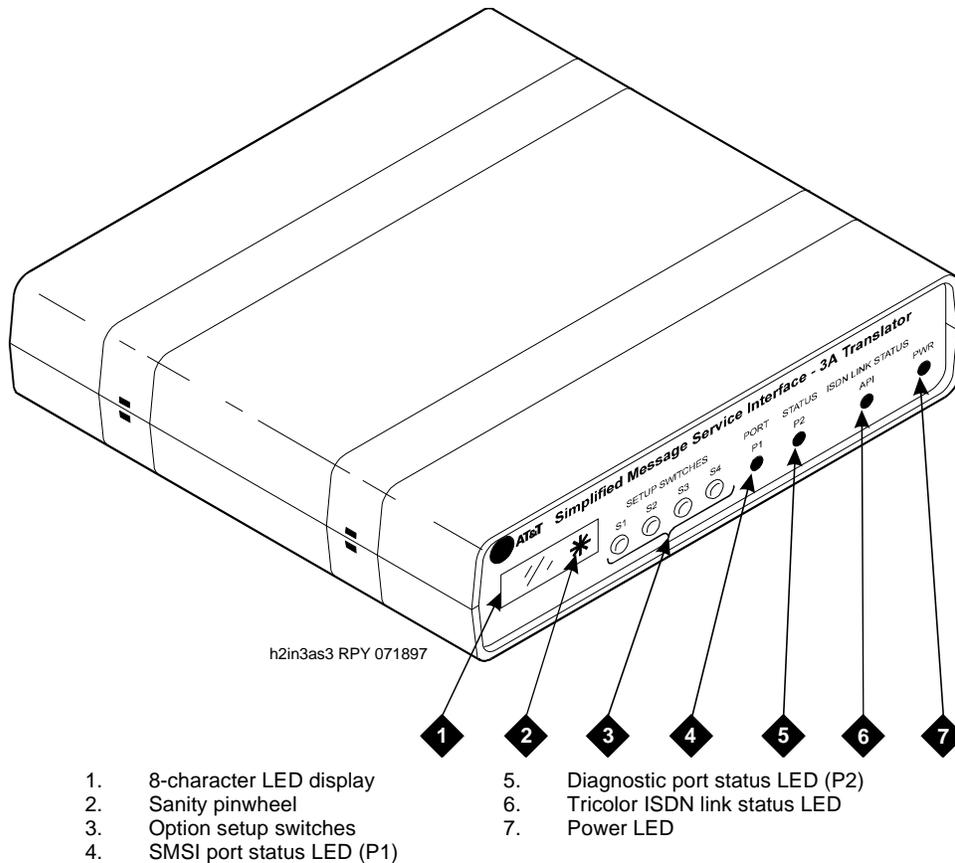
Figure 5-1.   Front Panel of 3A SMSI Translator

1. 8-character LED display
2. Sanity pinwheel
3. Option setup switches
4. SMSI port status LED (P1)
5. Diagnostic port status LED (P2)
6. Tricolor ISDN link status LED
7. Power LED
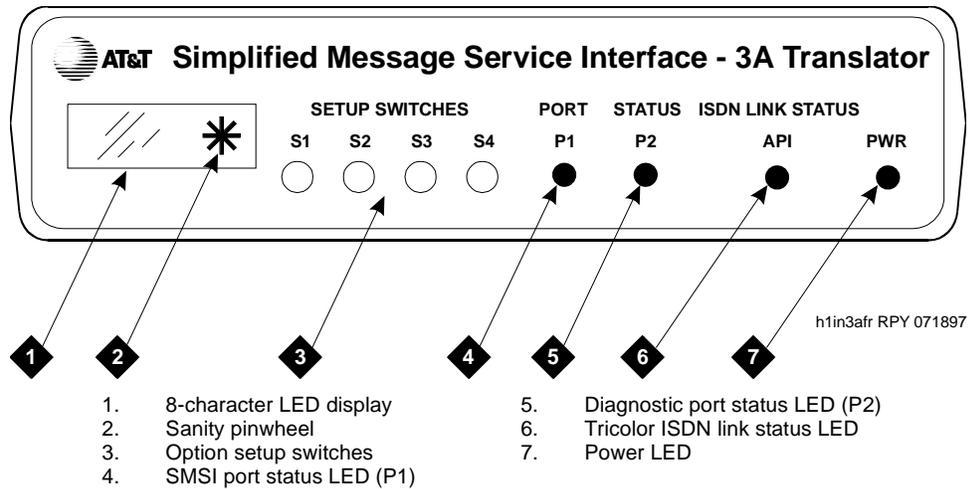
Figure 5-2.   Closeup Front View of 3A SMSI Translator

3A Translator Setup Options

Sixteen options are available on the 3A translator (Table 5-1). Each option has a default setting. For most of the options, you do not need to change the default. Options you must set for the Lucent INTUITY™ system are shown in Table 5-1 in **bold** type. Use Table 5-1 to record your settings for these options.

⇒ NOTE:
For a list of information needed to select the settings, see Chapter 2, "Planning for Centrex Switch Integration".

Table 5-1.   Options on the 3A Translator (Required Options in Bold)

Option	Default Setting	Your Setting
SMSIBAUD	**1200**	1200
SMSIPRTY	even7dls	
DIAGBAUD	1200	
DIAGPRTY	even7dls	
LCEN	**00000000**	
BCID	**00000**	
TEI	01	

Continued on next page

Table 5-1. Options on the 3A Translator (Required Options in Bold) — *Continued*

Option	Default Setting	Your Setting
DN SIZE	**7 digits**	
DIAGMODE	normal	
PRIVMODE	no block	
PRIVCHAR	space	
RUN MODE	smsi	AUDIX
FLOWCNTL	**rts/cts**	
TIMRCNTL	1.0 sec	
LO-WATER	80 bufrs	
HI-WATER	+4	

3A Translator Setup Switch Functions

To change the option settings on the 3A translator, use the setup switches (S1-S4) on the front of the translator (Figure 5-2). These switches toggle between program mode and change mode.

- To display each option and its setting, use the switches in *program mode*.

- To change the current setting and save the new setting, use the switches in *change mode*.

Table 5-2 describes the function for each setup switch, depending on the mode (setup or change) being used.

Table 5-2. 3A Translator Setup Switch Functions

Setup Switch	Program Mode	Change Mode
S1	Displays the current option in the LED display. Continue to press to display each option.	Toggles to program mode while saving the current setting, and displays the current option in the LED display.
S2	Toggles to change mode.	Displays the current option setting in the LED display. Continue to press to display each possible setting for that option.
S3	Displays the first current option setting in the LED display. Continue to press to display each current setting.	For numeric settings, shifts the cursor one digit to the right.

Table 5-2.   3A Translator Setup Switch Functions — *Continued*

Setup Switch	Program Mode	Change Mode
S4	Exits program mode, and completes the SMSI connection.	Toggles to program mode without saving the current setting, and displays the current option in the LED display.

Programming the 3A Translator

Before programming the 3A translator, ensure that all hardware connections to it have been made. For information about hardware connections for Lucent 5ESS switch integration, see Chapter 4, "Hardware Installation for 5ESS Switch Integration with the 3A Translator".

Use this procedure to program the 3A translator.

1. Turn the power switch off and then on.

   When the power is on, the power LED lights green.

2. When the LED display window displays ATP, press S1 until the window displays PROGMODE.

   You are now in program mode.

3. Press S1 until the window displays SMSIBAUD.

   The default baud rate setting, 1200, is displayed.

4. Press S2 until window displays the baud rate being used.

   A baud rate of 1200 is recommended.The baud rate must correspond with the setting for the Baud Rate field on the Serial Interface window (see "Setting the Serial Interface Parameters" in Chapter 9, "Lucent INTUITY Administration for Centrex Switch Integration" for information about this window).

5. When the window displays the setting you want, press S1.

   The new setting is saved, and the window displays the following:

   SAVED
   SMSIBAUD

6. Press S1 until the window displays LCEN, and then press S2.

   The window displays the default setting 00000000, with the first digit from the left flashing. You will change this setting, one digit at a time, to the value you obtained from the CO.

7. Press S2 until the flashing digit displays the value you want, and then press S3.

   The setting is displayed with the next digit flashing.

8. Repeat Step 7 until each of the digits is correctly set, and then press S1.

   The new setting is saved, and the window displays the following:

   ```
   SAVED
   LCEN
   ```

9. Press S1 until the window displays BCID, and then press S2.

   The window displays the default setting 00000, with the first digit from the left flashing. You will change this setting, one digit at a time, to the value you obtained from the CO.

10. Press S2 until the flashing digit displays the value you want, and then press S3.

    The setting is displayed with the next digit flashing.

11. Repeat Step 10 until each of the digits is correctly set, and then press S1.

    The new setting is saved, and window displays the following:

    ```
    SAVED
    BCID
    ```

12. If you are:

    ■ Changing the option setting for DN SIZE, continue with Step 13.

    ■ Not changing the option setting for DN SIZE, skip to Step 15.

    ⇒ **NOTE:**
    To determine what setting to use for this option, you must know what version of the 5ESS switch you are using. Versions 5 or later use 10 digits; older versions use 7 digits. Obtain this information from the CO.

13. Press S1 until the window displays DN SIZE, and then press S2.

    The window displays the default setting 7 digits.

14. Press S2 until the window displays 10 digits, and then press S1.

    The new setting is saved, and the window displays the following:

    ```
    SAVED
    DN SIZE
    ```

15. Press S1 until the window displays FLOWCNTL, and then press S2.

    The default setting rts/cts, is displayed.

16. Press S2 until the window displays xon/xoff, and then press S1.

    The new setting is saved, and the window displays the following:

```
                    SAVED
                    FLOWCNTL
```

17. Press S4.

The 3A translator is programmed, completing the SMSI connection. The window displays the following:

```
PROGMODE END
SMSI
```

3A SMSI Translator Indicator Lights

On the front panel of the 3A SMSI translator the right-most LED is the power (PWR) indicator and should always be illuminated green while the power switch is ON. (See Figure 5-2 for an illustration of the front panel.) The ISDN LINK STATUS LED is located to the left of the power indicator. This tricolor LED uses the following colors to indicate the status of the data link:

Red   Indicates that the link has reached level 2, meaning that a hardware connection has been established between the 3A translator and the 5ESS switch.

Yellow   Indicates that the link has reached level 3 and the communication protocol has been established.

Green   Indicates that the 5ESS switch is in communication with the application firmware over the link.

In normal operation, the ISDN LINK STATUS LED should remain green at all times.

The two remaining LEDS to the left of the ISDN LINK STATUS LED report the status of the serial ports. The SMSI and DIAGNOSTIC port status LEDs are labeled P1 and P2, respectively. If P1 is illuminated (green), the port is able to communicate with the Lucent INTUITY system or modem. P2 is illuminated when a diagnostic terminal is attached.

Setting the 202T Modem

6

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Setting the 202T Modem

6

Overview

This chapter describes how to set the options on the 202T modems and how to assemble the modem unit.

> **NOTE:**
> A Centrex switch integration does not require the installation of a 202T modem if the distance between the Lucent™ INTUITY™ system and the switch is less than or equal to 15.3 m (50 ft), the RS232 standard. If the distance is greater than 15.3 m (50 ft), use a 202T modem.
>
> The 202T modem supports *only* a baud rate of 1200. To use the 202T modem, verify that the SMDI link is configured for 1200, as specified in Chapter 3, ''Centrex Switch Requirements and Administration''.

Purpose

This chapter provides the procedures necessary to set the options on the 202T modem and to assemble the modem unit.

202T Modem Types

You can install either one of the following 202T modem types:

- Motorola 202T modem
- AT&T Dataphone 202T modem

The manufacturer's name appears on the faceplate of the unit.

Setting Options for the 202T Motorola Modem

The Motorola 202T modem contains 14 jumpers that must be correctly set. Use this procedure to set the jumpers.

1. To remove the top cover from the Motorola 202T modem, complete the following Steps a through f:

   ⇒ **NOTE:**
   Installers in Canada may need to use a screwdriver to remove a screw through the top rear panel or to remove tabs located between the cover latch and the bottom plate.

   a. Turn the modem on its side.

   b. Place your thumbs on the blue tabs and your fingers on the edge of the cover (Figure 6-1, View 1).

moin202c KLC 031097
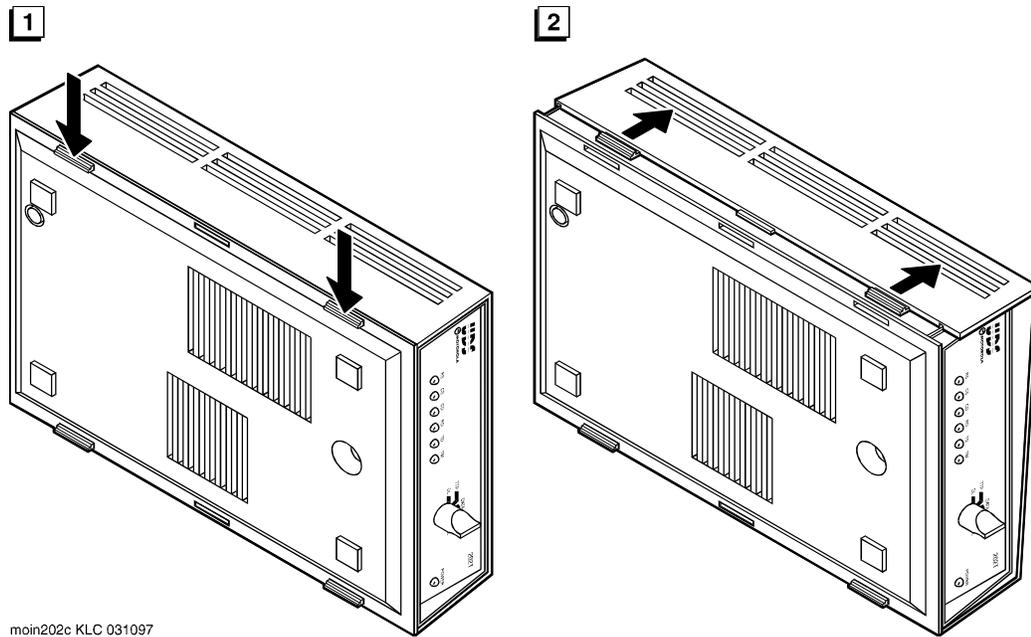
Figure 6-1. **Removing the Top Cover of the Motorola 202T Modem: Releasing the First Set of Latches**

    c. Press the tabs down and toward the modem (Figure 6-1, View 2). Use your fingers to gently push the top cover away from the body. *Do not remove the top cover.*

    d. Turn the modem so that the opposite side faces you.

    e. Gently push above the latches to release the other side of the cover.

    f. Pull the released cover off.

2. Verify the settings. To locate the jumpers in the modem, see Figure 6-2. To verify the jumpers, see Figure 6-3 and Table 6-1. Correct any as necessary.

Table 6-1.   Motorola 202T Modem Jumper Identities and Settings

Location on Figure 6-2 and Figure 6-3	Jumper Identity	Setting for the Lucent INTUITY System
❶	Carrier Detect Level	–45 dBm Level (0 and –45 strapped)
❷	Carrier Detect Delay	6 ms (6 and P strapped)
❸	Anti-Streaming Option	Out (6 strapped)
❹	Local Copy Squelch	Out – No local copy (Out and P strapped)
❺	Call Turnaround Squelch	Call Turnaround Squelch set to out (P and O strapped)
❻	Turnaround Squelch Time	8.3 ms squelch (P and 8.3 strapped)
❼	Soft Carrier Turnoff	0 – Do Not Send Soft Carrier (0 strapped)
❽	Test Generator Baud Rate Select	18 bps (Option 4 strapped)
❾	Chassis/System Ground Option	Out (Out and P strapped)
❿	RTS/CTS Delay	RTS/CTS Delay 33 ms (33 strapped)
⓫	Transmit Carrier	Strapped for terminal control of carrier by exercising RTS Input Line (TC and P strapped)
⓬	2-Wire/4-Wire Option	4-Wire Option (4W and P strapped)
⓭	Transmit Level Option	0 (-0 strapped)
⓮	2-Wire/4-Wire Option	4-Wire Option (4W and P strapped)

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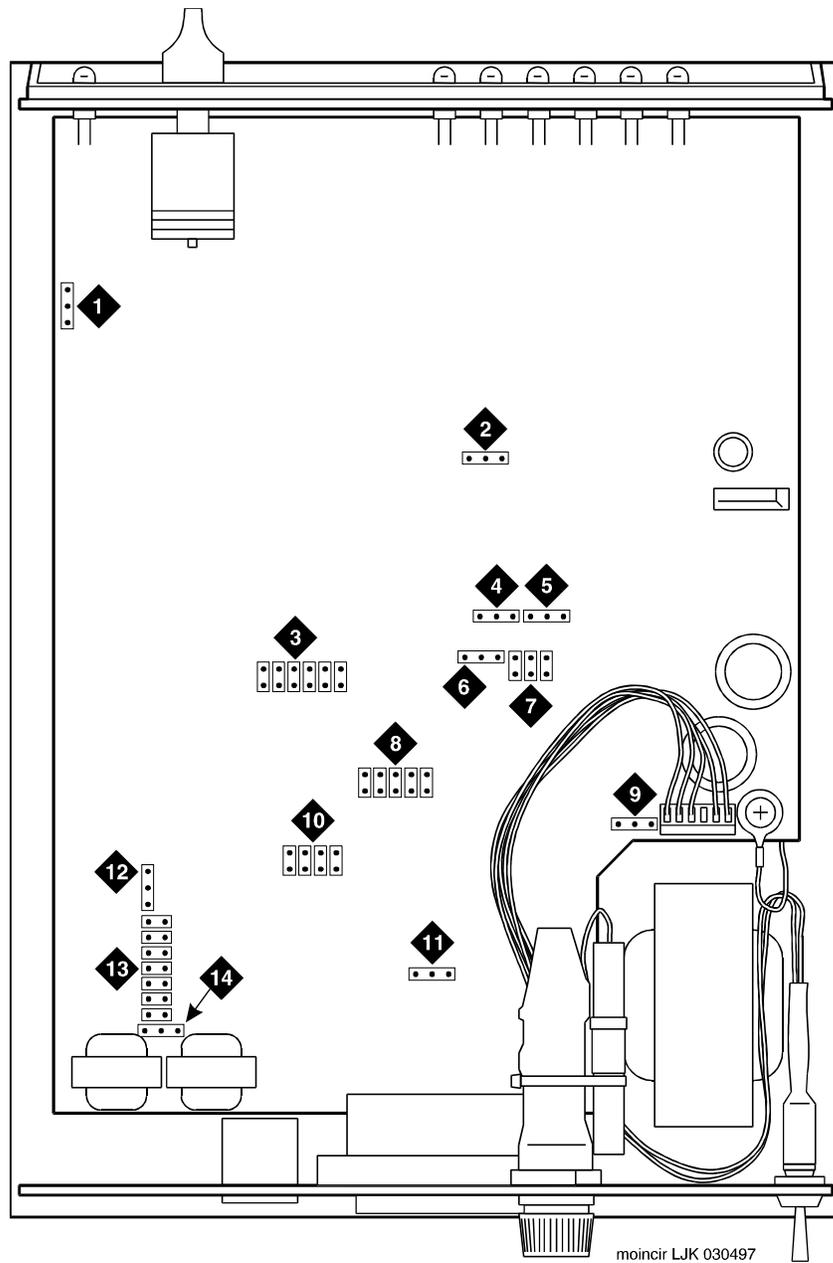
Figure 6-**2.** **Motorola 202T Modem Circuit Board and Jumper Locations**

jpin2md LJK 030497
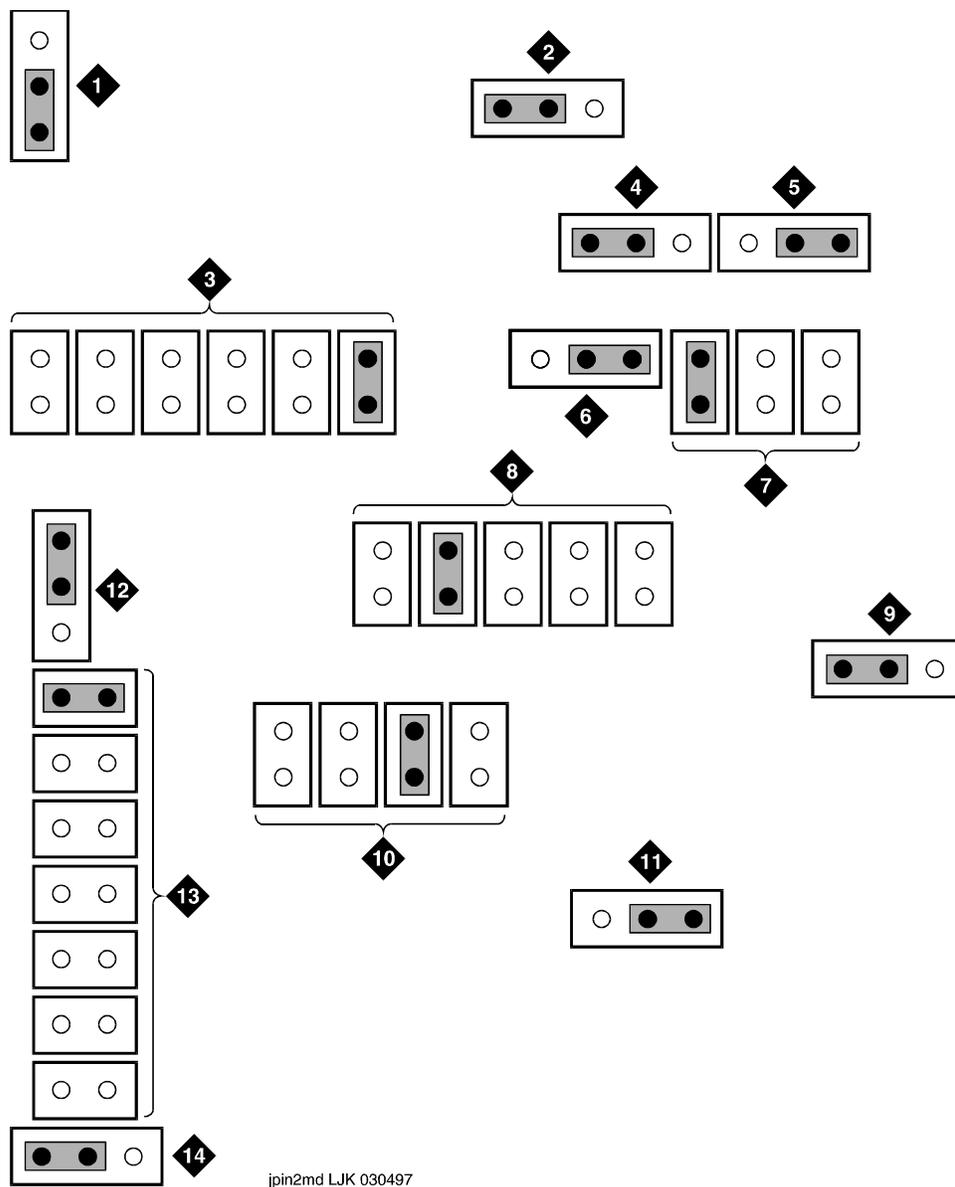
Figure 6-3.   Motorola 202T Modem Default Jumper Settings

3. To replace the top cover, complete the following Steps a and b:

   a. Line up the guides with the front and back panels.

   The guide for the front panel is slightly farther from the edge of the cover.

   b. Slide the cover into place.

The cover clicks when the latches are secure.

> ⇒ **NOTE:**
> Installers in Canada should replace the screw or the locking
> tabs.

4. Set the front dial to DATA (see Figure 6-4).

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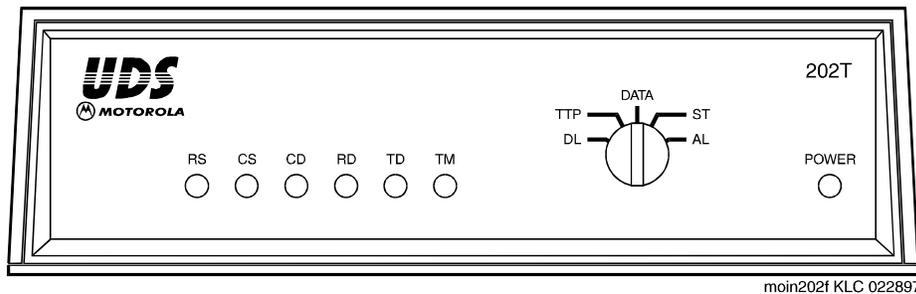
Figure 6-**4.** **Front Panel of the Motorola 202T Modem Showing the Dial Setting for DATA**

5. Continue with Chapter 7, "Hardware Installation for Centrex Switch Integration with the 202T Modem".

Setting Options for the AT&T Dataphone 202T Modem

The AT&T Dataphone 202T modem has three switches — S2, S3, and S4 — that you must set before installing the integration hardware.

Location of Switches

Figure 6-5 shows the location of the switches.
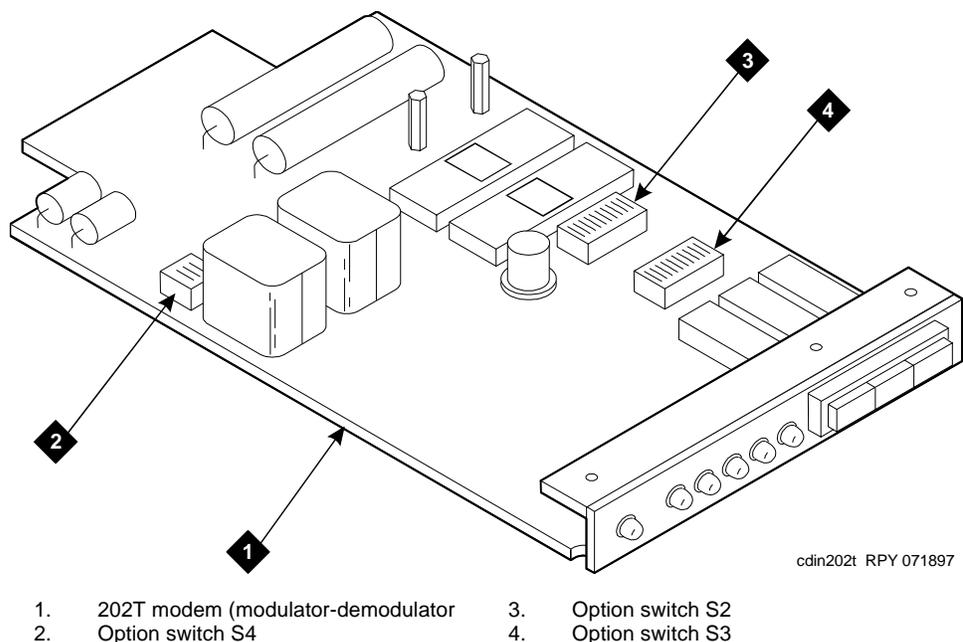
1.	202T modem (modulator-demodulator	3.	Option switch S2
2.	Option switch S4	4.	Option switch S3

Figure 6-5.   Location of Option Switches on the AT&T Dataphone 202T Modem

Operating the Rockers

The options are set by moving rockers on the numbered side of the switches up (open) or down (closed). Figure 6-6 shows an example of a switch on the 202T modem. In this example, options 1 through 5 are closed, indicated by rockers down on the numbered side of the switch. Options 6 through 10 are open, indicated by rockers up on the numbered side of the switch.

⇒ NOTE:
Figure 6-6 is an example only. Use the switch settings in Table 6-2.
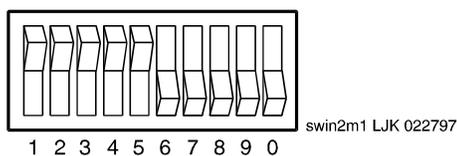
Figure 6-6.   Example of 202T Modem Switch Option Settings

Procedure

Use this procedure to set the switches.

1. Remove the front of the data mounting.

2. Pull out the circuit card.

3. Use Table 6-2 to verify the option switch settings for S2, S3, and S4.

⊒▶ **NOTE:**
The information in Table 6-2 may also be printed on the bottom of the modem housing.

Table 6-2.   AT&T Dataphone 202T Modem Option Settings

Switch	Segment	Position	Feature	Option (* = factory setting)	Description
S1	1	Closed	4-wire operation	ZK*	
	2	Closed	Soft turnoff and squelch intervals	Z	0 (soft turnoff) 0 (squelch)
	3	Closed	Fast carrier detection	N	Out (normal mode)
	4	Open	Clear-to-send interval	M*	8ms
	5	Open	—	—	—
	6	Open	Soft turnoff and squelch intervals	Z	0 (soft turnoff) 0 (squelch)
	7	Closed	Soft turnoff and squelch intervals	Z	0 (soft turnoff) 0 (squelch)
	8	Open	Soft turnoff and squelch intervals	Z	0 (soft turnoff) 0 (squelch)
	9	Closed	—	—	—
	0	Open	Clear-to-send interval	M*	8ms

Continued on next page

Table 6-2.   AT&T Dataphone 202T Modem Option Settings — *Continued*

Switch	Segment	Position	Feature	Option (* = factory setting)	Description
S2	1	Closed	4-wire operation	ZK*	
	2	Closed	Soft turnoff and squelch intervals	Z	0 (soft turnoff) 0 (squelch)
	3	Closed	Fast carrier detection	N	Out (normal mode)
	4	Open	Clear-to-send interval	M*	8ms
	5	Open	—	—	—
	6	Open	Soft turnoff and squelch intervals	Z	0 (soft turnoff) 0 (squelch)
	7	Closed	Soft turnoff and squelch intervals	Z	0 (soft turnoff) 0 (squelch)
	8	Open	Soft turnoff and squelch intervals	Z	0 (soft turnoff) 0 (squelch)
	9	Closed	—	—	—
	0	Open	Clear-to-send interval	M*	8 msec
S3	1	Open	4-wire operation	ZK*	
	2	Open	Compromise delay equalization	ZU*	Maximum
	3	Open	Channel condition	ZY*	Basic
	4	Open	4-wire operation	ZK*	
	5	Open	Compromise amplitude equalization	ZW*	Maximum
	6	Closed	4-wire operation	ZK*	
	7	Closed	4-wire operation	ZK*	
	8	Closed	4-wire operation	ZK*	
	9	Closed	4-wire operation	ZK*	
	0	Closed	4-wire operation	ZK*	
S4	1	Closed	Continuous carrier	ZN	In
	2	Open	Carrier detector reset	ZM*	Out
	3	Closed	State of CC (data set ready) during analog loopback	YB	On

4. Insert the circuit card in the modem data mounting.

5. Replace the front of the data mounting.

Hardware Installation for Centrex Switch Integration with the 202T Modem

7

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Hardware Installation for Centrex Switch Integration with the 202T Modem

7

Overview

This chapter describes:

- The 202T modem

- Connecting to the multi-port serial circuit card

- Cabling the voice ports

Purpose

This chapter provides information on the hardware connections required to integrate any Lucent™ INTUITY™ MAP (multi-application platform) system with a Centrex switch using a 202T modem.

Distance Requirements

A Centrex switch integration requires installation of a 202T modem only if the distance between the Lucent INTUITY system and the switch is greater than15.3 m (50 ft), per RS-232 standard. If the distance is 15.3 m (50 ft) or less, for Northern Telecom (Nortel) DMS-100 and SL-100 integrations, no modem is required, and a direct-connect configuration can be used. See Chapter 8, ''Hardware Installation for Integration with Direct Connection or Customer- Supplied Modem''.

For a Lucent 5ESS® switch, direct connection is not an option. Either a modem or the 3A SMSI translator must be used. See Chapter 4, ''Hardware Installation for 5ESS Switch Integration with the 3A Translator''. However, if the distance is 9.7 km (6 mi) or greater, the 5ESS switch cannot be integrated with a 3A SMSI translator. A 202T modem *must* be used instead.

Hardware

Two versions of the 202T modem are in use:

- Motorola 202T modem
- AT&T 202T Dataphone modem

Refer to the following drawings of the 202T modem when installing the switch integration hardware.

Motorola 202T Modem

Figure 7-1 shows the front and Figure 7-2 shows the back of the Motorola 202T modem.

moin202f KLC 022897
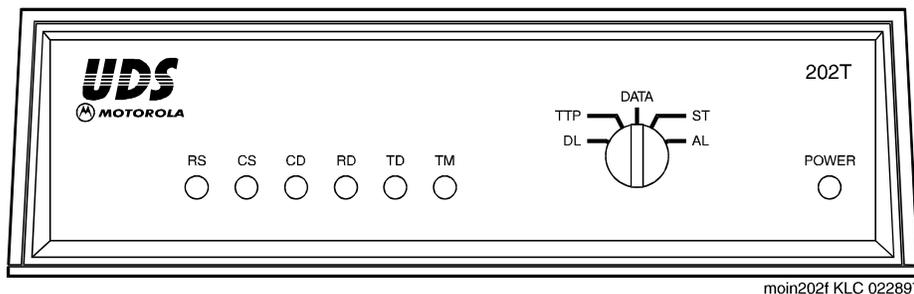
Figure 7-1.   Motorola 202T Modem (Front View)

moin202b KLC 022897
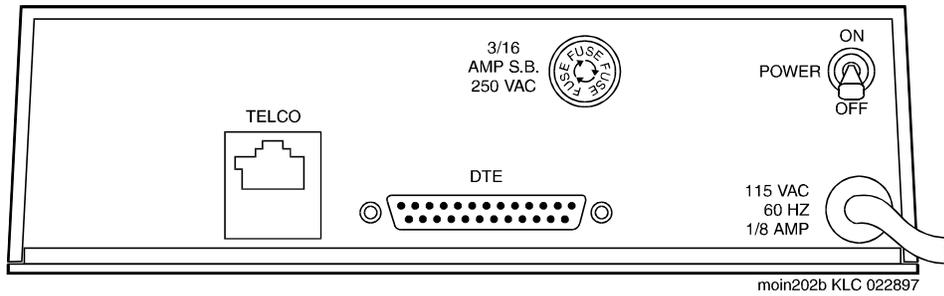
Figure 7-2.   Motorola 202T Modem (Back View)

AT&T 202T Dataphone

Figure 7-3 shows the front and Figure 7-4 shows the back of the AT&T 202T Dataphone modem.

h2in2tfr RPY 071897

1.   Status lights   2.   Test switches
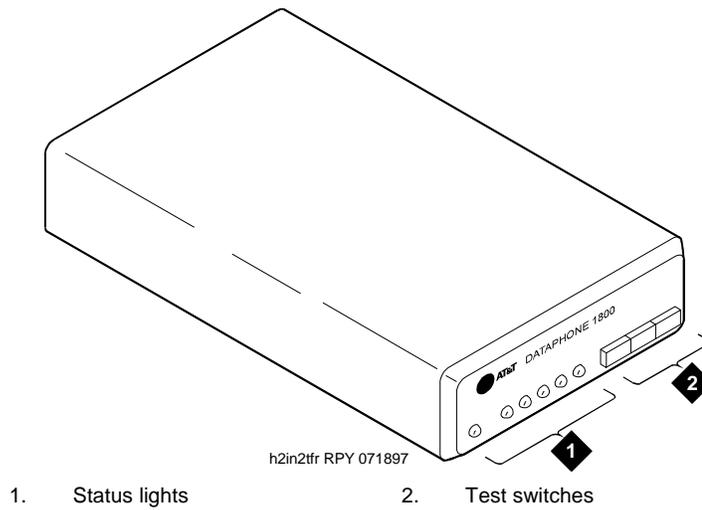
Figure 7-3.   AT&T 202T Dataphone Modem (Front View)

1.   To the Lucent system   2.   Power supply cord   3.   To the switch
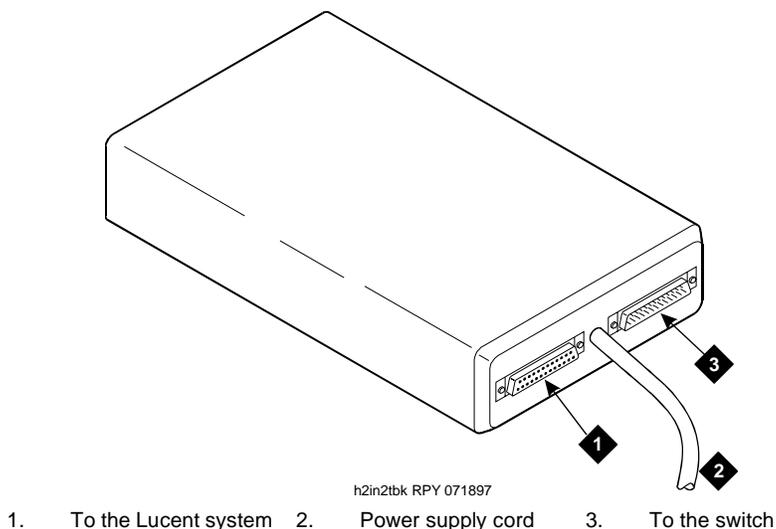
Figure 7-4.   AT&T Dataphone 202T Modem (Back View)

Connecting to the Multi-Port Serial Circuit Card

Use this configuration only if the distance between the Lucent INTUITY system and the switch is greater than15.3 m (50 ft).

Hardware Required

Use the following hardware:

- Multi-port serial circuit card installed in the MAP
- 4.3-m (14-ft) modular 6-wire cable (D6AP — provided with multi-port serial circuit card)
- RS-232 6-25 pin terminal/printer adapter (DTE)
- 202T modem
- M8K (or M13F) cable connector for integrations using an AT&T 202T modem (*not* needed for the Motorola connection through the telco port)

Figure 7-5 shows the configuration for the integration when the 202T modem is connected to the multi-port serial circuit card on a Lucent INTUITY MAP system.

1.   Multi-port serial circuit card
2.   4.3-m (14-ft) cable
3.   RS232 6-25 pin DTE adapter
4.   202T modem
5.   M8K (or M13F) cable connector
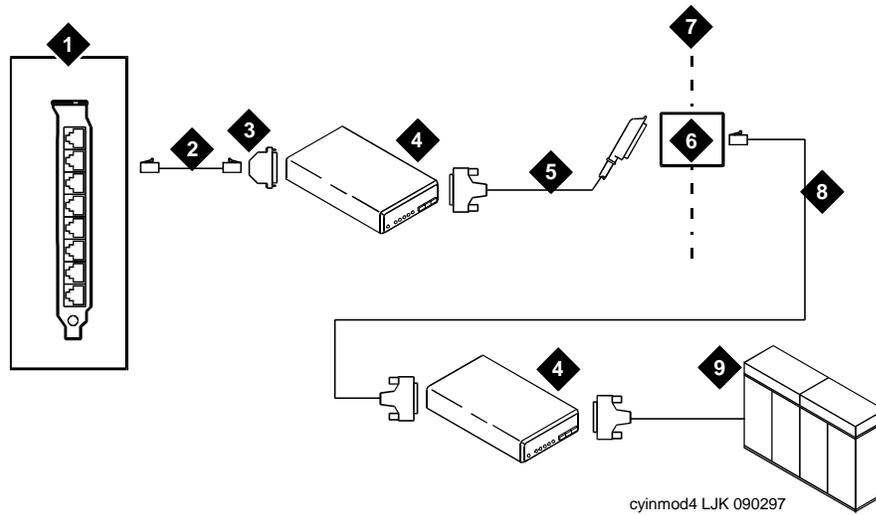
6.   829 channel interface unit (or equivalent equalization device)
7.   Demarcation point
8.   3002 data circuit
9.   Switch

Figure 7-5.   Connecting from the Multi-Port Serial Circuit Card on the Lucent INTUITY System to the Switch

Installing the Hardware

> **NOTE:**
> Before installing the integration hardware, set the switch options on the 202T modem. See Chapter 6, ''Setting the 202T Modem''.

Use this procedure to configure the hardware for a Centrex switch integration when connecting to the multi-port serial circuit card on the Lucent INTUITY system (Figure 7-5).

1.   Attach one end of the 4.3-m (14-ft) modular 6-wire cable into the connector being used on the multi-port serial circuit card on the Lucent INTUITY system.

> **NOTE:**
> The port used must correspond with the port indicated in the Serial Ports field on the Serial Interface window. For more information about this window, see ''Setting the Serial Interface Parameters'' in Chapter 9, ''Lucent INTUITY Administration for Centrex Switch Integration''.

2. Attach the other end of the 4.3-m (14-ft) modular cable into the RS-232 6-25 pin DTE adapter.

3. Attach the RS-232 adapter into the female connector in the back of the 202T modem.

4. Plug the power supply cord for the 202T modem into an AC electrical outlet.

5. Determine your next step. If you are connecting to:

   ■ An AT&T Dataphone 202T modem, complete the following Steps a through c:

      a. Attach one end of the M8K (or M13F) cable connector to the male RS-232 connector in the back of the AT&T Dataphone 202T modem.

      b. Attach the other end of the M8K (or M13F) adapter to the bottom of the 829 channel interface unit at the demarcation point.

      > **NOTE:**
      > For information about possible connections from the 202T modem to the switch, see *User's Manual 202T Modem* (999-102-1421S).

   ■ A Motorola 202T modem, continue with "Connecting the Motorola 202T Modem Telco Port," below. Do *not* use the M8K (or M13F) cable connector.

Connecting the Motorola 202T Modem Telco Port

Use Figure 7-6 to connect the Motorola 202T modem telco port.

h1in202t RPY 071897

1. Transmit pair to service provider
2. BL/W (blue-white) of 4-pair wire
3. W/BL (white-blue) of 4-pair wire
4. D8W modular connector
5. W/GN (white-green) of 4-pair wire
6. GN/W (green-white) of 4-pair wire
7. 103A or 104A connecting block (or equivalent)
8. RJ-45 telco connector on rear of modem
9. Receive pair from service provider
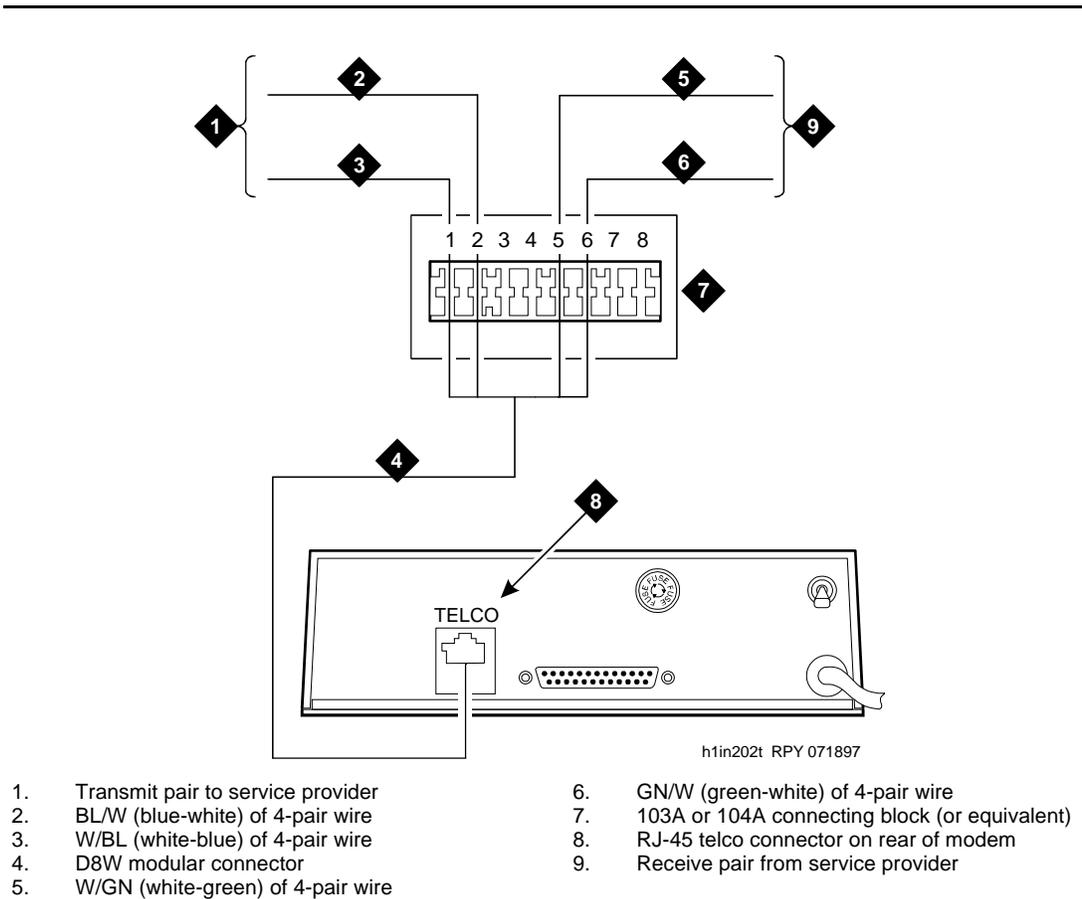
Figure 7-6.   Connection Diagram for the Motorola 202T Modem Telco Port

Cabling the Voice Ports

For information about cabling the voice ports from the Lucent INTUITY system, see Chapter 3, "Making Cable Connections," in the system installation for your platform.

Hardware Installation for Integration with Direct Connection or Customer-Supplied Modem

8

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Hardware Installation for Integration with Direct Connection or Customer-Supplied Modem

8

Overview

This chapter describes the hardware and testing required for custom integrations when a Lucent™ INTUITY™ system is to be connected directly to a switch. To use this configuration, the Lucent INTUITY system and the switch must be separated by no more than 14.3 m (50 ft). In a direct connection the Lucent INTUITY system and the switch are connected without a modem or other peripheral device by a straight RS-232 cable or by an RS-232 null modem cable.

The hardware and testing is also required when a Lucent INTUITY system is to be connected to a customer-supplied modem (other than the 202T modem). In this type of configuration, the customer is responsible for installation and testing of any hardware not supplied by Lucent Technologies.

Purpose

This chapter provides the hardware installation procedures necessary to integrate:

- A Northern Telecom (Nortel) DMS-100 or SL-100 switch with any Lucent INTUITY MAP (multi-application platform) using a direct connection to the multi-port serial circuit card

  ### ⇒ NOTE:
  This configuration *cannot* be used for integration of a Lucent 5ESS® switch. It can be used for Nortel DMS-100 and SL-100 switches only if the distance between the Lucent INTUITY system and the switch is less than 15.3 m (50 ft). If the distance is15.3 m (50 ft) or greater, a modem must be used. See Chapter 7, "Hardware Installation for Centrex Switch Integration with the 202T Modem".

■ A Lucent 5ESS, Nortel DMS-100, or Nortel SL-100 switch with any Lucent INTUITY MAP using a connection to a customer-supplied modem (not a 202T modem)

Connecting Directly to a Switch or Customer-Supplied Modem

Use the following hardware for this configuration:

■ 4.3-m (14-ft) modular cable (D6AP — provided with the multi-port serial circuit card)

■ RS-232 DTE (data terminal equipment) 6-25 pin adapter provided with the multi-port serial circuit card)

■ RS-232 minitester (Lucent-supplied for custom integrations)

Installing and Testing the Hardware

Use this procedure to configure the hardware for the integration when the Lucent INTUITY system and the switch are to be connected directly or when the Lucent INTUITY system is to be connected to a customer-supplied modem (see Figure 8-1.)

1. Attach the 4.3-m (14-ft) modular cable to the multi-port serial circuit card.

2. Attach the other end of the modular cable to the DTE adapter.

3. Attach the DTE adapter (male connection) to the RS-232 minitester (female connection).

    ⇒ NOTE:
    Do *not* connect the minitester to the customer equipment at this time.

4. Power on the Lucent INTUITY system.

    ⇒ NOTE:
    The system must be powered on to use the RS-232 minitester.

5. Ensure that the following LEDs (light-emitting diodes) on the minitester light green:

    ■ DTR (data terminal ready)

    ■ RTS (request to send)

    ■ TD (transmit data)

    ■ DSR (data set ready)

6. Leave the minitester connected to the cable.

> ➡ **NOTE:**
> The minitester can be left in-line with the customer equipment, at the
> customer's discretion.

cyin-mp1 LJK 080897

1.	Multi-port serial circuit card	4.	RS-232 mini-tester
2.	4.3-m (14-ft) cable	5.	To customer premise equipment
3.	RS-232 6-25 pin DTE adapter		
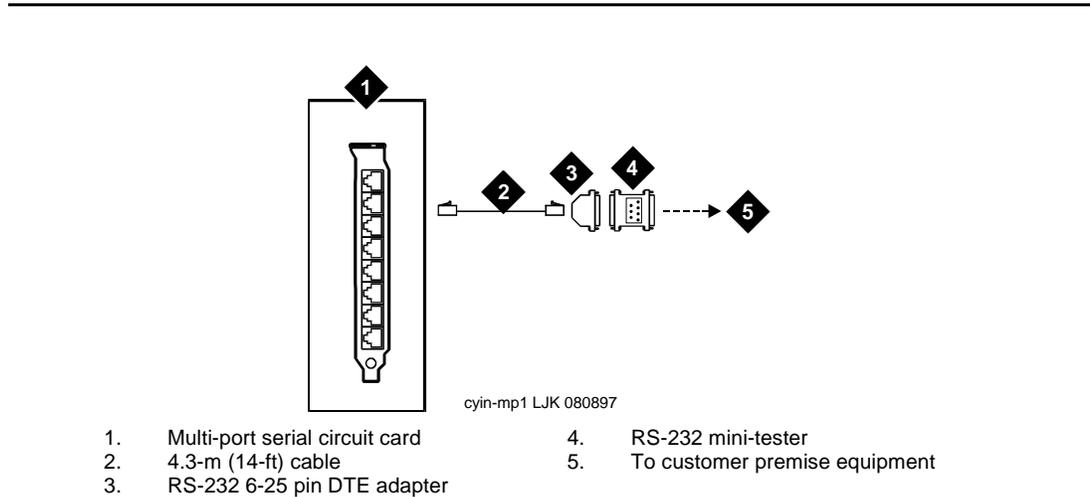
**Figure 8-1.   Connecting from the Multi-Port Serial Circuit Card on the Lucent INTUITY
System to a Customer-Supplied Modem or Other Equipment**

The remaining connections are the customer's responsibility.

- The connection may require punching, depending upon the service
  provider's requirements.

- A (customer-supplied) gender changer may be required to connect to the
  customer equipment.

- If the customer equipment is DTE, a (customer-supplied) null modem cable
  is required. If the customer equipment is DCE (data communications
  equipment), the connection can be made directly to the Lucent-supplied
  RS-232 DTE adapter (or the RS-232 minitester, if is left in-line).

    — DCE Comcode 407050111

    — DTE Comcode 407050095

Pinouts

Use the following pinout connections (Figure 8-2) as reference if needed when
configuring or testing DTE and DCE devices.

SIGNAL	RJ-11		DB-25
DATA IN	5	—— 2	TD
DATA OUT	3	—— 3	RD
Gnd	4	7	Gnd
Gnd	2		
CTRL OUT	6	5	CTS
	3K	8	DCD
CTRL IN	1	20	DTR

SIGNAL	RJ-11		DB-25
DATA OUT	3	—— 2	TD
DATA IN	5	—— 3	RD
Gnd	4	7	Gnd
Gnd	2		
CTRL IN	1	8	DCD
		4	RTS
		6	DSR
CTRL OUT	6	20	DTR

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1. DB-25 DCE (for terminals and printers)   2. DB-25 DTE (for modems)
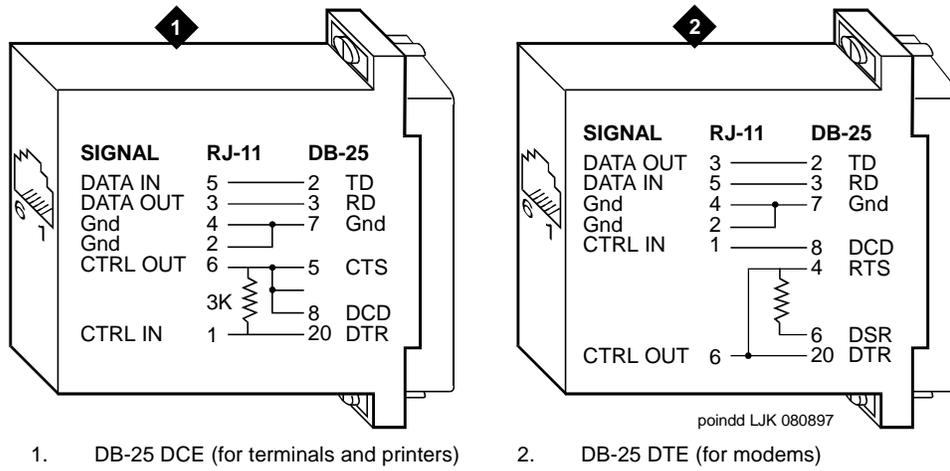
Figure 8-2. Pinout Connections for DTE and DCE Devices

Lucent INTUITY Administration for Centrex Switch Integration

9

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Lucent INTUITY Administration for Centrex Switch Integration

9

Overview

Administering the Lucent™ INTUITY™ system for switch integration requires using windows in the user interface to perform the procedures listed below in the specified order (Table 9-1).

Table 9-1.   Task Procedure Matrix

Order	Procedure		Window
1.	"Setting the Country and Switch"	**NOTE:** You *must* complete these procedures in the order specified.	Switch Selection
2.	"Setting the Serial Interface Parameters"		Serial Interface
3.	"Setting the MWI Device Assignments"		Device Assignment
4.	"Setting MWI Parameters"	**NOTE:** You can complete these procedures in any order.	MWI Parameters
5.	"Setting the Dial Plan Translations"		Dial Plan Translation
6.	"Setting the Hunt Group Translations"		Hunt Group Translation

In addition, the procedure in "Stopping and Starting the Voice System" below may be necessary.

Purpose

This chapter provides the procedures you need to use the Lucent INTUITY user
interface windows to administer the system for switch integration.

Before You Begin

In this chapter it is assumed that:

- You have been directed to this book from Chapter 6, "Initial Administration
  for Switch Integration," in the system installation book for your platform and
  you have completed all the procedures specified there.

- The correct hardware and switch software package are installed on the
  system. See the maintenance book for your platform for information on
  checking the hardware and software.

Before you complete the procedures in this chapter, you should have already
done the following:

- Assigned extension numbers to all voice channels using the PBX
  Extension to Channel option under the Voice Equipment menu

- Assigned DNIS_SVC as a service to all channels using the Services to
  Channels option under the Voice Equipment menu

  ⇒ NOTE:
  If multiple applications are used (for example, INTUITY AUDIX® and
  Lucent INTUITY Lodging), you should have administered the proper
  service for the called number.

- Assigned service through the Number Services option under the Voice
  System Administration menu, by selecting **any** for the calling and called
  number and specifying the appropriate service (for example, **audix**)

- Assigned all numbers that do not have real stations (called phantom or
  dummy numbers) to switch 0 in the INTUITY AUDIX database.

  ⚠ CAUTION:
  *If switch 0 is not used for these extensions, the system will try to turn
  message waiting indicators (MWIs) on and off and continually fail.
  This condition can seriously impede system performance.*

- Assigned the appropriate transfer restrictions (if any) using the Transfer
  Security option from the Voice System Administration menu

- Specified the voice equipment state using the State of Voice Equipment option under the Voice Equipment menu:

  — New State: **inserv**

  — Equipment: **channel**

  — Equipment Number: **all**

  — Change Immediately?: **yes**

- Assigned the appropriate channel group to voice channels using the Channels to Group option under the Voice Equipment menu

  ⇒ NOTE:
  The platform comes with default setting of channel group to 2. This is appropriate for most applications.

- Administered the Lucent INTUITY extension length (dial plan)

- Selected the country and switch on the Switch Selection window

Permissions for Windows

The sa login can view all the windows used in these procedures but cannot change any values for parameters. The craft and remote maintenance logins can set values for parameters in all windows, except the MWI Parameters window. On the MWI Parameters window, the craft login is restricted from changing all but two fields.

Other Windows Used for Switch Integration

Some windows in the user interface that are used for switch integration can be viewed by the sa and craft logins, but require remote maintenance permissions to change any values for parameters. These windows are used only in troubleshooting scenarios involving your service representative and are therefore not described here.

When to Stop and Restart the Voice System

If you change or enter parameters on any of the windows used for switch integration, you must stop and then restart the system in order for your changes to be incorporated into call processing. However, you can administer all the windows and then stop and restart the system just one time. See "Stopping and Starting the Voice System" below for the procedure.

Lucent INTUITY Main Menu

All procedures in this chapter begin at the Lucent INTUITY Main menu (Figure 9-1). For information about accessing the Main menu, see "Logging In to the INTUITY AUDIX System" in Appendix B, "Accessing Windows and Screens," in the system installation book for your platform.

> **NOTE:**
> Figure 9-1 is a sample window only and does not reflect the options loaded onto the actual system you are installing.

```
            INTUITY (TM) Main Menu

  AUDIX Administration
  Customer/Services Administration
  Switch Interface Administration
  Networking Administration
  Upgrade
  Voice System Administration
```
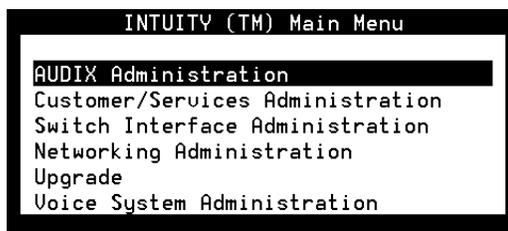
Figure 9-1.   Lucent INTUITY Main Menu

Setting the Country and Switch

Use this procedure to set the country and switch for the integration or to print the default settings for certain system parameters should they be needed for future troubleshooting. Settings in this window determine the default switch integration parameters for the system. Country-specific and switch-specific defaults are displayed on various windows in the user interface.

Although the correct country and switch for your integration should be set at the factory, you must verify that the settings are correct. (You may have already done so when you completed the procedures in the installation book specific to your platform before being directed to this book.)

NOTE:
This procedure is also used by your remote support organization in certain circumstances when it is necessary to override the system defaults by selecting OTHER as the switch type (see Table 9-2).

1. Start at the Lucent INTUITY Main menu (Figure 9-1) and select

> Switch Interface Administration

> Switch Selection

The system displays the Switch Selection window with the factory settings, or if the settings have been previously administered, with the current selections (Figure 9-2).

```
                    Switch Selection



     Country    : ████████████████


     Switch     : ████████████████
```
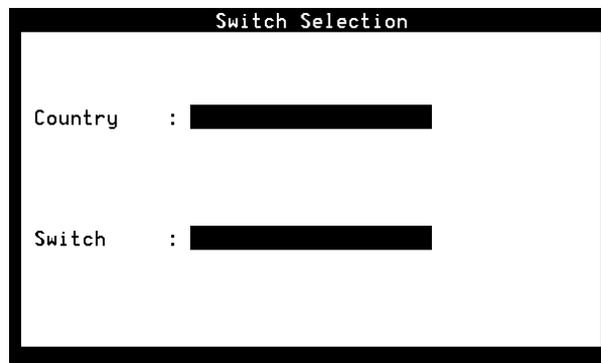
Figure 9-2.   Switch Selection Window

2. It is recommended that you make a printout of the system's current parameters in case your remote support organization needs them in the future for troubleshooting. Do you want a printout at this time?

■ If no, continue with Step 3.

■ If yes, press [F7] (PRINT) and then skip to Step 9.

The system prints the current settings for the following windows in the telephony interface:

— Interface Parameters

— Frequency Specification

— All switch tones windows, including Busy Tone, Dial Tone, Reorder Tone, Ring Tone, and Stutter Tone

⟹ NOTE:
Only the remote maintenance login can change values in these windows, though the craft and sa logins can view them.

3. Do you need to change the country or switch setting?

■ If yes, continue with Step 4.

■ If no skip to Step 9.

4. Enter a country name in `Country:` field (see Table 9-2).

5. Enter a switch name in the `Switch:` field (see Table 9-2).

6. Press [F3] (SAVE).

The system displays the following message:

```
By changing the country name, you will install default
values for the new country. In this process, the
current settings will be lost. You may want to keep a
printout of the settings for your reference. Do you
wish to continue with this change (y/n)?
```

7. If you have:

■ Already printed the current settings or do not want a printout, enter **y**

■ Not yet printed the settings and now decide to, do the following:

   a. Enter **n**

   b. Press [F7] (PRINT).

   c. Press [F3] (SAVE).

The system displays the following message:

```
Your changes have been saved. You need to stop and start
the Voice System to make these changes active.
```

⟹ NOTE:
Although the interface windows immediately display default settings for the changes you have made, you must stop and start the system to activate new interface parameters.

8. Press F1 (ACKNOWLG MESSAGE).

9. Press F6 (CANCEL) twice to return to the Lucent INTUITY Main menu (Figure 9-1).

Table 9-2.   Switch Selection Window — Field Descriptions

| Field	Description
`Country:`	Specifies the country for which the system sets country-specific default parameters.
	The selectable countries depend on the switch integration software package loaded on your system. Normally the country is set at the factory for your integration.
	■ If the platform software is loaded but switch integration software is not loaded, this field defaults to OTHER.
	■ When a switch integration package is installed, any of the countries configured in that package or OTHER can be selected. Press F2 (CHOICES) to see a list of choices.
	■ Only the remote maintenance login can select OTHER. The system provides this choice so integrations can be done in countries not in the list of choices or in certain unusual circumstances. When OTHER is selected, the system removes certain internal restrictions, but you cannot select a switch in the `Switch` field.
	If OTHER is selected in this field and should not be, ensure that the appropriate switch integration software is installed on your system. See "Verifying Installed Software" in Chapter 5, "Administering Passwords and Verifying Hardware, Software, and System Status" in the system installation book for your platform. For information on installing switch software, see "Installing the Switch Interface Software Packages" in Chapter 8 (for the MAP/5P) or Chapter 9 (for other platforms), "Installing Base Software" in the maintenance book for your platform.
`Switch:`	Specifies the switch for which the system sets default parameters in the call data interface.
	The selectable switches depend on the switch integration software loaded on your system. Normally the switch type is set at the factory for your integration.
	■ If the platform software is loaded but no switch integration software is loaded, this field defaults to NO SWITCH. When NO SWITCH is selected, the system removes certain switch-specific default parameters and substitutes generic defaults.
	■ When a switch integration package is installed, you can select any switch approved for the specified country. However, NO SWITCH is not a valid selection. Press F2 (CHOICES) to see a list of choices.
	■ If your remote support organization has set the country to OTHER in the `Country:` field, you cannot select a switch in this field.

Setting the Serial Interface Parameters

Use this procedure to set the parameters used for serial communication between the Lucent INTUITY system and the switch.
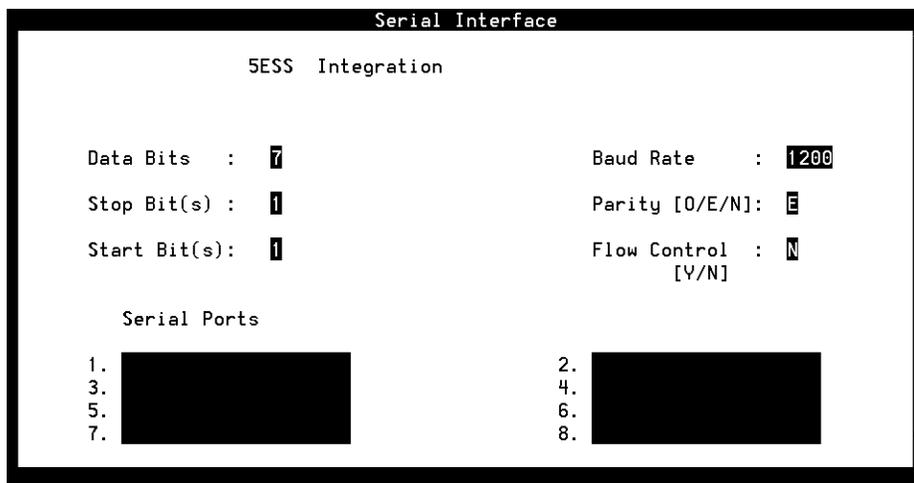
➡ **NOTE:**
The serial communication parameters on the switch side and on the Lucent INTUITY system side must match.

1. Start at the Lucent INTUITY Main menu (Figure 9-1) and select

> Switch Interface Administration

> Call Data Interface

> Switch Link Administration
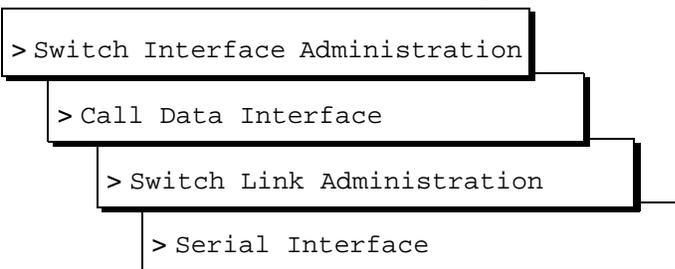
> Serial Interface

The system displays the Serial Interface window (Figure 9-3) with defaults for your integration. If the parameters have been previously administered, the system displays the current values instead.

```
                        Serial Interface
              5ESS   Integration


    Data Bits   :   7               Baud Rate    :  1200

    Stop Bit(s) :   1               Parity [O/E/N]:  E

    Start Bit(s):   1               Flow Control  :  N
                                              [Y/N]

        Serial Ports

    1.                              2.
    3.                              4.
    5.                              6.
    7.                              8.
```

Figure 9-3.   Serial Interface Window

2. Enter the number of data bits in the `Data Bits:` field (see Table 9-3).

3. Enter the baud rate in the `Baud Rate:` field (see Table 9-3).

4. Enter the number of stop bits in the `Stop Bit(s):` field (see Table 9-3).

5. Enter the parity type in the `Parity [O/E/N]:` field (see Table 9-3).

6. Enter the number of start bits in the `Start bit(s):` field (see Table 9-3).

7. Enter **Y** or **N**, as appropriate to enable or disable flow control, in the `Flow Control [Y/N]:` field (see Table 9-3).

8. Press F3 (SAVE).

   The system displays the following message:

   `You need to restart the Voice System to make these changes active.`

9. Press F1 (ACKNOWLG MESSAGE).

10. Press F6 (CANCEL) three times to return to the Lucent INTUITY Main menu (Figure 9-1).

Table 9-3.   **Serial Interface Window— Field Descriptions**

Field	Description	Values
<switch> `Integration`	Displays the switch selected on the Switch Selection window (Figure 9-2).	Display only.
`Data Bits:`	Specifies the number of data bits in the units of information.	The default value of 7 should be used.
`Stop Bit(s):`	Specifies the number of stop bits used when sending information. A stop bit is an interval at the end of a character that allows the receiving device to pause before the start of the next character.	The default value of 1 should be used.
`Start Bit(s):`	Specifies the number of start bits used when sending information. A start bit is a character sent to signal the beginning of a transmission.	The default value of 1 should be used.
`Baud Rate:`	Specifies the transmission speed for communication between the switch and the INTUITY system.	1200, 2400, 4800, or 9600. A baud rate of 1200 should be used for all Centrex switch integrations, except direct connects, where the baud rate should match the baud rate set on the switch.
`Parity [O/E/N]:`	Specifies the parity type for all the serial ports. Parity is used for detection of errors in transmitted data.	■ o for odd parity ■ e for even parity ■ n for no parity The default value of E should normally be used.

Continued on next page

Table 9-3.   **Serial Interface Window— Field Descriptions —** *Continued*

Field	Description	Values
Flow Control [Y/N]:	Specifies whether flow control is enabled or disabled for all the serial ports. Flow control is a handshaking process whereby transmission is regulated so that receive buffers on peripheral devices do not overflow.	■ y to enable ■ n to disable The default value of N should be used.
Serial Ports	Specifies the device IDs of the serial ports on the multi-port serial circuit card used for integration. Only one serial port can be specified on each line. It is recommended that you use the lowest port(s) available, depending on your configuration.	Device IDs for the multi-port serial circuit card are in the format /dev/ttysa*x*, where *x* is a letter (a through h) representing a port on the card (from right to left). Example: /dev/ttysaa

Setting the MWI Device Assignments

Use this procedure to assign the devices on which the system performs MWI (message waiting indicator) updates.

For the Lucent 5ESS® switch only, this procedure also lets you enable heartbeat processing, that is, a link test that periodically checks the status of the serial link. To do the test, the system periodically tries to perform an MWI update on an invalid user extension number.

1. Start at the Lucent INTUITY Main menu (Figure 9-1) and select

   > Switch Interface Administration

     > Call Data Interface

       > MWI Administration

         > Device Assignment

   The system displays the first of two screens of the Device Assignment window (Figure 9-4). If the parameters have been previously administered, the system displays the current values instead. To access the second screen, press F5 (NEXT PAGE). To return to the first screen, press F4 (PREV PAGE).
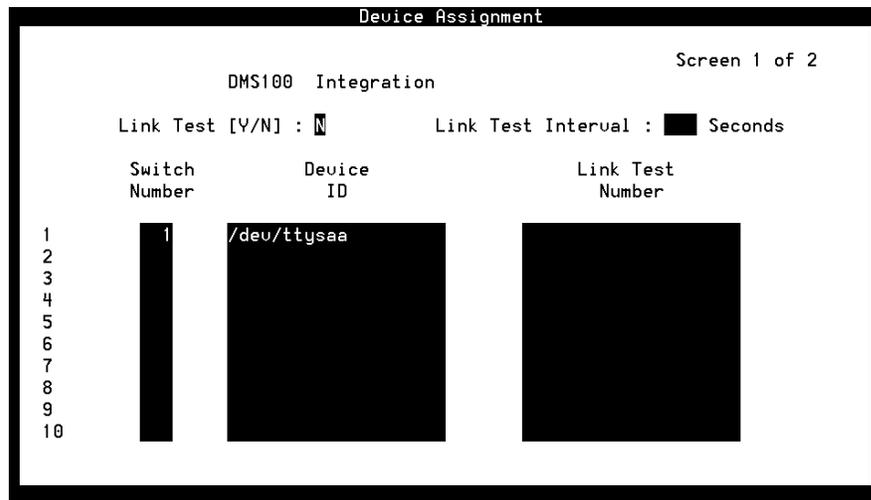
Figure 9-4. Device Assignment Window

2. Enter **y** or **n**, as appropriate, in the `Link Test (Y/N):` field (see Table 9-4).

3. Did you enter Y in the `Link Test (Y/N)` field?

   ■ If yes, do the following:

      a. Enter the number of seconds for the link test interval in the `Link Test Interval:` field (see Table 9-4).

      b. If yes, enter a link test number in the `Link Test Number` field (see Table 9-4).

   ■ If no, go to Step 4.

4. Enter a switch number in the `Switch Number` field (see Table 9-4).

5. Enter a device ID in the `Device ID` field (see Table 9-4).

6. Press F3 (SAVE).

   The system displays the following message:

   `You need to restart the Voice System to make these changes active.`

7. Press F1 (ACKNOWLG MESSAGE).

8. Press F6 (CANCEL) four times to return to the Lucent INTUITY Main menu (Figure 9-1).

Table 9-**4. Device Assignment Window — Field Descriptions**

Field	Description	Values
<switch> `Integration`	Displays the switch selected on the Switch Selection window (see Figure 9-2).	Display only.
`Link Test (Y/N):`	Specifies whether the integration enables heartbeat processing. If the link test is disabled, the `Link Test Interval:` and `Link Test Number` fields are not used. If the link test is enabled, these fields are required.	■ y to enable the link test ■ n to disable the link test ➡ **NOTE:** For the Northern Telecom (Nortel) DMS-100 and SL-100 switches, this value must be set to n (no)because y (yes) causes an error to be logged on the switch. The link test is recommended for the 5ESS switch.

`Link Test Interval (seconds):`	➡ **NOTE:**
	    This field is not used for the Nortel DMS-100 and SL-100 switches. For the Lucent 5ESS switch, use this field *only* if the link test is enabled in the `Link Test (Y/N):` field.
	
	Specifies the heartbeat interval in seconds.
		One or more integers specifying the number of seconds.
		
		➡ **NOTE:**
		    The default value provided in the software for each switch type is normally appropriate.

`Switch Number`	Number that uniquely identifies the switch in the Lucent INTUITY system and is used to address it.	Maximum of 3 digits, range 1-999. The switch number here must match the switch number assigned for system users in the INTUITY AUDIX® system.
`Device ID`	Name(s) of the port(s) on the multi-port serial circuit card to be used for MWI updates. This name must also be specified in the `Serial Ports` field on the Serial Interface window (see "Setting the Serial Interface Parameters" above). Only one device ID can be specified on each line.	It is recommended that you use the lowest port(s) available on the multi-port serial circuit card. Device IDs for this card are in the format /dev/ttysa*x*, where *x* is a letter (a through h) representing a port on the card, from right to left. Example: /dev/ttysaa

Continued on next page

Table 9-4.   Device Assignment Window — Field Descriptions — *Continued*

Field	Description	Values
`Link Test Number`	⇒ **NOTE:** This field is not used for the Nortel DMS-100 and SL-100 switches. For the Lucent 5ESS switch, use this field *only* if the link test is enabled in the `Link Test (Y/N)` field. Specifies the extension to which the heartbeat message is sent.	Any *invalid* subscriber number on the switch. Maximum of 10 digits. Examples: 5551212 or 0000000 An invalid extension is used because the system checks the link by attempting to do an MWI update on the extension.

Setting MWI Parameters

Use this procedure to disable MWI updates altogether on the system, or to block them during a specified period of time. The switch administrator may want MWI updates to be blocked during the time when audits run.

1. Start at the Lucent INTUITY Main menu (Figure 9-1) and select

```
> Switch Interface Administration
    > Call Data Interface
        > MWI Administration
            >MWI Parameters
```
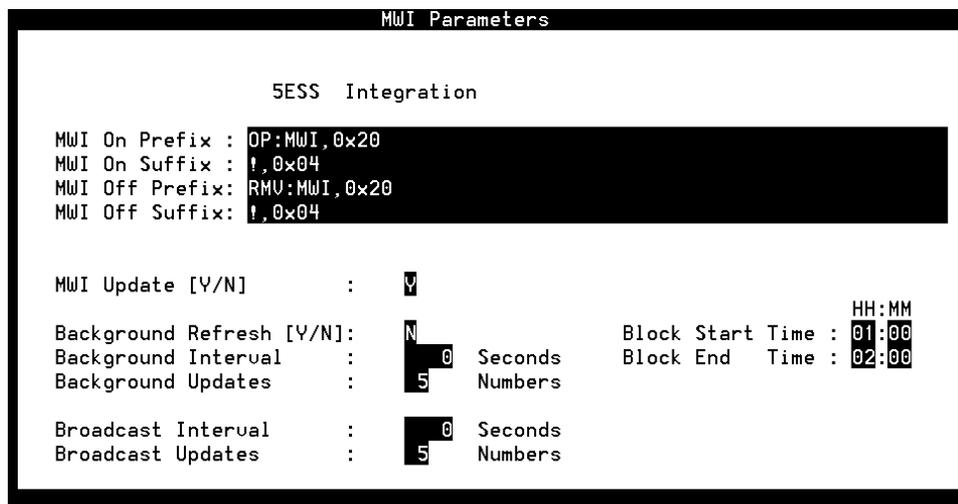
The system displays the MWI Parameters window (Figure 9-5) with system defaults for your integration. If the parameters have been previously administered, the system displays the defaults instead.

⇒ **NOTE:**
    Some of the fields on this window are closed to all but the remote maintenance login.

```
                          MWI Parameters                              ^

                  5ESS  Integration

 MWI On Prefix : OP:MWI,0x20
 MWI On Suffix : !,0x04
 MWI Off Prefix: RMV:MWI,0x20
 MWI Off Suffix: !,0x04


 MWI Update [Y/N]        :    Y
                                                          HH:MM
 Background Refresh [Y/N]:    N          Block Start Time : 01:00
 Background Interval    :        0  Seconds  Block End   Time : 02:00
 Background Updates     :      5    Numbers

 Broadcast Interval     :        0  Seconds                          u
 Broadcast Updates      :      5    Numbers
```

Figure 9-5. MWI Parameters Window

2. Enter the time for blocking of MWI updates to start in the `Block Start Time:` field (see Table 9-5).

3. Enter the time for blocking of MWI updates to end in the `Block End Time:` field (see Table 9-5).

4. Press (F3) (SAVE).

   The system displays the following message:

   ```
   You need to restart the Voice System to make these
   changes active.
   ```

5. Press (F1) (ACKNOWLG MESSAGE).

6. Press (F6) (CANCEL) four times to return to the Lucent INTUITY Main menu (Figure 9-1).

Table 9-5. MWI Parameters Window — Field Descriptions

Field	Description	Values
<switch> Integration	Displays the switch selected on the Switch Selection window (Figure 9-2).	Display only.

Continued on next page

Table 9-5.   MWI Parameters Window — Field Descriptions — *Continued*

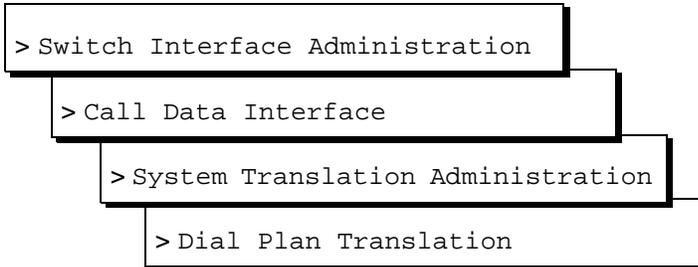| Field	Description	Values
MWL on prefix: MWL on suffix: MWL off prefix: MWL off suffix: MWI Update [Y/N]: Background Refresh [Y/N]: Background Interval: Background Updates: Broadcast Interval: Broadcast Updates:	⇒ **NOTE:** Only the remote maintenance login can change the information in these fields.	
Block Start Time:	Sets the time when blocking of MWI updates begins on a daily basis.	Format *HH/MM/SS*, where: ■ *HH* is the hour in the 24-hour system (range 0-23). ■ *MM* is the minute (range 0-59). ■ *SS* is the second (range 0-59).
Block End Time:	Sets the time when blocking of MWI updates ends on a daily basis.	

Setting the Dial Plan Translations

Use this procedure to:

- Set the Lucent INTUITY extension length (also called the dial plan).

- Set up the translations to be done on the calling party identification (CLI) and called party identification (CP ID) for incoming and outgoing calls to interface the Lucent INTUITY system and the switch.

For Centrex switches, typically, the switch sends a string of either 7 or 10 digits. The Lucent INTUITY system must strip digits from the string to accord with the number of digits set in the Lucent INTUITY system extension length.

1. Start at the Lucent INTUITY Main menu (Figure 9-1) and select

> > Switch Interface Administration

>   > Call Data Interface

>   > System Translation Administration

>   > Dial Plan Translation

The system displays the first of five screens of the Dial Plan Translation window (Figure 9-6) with defaults for your integration. If the parameters have been previously administered, the system displays the current values instead. To access the next screen, press F5 (NEXT PAGE). To return to the previous screen, press F4 (PREV PAGE).

```
                        Dial Plan Translation
                                                          Screen 1 of 5
                      5ESS  Integration

     INTUITY Extension Length: ▮4        Switch Network Access Code: ▮

          Switch       Switch       Switch      INTUITY     Switch    Remote
          Prefix    Start Ext.    End Ext.      Prefix     Number    [Y/N]

       1             0000          9999                        1       N
       2
       3
       4
       5
       6
       7
       8
       9
      10
```

Figure 9-6.   Dial Plan Translation Window

2. Verify that the INTUITY extension length in the `INTUITY Extension Length:` field is correct (see Table 9-6).

    > **NOTE:**
    > You should have already administered the `INTUITY Extension Length:` field as a part of initial administration for switch integration.

3. Enter the Switch network access code in the `Switch Network Access Code:` field (see Table 9-6).

4. Enter the switch prefix in the `Switch Prefix` field (see Table 9-6).

5. Enter the switch start extension in the `Switch Start Ext.` field (see Table 9-6).

6. Enter the switch end extension in the `Switch End Ext.` field (see Table 9-6).

7. Enter the INTUITY prefix in the `INTUITY Prefix` field (see Table 9-6).

8. Enter the switch number in the `Switch Number` field (see Table 9-6).

9. Enter **y** or **n** in the `Remote [Y/N]` field (see Table 9-6).

10. Repeat Steps 4 through 9 for any remaining translations.

11. Press F3 (SAVE).

    The system displays the following message:

    ```
    You need to restart the Voice System to make these
    changes active.
    ```

12. Press F1 (ACKNOWLG MESSAGE).

13. Press F6 (CANCEL) four times to return to the Lucent INTUITY Main menu
    (Figure 9-1).

Table 9-6.   Dial Plan Translation Window— Field Descriptions

Field	Description	Values
<switch> Integration	Displays the switch selected on the Switch Selection window (Figure 9-2).	Display only.
INTUITY Extension Length:	Specifies the number of digits used in the Lucent INTUITY mailbox.	3 to 10 integers. Must be the same as the number of digits administered for the switch prefix combined with the number of digits for the (start or end) extension number.
Switch Network Access Code:	⇒ **NOTE:** This field is not used for Centrex switch integrations because it applies only in networked switch configurations.	
Switch Prefix	Specifies the initial part of the code sent by the switch as part of the call information. For Centrex switches, it is typically the NNX code used in the North American Numbering Plan scheme. For example, if the extension length on the Lucent INTUITY system is 4 and the call information is 8604000, then 860 is the switch prefix and 4000 is the INTUITY mailbox number.	The dialing number obtained by combining the switch prefix with any number in the range between the start and end extension number must be a unique number. No overlaps are allowed. The final translated number must provide a unique fixed-length INTUITY extension.
Switch Start Ext.	Specifies the first extension number in the range of allowed extension numbers.	The number of digits specified for the start and end extension numbers must be identical and must match the dial plan. For example, to specify the range 200-3999, enter:
Switch End Ext.	Specifies the last extension number in the range of allowed extension numbers.	■ Start extension 0200 ■ End extension 3900
INTUITY Prefix	⇒ **NOTE:** This field is not used for Centrex switch integrations because it applies only in networked switch configurations.	

Continued on next page

Table 9-6. Dial Plan Translation Window— Field Descriptions — *Continued*

Field	Description	Values
Switch Number	Number that uniquely identifies the switch in the Lucent INTUITY system and is used to address it. The Lucent INTUITY system uses this number to differentiate between system users on different switches. For Centrex switch integrations switch networking is not normally done, so there is typically only one switch.	Maximum of 3 digits, range 1-999.
Remote [Y/N]	Specifies whether the administered switch identified in the Switch Number field is a remote switch on the network or a local switch. For Centrex switch integrations, switch networking is not normally done.	■ y for remote ■ n for local (direct) The default is n (local). For Centrex switch integrations there is typically only one (local) switch.

Examples

The following example illustrates an entry used in the case where the switch sends 7 digits and the INTUITY extension length is 4 digits. The first 3 digits are stripped off.

```
INTUITY extension length = 4

Switch        Switch         Switch        INTUITY        Switch    Remote
Prefix        Start Ext.     End Ext.      Prefix         ID        [Y/N]

860           0000           9999                         1         N
```

The following example illustrates an entry used in the case where the switch sends 10 digits and the INTUITY extension length is 7 digits. The first 3 digits are stripped off.

```
INTUITY extension length = 7

Switch        Switch         Switch        INTUITY        Switch    Remote
Prefix        Start Ext.     End Ext.      Prefix         ID        [Y/N]

212           8600000        8609999                      1         N
```

Setting the Hunt Group Translations

Use this procedure to assign the Tip/Ring port channels to hunt groups. This procedure is used only for switches that use simplified message desk interface (SMDI) protocol to enable multiple hunt group administration. Specifically, the procedure assigns to a Lucent INTUITY channel the message desk number (MDN) and switch channel logical terminal number (LTN) that the switch passes in the call information. To complete the procedure you will need information from the central office (CO) in Table 2-3 in Chapter 2, "Planning for Centrex Switch Integration".

1. Start at the Lucent INTUITY Main menu (Figure 9-1) and select

> Switch Interface Administration

> Call Data Interface

> System Translation

> Hunt Group Translation

The system displays the first of four screens of the Hunt Group Translation window (Figure 9-7). If the parameters have been previously administered, the system displays the current values. To access the next screen, press NEXT PAGE (F5). To return to the previous screen, press PREV PAGE (F4).

```
                        Hunt Group Translation

                                             Screen  1 of 4
                    DMS100  Integration


     INTUITY   Message    Logical     INTUITY   Message    Logical
     Channel    Desk     Terminal     Channel    Desk     Terminal
               Number     Number                Number     Number
        0      000         001           1      000         002
        2      001         003           3      002         004
        4      003         005           5      003         006
        6      004         007           7      005         008
        8      006         009           9      007         010
       10      008         011          11      009         012
       12      010         013          13      010         014
       14      011         015          15      012         016
```

Figure 9-7. Hunt Group Translation Window

2. Enter the MDN that is to be mapped to INTUITY channel 0 in the `Message Desk Number` field associated with channel 0 (see Table 9-7).

3. Enter the LTN corresponding to the MDN in the `Logical Terminal Number` field associated with channel 0 (see Table 9-7).

4. Repeat Steps 2 and 3 for the other MDNs and LTNs you need to map.

5. Press F3 (SAVE).

   The system displays the following message:

   ```
   You need to restart the Voice System to make these
   changes active.
   ```

6. Press F1 (ACKNOWLG MESSAGE).

7. Press F6 (CANCEL) four times to return to the Lucent INTUITY Main menu (Figure 9-1).

Table 9-7.   Hunt Group Translations Window— Field Descriptions

Field	Description	Values
<switch> `Integration`	Displays the switch selected on the Switch Selection window (Figure 9-2).	Display only.
`INTUITY channel`	Displays the maximum number of channels (0 through 63) that can be configured on the INTUITY system. Your system may have fewer than the maximum number of channels.	Display only. If a channel is not in use, do not map an MDN or LTN to it. Leave the corresponding `Message Desk Number` and `Logical Terminal Number` fields blank.
`Message Desk Number`	Specifies the MDN being mapped to the specified INTUITY channel.	Maximum of 3 digits, range 1-999.
`Logical Terminal Number`	Specifies the LTN being mapped to the specified Lucent INTUITY channel.	4 digits. Each MDN/LTN can be mapped to only one channel.

Example

The following example illustrates a simple scenario where six Lucent INTUITY system ports are used and the switch is configured to have two MDNs. The switch passes call information based on the MDN and the LTN. This must be interpreted as call information for a particular Lucent INTUITY port as follows.

INTUITY Channel	Message Desk Number	Logical Terminal Number	INTUITY Channel	Message Desk Number	Logical Terminal Number
0	000	001	1	000	002
2	001	003	3	002	004
4	003	005	5	003	006

Stopping and Starting the Voice System

To execute any changes you have made to the switch integration administration windows in the procedures in this chapter, you must stop and then restart the voice system.

⚠ CAUTION:
Only stop the voice system when it is absolutely necessary. All calls in progress will be disconnected. Users calling the AUDIX system will hear a fast busy signal. Callers sent to AUDIX coverage will hear ringing with no answer.

Use this procedure to stop and restart the voice system.

1. Start at the Lucent INTUITY Main menu (Figure 9-1) and select

> `> Customer/Services Administration`
> `> System Management`
> `> System Control`
> `> Stop Voice System`

⇒ NOTE:
Be sure to select `Stop Voice System`. Do not select `Shutdown Voice System`.

The system displays the Wait Time window (Figure 9-8).

```
        Wait Time
      Seconds: ■
```
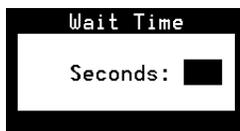
Figure 9-8.   Wait Time Window

2. Enter a time between 60 and 600 seconds as the time to wait for calls in progress.

3. Press F3 (SAVE).

The system displays the following message:

```
The voice System has stopped
Press ENTER to continue...
```

➡ **NOTE:**
   The system waits until all calls in progress disconnect before
   stopping the voice system.

4. Press ENTER.

    The system displays the System Control menu (Figure 9-9).

```
                   System Control

  Shutdown System
  Start Voice System
  Stop Voice System
```
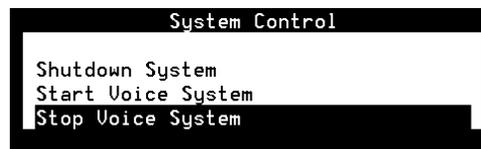
Figure 9-9.   System Control Menu

5. Select

    > Start Voice System

    The system displays the following message:

    ```
    Startup of the Voice System is complete
    Hit Acknowledge key to continue...
    ```

6. Press F1 (ACKNOWLG MESSAGE).

7. The system redisplays the System Control window (Figure 9-9).

8. Press F6 (CANCEL) three times to return to the Lucent INTUITY Main menu
    (Figure 9-1).

Integration Validation and Troubleshooting

10

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Integration Validation and Troubleshooting

10

Overview

This chapter assumes that:

- The switch has been administered.

- The hardware necessary for integration has been installed.

- The Lucent™ INTUITY™ system has been administered for switch integration.

- The Lucent INTUITY system has been stopped and restarted to activate the changes made for switch administration.

Coordination and cooperation with the switch administrator may be required to validate and troubleshoot the integration.

Purpose

This chapter contains procedures and guidelines to validate and troubleshoot a Centrex switch integration with the Lucent INTUITY system.

Integration Validation

The following procedures are used to validate the integration:

- ''Viewing the Switch Integration Logs''
- ''Verifying the Channel Mapping''
- ''Verifying the MDN Mapping''
- ''Validating the Port Connectivity''
- ''Validating Call Forwarding Scenarios''
- ''Validating Transfers''
- ''Validating Call Disconnection''
- ''Validating MWI Updates''
- ''Validating the Automated Attendant''

> **NOTE:**
> Several procedures require you to view the System Monitor window.
> See ''Viewing the System Monitor'' below for the procedure to do so.
>
> Some procedures require you to view the Switch Integration Log window.
> See ''Viewing the Switch Integration Logs'' below for the procedure to do so.

Viewing the Switch Integration Logs

Use this procedure to view the log entries generated by the various switch integration processes. You can select the entries by date and time or by process. Or, by selecting an event sequence number, you can view only those entries associated with a specified event. Usually, selecting an event by sequence number presupposes that you have first viewed the log to obtain the number of the event of interest. The log records the most recent 2000 events, and its contents are rolled over.

If calls are made to the system and the switch integration logs:

- Contain the normally expected data, then calls are integrated
- Contain no data, calls are not integrated
- Are missing some of the normally expected data, the switch is most likely administered incorrectly. Contact your remote support center for assistance.

1. Start at the Lucent INTUITY Main menu (Figure 9-1) and select

```
> Switch Interface Administration
   > Call Data Interface
      > Switch Integration Log
```

The system displays the Switch Integration Log window (Figure 10-1) with the current date and time displayed.


```
                     Switch Integration Log

           DMS100  Integration

                   MM/DD/YYYY                      HH:MM:SS
      Start Date : 6/13/1997              Time : 11:15: 0

          Source : ALL

Sequence Number :

                              System Time : 11:23:19
```

Figure 10-**1.   Switch Integration Log Window**

2. Do you want to view log entries by sequence number?

   ■   If yes, enter the sequence number in the `Sequence Number:` field (see Table 10-1) and go to Step 6.

   ■   If no, go to Step 3.

3. Enter date for the first log entry you want to view in the `Start Date:` field (see Table 10-1).

4. Enter the time for the first log entry you want to view in the `Time:` field (see Table 10-1).

   The time must be earlier than that displayed in the `System Time:` field.

5. Do you want to select entries by process type?

   ■ If yes, enter the name of process for which you want to view entries in the `Source` field (see Table 10-1).

   ■ If no, enter **ALL** in the Source field.

6. Press ⌨F3 (DISPLAY).

   The system displays the log data you selected, up to a maximum of 2000 entries (see the examples following Table 10-1).

7. Press ⌨F6 (CANCEL) three times to return to the Lucent INTUITY Main menu (Figure 9-1).

Table 10-1. Switch Integration Log Window — Field Descriptions

Field	Description	Values
<switch> `Integration`	Displays the switch selected on the Switch Selection window (Figure 9-2).	Display only.
`Start Date:`	Selects events logged in the specified interval up to a maximum of 2000 events. If you use the `Sequence Number:` field, the system ignores data in these fields and the `Source:` field.	Format *MM DD YYYY*, where: ■ *MM* is the month (range 1-12) ■ *DD* is the day (range 1-31) ■ *YYYY* is the year
`Time:`		Format *HH MM SS*, where: ■ *HH* is the hour in the 24-hour system (range 0-23) ■ *MM* is the minute (range 0-59) ■ *SS* is the second (range 0-59)
`Source:`	Selects the name of a switch integration process for display. The display includes all events logged by this process from the 2000 events currently contained in the log. If you use the `Sequence Number:` field, the system ignores data in this field and the `Start Date:` and `Time:` fields.	■ RDR ■ SWINDIP ■ WTR ■ ALL
`Sequence Number:`	Specifies a sequence number that corresponds to a logged event. If you use this field, the system ignores the other fields in the window. The display includes all data logged with the specified sequence number from the 2000 events currently contained in the log.	A 5-digit number.
`System Time:`	Displays the system time as a convenience.	Display only. The format is the same as in the `Time:` field.

Overview of Log Contents

Log entries for Centrex (serial) integrations are generated by the RDR, SWINDIP, and WTR processes (Figure 10-2).

- Each serial RDR entry contains the raw data sent from the switch for one call.

- Serial SWINDIP entries associated with the serial RDR entry contain the corresponding parsed and translated call data.

- Each serial WTR entry logs data about one message waiting indicator (MWI) update.

- Data fields are separated by a forward slash (/).

```
10002                    RDR                    Fri May  2 13:55:04 1997
Raw: /tty00/[0XD][0XA]MD9993276D ...4001 [0XD][0XA][0X19]/
10002                    SWINDIP                Fri May  2 13:55:04 1997
Parsed:/DIR_INT/CHANNEL -1/CHANEXT 3276/CLI 4001/CP /
10002                    SWINDIP                Fri May  2 13:55:04 1997
Translated:/DIR_INT/CHANNEL -1/CHANEXT 3276/CLI 4001/CP /
10003                    RDR                    Fri May  2 14:00:23 1997
Raw: /tty00/[0XD][0XA]MD9993276B...4000  [0XD][0XA][0X19]/
10003                    SWINDIP                Fri May  2 14:00:23 1997
Parsed:/BUSY_EXT/CHANNEL -1/CHANEXT 3276/CLI /CP 4000/
10003                    SWINDIP                Fri May  2 14:00:23 1997
Translated:/BUSY_EXT/CHANNEL -1/CHANEXT 3276/CLI /CP 4000/
21002                    WTR                    Fri May  2 14:00:54 1997
MWI_ON:/SWID 1/TTY /dev/tty00/AUDIX EXTN 4000/XLAT EXTN 4000/
21002                    WTR                    Fri May  2 14:00:54 1997
MWI_SUCCESS:/OP:MWI ...4000![0X4]/
```

Figure 10-2. Example of Serial Switch Integration Log

Each type of serial log entry contains two lines. The first line for all types identifies the entry as follows (Table 10-2):

Table 10-2. Serial Integration Log — All Entries — Event ID

Field	Description
<sequence number>	Identifies the event. A RDR entry and its corresponding SWINDIP entries share a sequence number. Pairs of WTR entries share a sequence number.
<process name>	RDR, SWINDIP, or WTR.
<date and time>	The time and date stamp of the event.

Serial RDR Log Entries

Serial RDR entries contain the following data (Table 10-3):

Table 10-3. Serial RDR (Raw) — Field Descriptions

Field	Description
Raw	Indicates the unparsed, untranslated data sent from the switch.
tty<number>	The name of the serial device used for the call.
<data string>	The data stream sent by the switch, consisting of ASCII and hexadecimal characters.

Serial SWINDIP Log Entries

Serial SWINDIP entries contain the following data (Table 10-4):

Table 10-4. Serial SWINDIP (Parsed/Translated) — Field Descriptions

Field	Description	
Parsed and Translated	Indicates the data stream sent from the switch after parsing or translation, respectively.	
<call type>	Identifies the call as: ■ DIR_INT (direct internal) ■ DIR_EXT (direct external ■ NA_INT (no answer internal) (This category includes call forward, all calls.) ■ NA_EXT (no answer external) ■ BUSY_INT (busy internal) ■ BUSY_EXT (busy external) For DIR_INT, NA_INT, and BUSY_INT calls, both the CLI and CP are shown. For DIR_EXT, NA_EXT, and BUSY_EXT calls, only the CP is shown.	
CHANNEL <number>	The Lucent INTUITY channel number for the call.	➡ **NOTE:** Either one of these fields may be displayed, depending on the switch. If the CHANNEL<number> is not displayed, its default value is -1. (Channel-to-extension mapping is done on the Voice Equipment window as part of voice system administration.)
CHANEXT	The Lucent INTUITY extension number for the call.	

Continued on next page

Table 10-4. Serial SWINDIP (Parsed/Translated) — Field Descriptions — *Continued*

Field	Description
CLI	The extension of the calling party, if available (see *<call type>* above). The number of digits in the parsed and translated CLI may differ depending on how the dial plan is administered on the Dial Plan Translation window in the call data interface.
CP	The extension of the called party, if available (see *<call type>* above).

Serial WTR Log Entries

Serial WTR entries are of two types. One type provides information on requests for MWI updates that the Lucent INTUITY system sends to the switch. The other provides information on the status of the updates.

Serial WTR MWI request entries contain the following data (Table 10-5):

Table 10-5. Serial WTR (MWI Requests) — Field Description

Field	Description
MWI_ON or MWI_OFF	Indicates whether the MWI is to be turned on or off.
SWID *<number>*	Uniquely identifies the switch in the Lucent INTUITY system.
TTY	The name of the serial device used for the call.
AUDIX EXTN	The INTUITY AUDIX® extension number.
XLAT EXTN	The translated extension number. The number of digits may differ from that in the AUDIX EXTN depending on how the dial plan is administered on the Dial Plan Translation window in the call data interface.

Serial WTR MWI status entries contain the following data (Table 10-6):

Table 10-6. Serial WTR (MWI Status) — Field Description

Field	Description
MWI_SUCCESS or MWI_FAIL	Indicates whether the requested MWI update occurred.

Continued on next page

Table 10-6.   Serial WTR (MWI Status) — Field Description — *Continued*

Field	Description
<MWI string>	A string that contains the INTUITY AUDIX extension number for which the MWI is updated plus any prefix or suffix needed to turn the MWI on or off. (MWI prefixes and suffixes are administered on the MWI Parameters window. See "Setting MWI Parameters" in Chapter 9, "Lucent INTUITY Administration for Centrex Switch Integration".) "Padding" characters, such as periods (. . .) may also be included in the string.

Viewing the System Monitor

Several procedures used to validate an integration use the System Monitor - Voice Channels window. Use this procedure to view the System Monitor - Voice Channels window.

1. Start at the Lucent INTUITY Main menu (Figure 9-1) and select

    > Voice System Administration
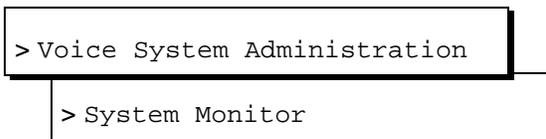
    > System Monitor

    The system displays the System Monitor - Voice Channels window (Figure 10-3).

```
                    System Monitor - Voice Channels
          Calls Voice      Service                 Caller        Dialed
Channel Today Service      Status                  Input         Digits

      0     0              *On Hook
      1    10              *On Hook
      2    21              *On Hook
      3     4              *On Hook
      4    12  AUDIX        Talking                12345#
      5     0              *On Hook
```

Figure 10-3.   System Monitor Window

2. Press ⬚F3 (CANCEL) twice to return to the Lucent INTUITY Main menu.

Verifying the Channel Mapping

To test the channel mapping, you must display the system monitor and call each channel. Use the worksheet for channel mapping and MDN (message desk number) test for the list of numbers to call (Table 2-3 in Chapter 2, "Planning for Centrex Switch Integration". Use this procedure to test the channel mapping.

1. Access the System Monitor - Voice Channels window.

   For the procedure to do so, see "Viewing the System Monitor" above.

2. Verify that all the purchased and activated voice channels are on-hook at the start of the testing.

3. Press F8 (CHG-KEYS).

4. Press F1 (CHG-RATE).

   The system displays the Change Refresh Rate window.

5. Enter **1** to change the refresh rate to every 1 second.

6. Press F3 (SAVE).

7. Call each phone number on the worksheet and verify that the correct channel answers by viewing the system monitor.

   When the system answers, the system monitor changes the service status for the channel from `On Hook` to `Talking`. If any of the channels fails to answer when the extension is dialed and the system lists the channel as `INSERV`, the channel is probably improperly mapped on the Lucent INTUITY system or the switch is not processing the call correctly.

Verifying the MDN Mapping

Verify that the correct MDN (message desk number) is associated with the correct channel(s). To do so, call the hunt group number (leading number of the hunt) and watch the system answer on the System Monitor - Voice Channels window. Use the worksheet for extension numbers for test for the telephone numbers to call (see Table 2-4 in Chapter 2, "Planning for Centrex Switch Integration").

$\Rightarrow$ NOTE:

For this procedure, the switch must have been provisioned to support the multiple hunt groups.

1. Access the System Monitor - Voice Channels window.

   For the procedure to do so, see "Viewing the System Monitor" above.

2. Place a call using one of the hunt group numbers or one of the extensions that should be forwarded to a call coverage path.

3. View the System Monitor window and verify that one of the channels associated with the MDN answers.

   The system should answer in one of the following ways:

■ For an MDN used for an INTUITY AUDIX® call forwarding coverage path, the system plays either the AUDIX greeting, "Your call is being answered by AUDIX," or the subscriber's personal greeting.

■ For an MDN associated with INTUITY AUDIX message retrieval, the system plays the message retrieval greeting:

"Welcome to AUDIX. For help at any time, press star H. Please enter extension and pound sign."

■ For an MDN associated with an Automated Attendant, the system plays the Automated Attendant's greeting.

■ For an MDN associated with another application such as INTUITY Lodging, the system answers with the application's greeting.

If the system answers with the wrong prompt or with a request for the extension number for the person for whom you wish to leave a message, the test failed. This usually indicates one of the following:

■ The channel numbers have changed and the channels have not been re-mapped or the channel has been improperly mapped on the Lucent INTUITY system.

■ The physical connection is incorrect or loose.

■ The MDN or the channels on the switch may be improperly administered.

■ The MDNs and the channel have been improperly mapped on the Lucent INTUITY Hunt Group Administration window.

4. Repeat Steps 2 and 3 for each hunt group, and verify that you receive the correct response.

Validating the Port Connectivity

Use this procedure to test whether the ports are properly physically connected.

1. Access the System Monitor - Voice Channels window.

   For the procedure to do so, see ''Viewing the System Monitor'' above.

2. Have the switch administrator place calls to each individual Lucent INTUITY voice channel, one at a time.

3. Use the System Monitor window to verify that the correct channel is accessed from the switch.

Validating Call Forwarding Scenarios

Use the procedure below to test coverage for call forwarding scenarios:

■ Testing for Busy

■ Testing for Forward All Calls and Call No Answer

Validating Busy

Use this procedure to test call forwarding for busy extensions:

1. Busy out a subscriber extension.

2. Call the busy extension.

3. Verify that the call follows the correct call forwarding coverage path and that the Lucent INTUITY system plays the busy greeting.

4. Repeat this procedure for the other extensions to be tested.

Validating Forward All Calls and Call No Answer

When a subscriber forwards all calls to the Lucent INTUITY SDGN number, a call placed to the subscriber should follow the call forwarding coverage path and the correct system prompt should be played for that subscriber.

Use this procedure to test for Forward All Calls and Call No Answer for all subscribers:

1. Call the subscriber.

2. Verify that the correct prompt is played.

Validating Transfers

Use this procedure to test transfers for all subscribers:

1. From an INTUITY AUDIX mailbox, use the "*T" option to transfer to another AUDIX mailbox.

2. Monitor the transfer time

   The transfer time should be approximately 5 to 8 seconds.

Validating Call Disconnection

Use this procedure to test call disconnect for all subscribers:

1. Leave a message in the subscriber mailbox.

2. Retrieve the message, and listen for the sign of call progress tone recording.

   If there is no call progress tone in the message, disconnect is working correctly.

Validating MWI Updates

Use this procedure to test MWI (message waiting indicator) updates for all subscribers:

1. Leave a voice message for the subscriber.

2. After the message is left, check that the MWI is turned on.

Validating the Automated Attendant

Use this procedure to test the automated attendant for all subscribers (if configured):

1. Call the subscriber.

2. Verify that the automated attendant message plays.

Integration Troubleshooting

Use the information in Table 10-7 to troubleshoot problems with the integration.

Table 10-7.   Troubleshooting Scenarios

Trouble	Possible Reason	Possible Solutions
Calls not integrated	Bad serial connection.	1. Check the connection using an RS232 mini-tester or a serial breakout box. 2. Ensure that the transmit data and receive data leads are crossed properly. 3. Try the connection both with and without a null modem. 4. Try different adapters (DCE or DTE) with or without null modem until the correct combination works. For information on cable connections, see Appendix E, "Cable Connectivity," in the *System Installation* book for your platform. See also Chapter 4, "Hardware Installation for 5ESS Switch Integration with the 3A Translator", and Chapter 7, "Hardware Installation for Centrex Switch Integration with the 202T Modem". ⫸ **NOTE:** If these solutions do not clear the trouble, contact your remote support center.
	Serial port parameter mismatch between the switch and the Lucent INTUITY system.	■ Check the parameter settings on the Serial Interface window in the Lucent INTUITY system. For information on the window, see "Setting the Serial Interface Parameters" in Chapter 9, "Lucent INTUITY Administration for Centrex Switch Integration". ■ Work with the switch administrator to check the parameter settings on the switch.
	3A translator or 202T modem incorrectly installed or configured.	■ For information on the 3A translator see Chapter 4, "Hardware Installation for 5ESS Switch Integration with the 3A Translator", and Chapter 5, "Programming the 3A Translator". ■ For information on the 202T modem see Chapter 6, "Setting the 202T Modem", and Chapter 7, "Hardware Installation for Centrex Switch Integration with the 202T Modem".
	Incorrect switch translations.	Work with the switch administrator to correct the translations.

Continued on next page

Table 10-**7.   Troubleshooting Scenarios — *Continued***

Trouble	Possible Reason	Possible Solutions
MWI updates do not occur properly	See the reasons above for calls not integrated.	See the solutions above for calls not integrated.
	Inappropriate switch setup.	Request that the switch administrator check the administration for translations, class of service, and subscriber setup.
	Incorrect parameters or parameter mismatch between the switch and the Lucent INTUITY system.	Contact your remote support center to ensure that the MWI update flag is set to **y** on the MWI Parameters window (Figure 9-5).
	Incorrect switch settings for class or service or subscriber setup.	Work with the switch administrator to correct the switch settings.
	Station set capability to register MWI updates.	This problem may not be correctable. If the station is programmed to receive calls from multiple numbers but has only one MWI, then MWI updates for all but one number may be lost.
Transfers fail	Incorrect transfer administration for Lucent INTUITY AUDIX®.	Verify the transfer restrictions administered for the INTUITY AUDIX system.
	Inappropriate transfer restrictions set on the switch.	Work with the switch administrator to check any transfer restrictions set on the switch.
	Dial tone is not detected and the Lucent INTUITY transfer function times out due to a mismatch in the tone parameters between the switch and the Lucent INTUITY system.	Work with the switch administrator to check the tone parameters on the switch, or use the Tone Capture and Analysis window to check the switch tones. Verify that matching parameters are set on the Lucent INTUITY system. See information on the Dial Tone window and the Tone Capture and Analysis window in Appendix C, "Troubleshooting Procedures", in the system installation book for your platform.
Calls are not disconnected upon caller hangup	■ The switch disconnect wink, tone, or silence is not recognized. ■ The far-end disconnect tone is not recognized.	Contact your remote support center for further assistance if necessary.
Outcalling fails	The switch dial tone is not recognized.	

Table 10-7.   **Troubleshooting Scenarios** — *Continued*

Trouble	Possible Reason	Possible Solutions
Fax outcalling fails.	■ The fax cng tone is not detected because the tone level is too low. ■ The defaults for the fax transmit and receive gains may not be appropriate.	Contact your remote support center for assistance.

Glossary

5ESS Switch
A central office switch manufactured by Lucent Technologies that can be integrated with the Lucent INTUITY™ system.

A

accessed message
A message that was received and scanned (either the entire message or just the header).

ACA
See *automatic circuit assurance*.

ACD
See *automatic call distribution*.

activity menu
The list of options spoken to users when they first access a messaging system. Selecting an activity is the starting point for all user operations.

ADAP
See *administration and data acquisition package*.

address
INTUITY AUDIX user identification, containing the user's extension and machine, that indicates where the system needs to deliver a message. An address may include several users or mailing lists. Name or number addressing can be selected with the ☐ Ⓐ (Address) command.

adjunct
A separate system closely integrated with a switch, such as a Lucent INTUITY system or a call management system (CMS).

administration
The process of setting up a system (such as a switch or a messaging system) to function as desired. Options and defaults are normally set up (translated) by the system administrator or service personnel.

administration and data acquisition package (ADAP)
A software package that allows the system administrator to transfer system user, maintenance, or traffic data from an INTUITY AUDIX system to a personal computer (PC).

ADU
See *asynchronous data unit*.

alarm log
A list of alarms that represent all of the active or resolved problems on a Lucent INTUITY system. The alarm log is stored in a software file on disk and can be accessed either locally or remotely on a terminal connected to the system.

alarms
Hardware, software, or environmental problems that may affect system operation. Alarms are classified as *major*, *minor*, or *warning*.

alphanumeric
Consisting of alphabetic and numeric symbols or punctuation marks.

ALT
See *assemble, load, and test.*

American wire gauge (AWG)
A standard measuring gauge for nonferrous conductors.

AMIS
See *Audio Messaging Interchange Specification.*

AMIS prefix
A number added to the destination number to indicate that it is an AMIS analog networking number.

analog networking
A method of transferring a message from one messaging system to another whereby the message is played back (voiced) during the transfer.

analog signal
In teleprocessing usage, a communications path that usually refers to a voice-grade telephone line.

announcement
A placeholder within the Lucent INTUITY system for playing fragments. Each event that may occur within AUDIX has one or more announcement numbers permanently assigned to it. Fragment numbers are then assigned to the announcement numbers.

announcement fragment
A numbered piece of spoken information that makes up a system message or prompt.

antistatic
A treatment for material to prevent the build-up of static electricity.

API
See *application programming interface.*

application
A computer software program.

application identifier
A two-letter code used in the administrator's log to identify the application or subsystem for which an alarm is being generated. There are 11 application identifiers as follows: CA (Call Accounting), EL (Enhanced List), LF (Lodging Fax), LG (Lucent INTUITY Lodging), ML (MERLIN LEGEND), MT (Maintenance), NW (Digital Networking), SW (Switch Integration), VM (Voice Messaging), VP (Voice Processing), and VR (Voice Response).

application programming interface (API)
A set of formalized software calls and routines that an application program can reference to access underlying network services.

assemble, load, and test (ALT)
The Lucent factory process that preloads software, installs hardware, and tests the system prior to shipping.

ASP
advanced signal processor

asynchronous communication

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

asynchronous data unit (ADU)

An electronic communications device that can extend data transmission over asynchronous lines more than 50 feet in length. Recommended ADUs for use with the Lucent INTUITY system include Z3A1 or Z3A4.

asynchronous transmission

A form of serial communications where each transmitted character is bracketed with a start bit and one or two stop bits. The Lucent INTUITY system provides asynchronous EIA-232 capabilities for INTUITY AUDIX Digital Networking, if required.

attendant console

A special-purpose telephone with numerous lines and features usually located at the front desk of a business or other organization. The front desk attendant uses this telephone to answer and transfer calls.

Audio Messaging Interchange Specification (AMIS)

An analog networking protocol that allows users to exchange messages with any messaging system that also has AMIS Analog Networking capabilities. Messages can be exchanged with users on Lucent INTUITY systems as well as with users on remote messaging systems made by vendors other than Lucent Technologies.

Audio Information Exchange (AUDIX)

A complete messaging system accessed and operated by touch-tone telephones and integrated with a switch.

audit

A software program that resolves filesystem incompatibilities and updates restored filesystems to a workable level of service. Audits are done automatically on a periodic basis, or can be performed on demand.

AUDIX

See *Audio Information Exchange*.

autodelete

An INTUITY AUDIX feature that allows users to designate that faxes be automatically deleted from their mailboxes after they are printed.

automated attendant

A Lucent INTUITY system feature that allows users to set up a main extension number with a menu of options that routes callers to an appropriate department at the touch of a button.

automatic call distribution (ACD)

The System 85, Generic 2, or Generic 3 call-distribution group of analog ports that connects Lucent INTUITY users to the system. See also *call-distribution group*.

automatic circuit assurance (ACA)

A feature of the switch that keeps records of both very long and very short calls and notifies the attendant when these calls exceed a certain parameter. The logic is that many very short calls or one very long one may suggest a trunk that is hung, broken, or out of order. The attendant can then physically dial into the trunk to check it.

automatic message scan

An INTUITY AUDIX feature that allows users to scan all message headers and messages at the touch of two buttons. With Lucent INTUITY FAX Messaging, this feature allows all new faxes to be bundled and transmitted over a single fax call delivery call. Also called *autoscan*.

autoprint

An INTUITY AUDIX feature that allows users to designate that faxes be automatically sent to a specified print destination.

autoscan

See *automatic message scan*.

AWG

See *American wire gauge.*

B

background testing

Testing that runs continuously when the system is not busy doing other tasks.

backplane

A centrally located device within a computer to which individual circuit cards are plugged for communication across an internal bus.

backup

A duplicate copy of files and directories saved on a removable medium such as floppy diskette or tape. The back-up filesystem can be copied back (restored) if the active version is damaged (corrupted) or lost.

basic input/output system (BIOS)

A system that contains the buffers for sending information from a program to the actual hardware device for which the information is intended.

basic call transfer

The switch-hook flash method used to send the INTUITY AUDIX transfer command over analog voice ports.

basic rate access

See *basic rate interface*.

basic rate interface (BRI)

International standard protocol for connecting a station terminal to an integrated systems digital network (ISDN) switch. ISDN BRI supports two 64-Kbps information-bearer channels (B1 and B2), and one 16-Kbps call status and control (D) channel (a 2B + D format). Also called b*asic rate access*.

binary synchronous communications (BSC)

A character-oriented synchronous link protocol.

BIOS

See *basic input/output system*.

body

The part of a Lucent INTUITY voice mail that contains the actual spoken message. For a leave word calling (LWC) message, it is a standard system announcement.

boot

The operation to start a computer system by loading programs from disk to main memory (part of system initialization). Booting is typically accomplished by physically turning on or restarting the system. Also called *reboot*.

boot filesystem

The filesystem from which the system loads its initial programs.

BRI

See *basic rate interface*.

broadcast messaging

An INTUITY AUDIX feature that enables the system administrator and other designated users to send a message to all users automatically.

BSC

See *binary synchronous communications*.

buffer

A temporary storage area used to equalize or balance different operating speeds. A buffer can be used between a slow input device, such as a terminal keyboard, and the main computer, which operates at a very high speed.

bulletin board

An INTUITY AUDIX feature that allows a message to be played to callers who dial the bulletin board extension. Callers cannot leave a message since it is a listen-only service. Also called *information service*.

bundling

Combining several calls and handling them as a single call. See also *automatic message scan*.

bus

An electrical connection/cable allowing two or more wires, lines, or peripherals to be connected together.

busy-out/release

To remove a Lucent INTUITY device from service (make it appear busy or in use), and later restore it to service (release it). The Lucent INTUITY switch data link, voice ports, or networking ports can be busied out if they appear faulty or when maintenance tests are run.

C

CA

Call accounting system application identifier. See *application identifier*.

call accounting system (CAS)

A software device that monitors and records information about a calling system.

call-answer

An INTUITY AUDIX feature that allows the system to answer a call and record a message when the user is unavailable. Callers can be redirected to the system through the call coverage or call forwarding switch features. INTUITY AUDIX users can record a personal greeting for these callers.

call-answer language choice

The capability of user mailboxes to accept messages in different languages. For the INTUITY AUDIX application, this capability exists when the multilingual feature is turned on.

callback number
In AMIS analog networking, the telephone number transmitted to the recipient machine to be used in returning messages that cannot be delivered.

call classification analysis (CCA)
A process that enables application designers to use information available within the system to classify the disposition of originated and transferred calls.

call coverage
A switch feature that defines a preselected path for calls to follow if the first (or second) coverage points are not answered. The Lucent INTUITY system can be placed at the end of a coverage path to handle redirected calls through call coverage, send all calls, go to cover, etc.

call data handler process (CDH)
A software process that accumulates generic call statistics and application events.

call detail recording (CDR)
A switch feature that uses software and hardware to record call data. See also *call detail recording utility*.

call detail recording utility (CDRU)
Applications software that collects, stores, optionally filters, and outputs call detail records for direct or polled output to peripheral devices. See also *call detail recording*.

call delivery
See *message delivery*.

call-distribution group
The set of analog port cards on the switch that connects switch users to the Lucent INTUITY system by distributing new calls to idle ports. This group (or split) is called automatic call distribution (ACD) on System 85, Generic 2, and Generic 3 and uniform call distribution (UCD) on System 75, Generic 1, and Generic 3. See also *automatic call distribution* and *uniform call distribution*.

call management system (CMS)
An inbound call distribution and management reporting package.

called tone (CED tone)
The distinctive tone generated by a fax endpoint when it answers a call (a constant 2100-Hz tone).

called subscriber information (CSI)
The identifier for the answering fax endpoint. This identifier is sent in the T.30 protocol and is generally the telephone number of the fax endpoint.

calling tone (CNG tone)
The distinctive tone generated by a fax endpoint when placing a call (a constant 1100-Hz tone that is on for 1/2 second, off for 3 seconds).

call vectoring
A System 85 R2V4, Generic 2, and Generic 3 feature that uses a vector (switch program) to allow a switch administrator to customize the behavior of calls sent to an automatic call distribution (ACD) group.

card cage
An area within the Lucent INTUITY hardware platform that contains and secures all of the standard and optional circuit cards used in the system.

cartridge tape drive

A high-capacity data storage/retrieval device that can be used to transfer large amounts of information onto high-density magnetic cartridge tape based on a predetermined format. This tape is to be removed from the system and stored as a backup.

CAS

See *call accouting system*.

CCA

See *call classification analysis.*

CDH

See *call data handler process*.

CDR

See *call detail recording*.

CDRU

See *call detail recording utility (CDRU).*

CED tone

See *called tone*.

CELP

See *code excited linear prediction*.

central office (CO)

An office or location in which large telecommunication equipment such as telephone switches and network access facilities are maintained. In a CO, private customer lines are terminated and connected to the public network through common carriers.

central processing unit (CPU)

The component of the computer that manipulates data and processes instructions coming from software.

channel

A telecommunications transmission path for voice and/or data.

channel capacity

A measure of the maximum bit rate through a channel.

class of restriction (COR)

A feature that allows up to 64 classes of call-origination and call-termination restrictions for telephones, telephone groups, data modules, and trunk groups. See also *class of service*.

class of service (COS)

The standard set of INTUITY AUDIX features given to users when they are first administered (set up with a voice mailbox). See also *class of restriction*.

clear to send (CTS)

Located on Pin 5 of the 25-conductor RS-232 interface, CTS is used in the transfer of data between the computer and a serial device.

client

A computer that sends, receives and uses data, but that also shares a larger resource whose function is to do most data storage and processing. For Lucent INTUITY Message Manager, the user's PC running Message Manager is the client. See also *server*.

CMS

See *call management system*.

CNG tone
   See *calling tone*.

CO
   See *central office*.

COR
   See *class of restriction*.

COS
   See *class of service*.

code excited linear prediction (CELP)
   An analog-to-digital voice coding scheme.

collocated
   A Lucent INTUITY system installed in the same physical location as the host switch. See also *local installation*.

collocated adjunct
   Two or more adjuncts that are serving the same switch (that is, each has voice port connections to the switch) or that are serving different switches but can be networked through a direct RS-232 connection due to their proximity.

comcode
   A numbering system for telecommunications equipment used by Lucent Technologies. Each comcode is a 9-digit number that represents a specific piece of hardware, software, or documentation.

command
   An instruction or request given by the user to the software to perform a particular function. An entire command consists of the command name and options. Also, one-key or two-key touch tones that control a mailbox activity or function.

community
   A group of telephone users administered with special send and receive messaging capabilities. A community is typically comprised of people who need full access to each other by telephone on a frequent basis. See also *default community*.

compound message
   A message that combines a voice message and a fax message into one unit, which INTUITY AUDIX then
   handles as a single message.

configuration
   The particular combination of hardware and software components selected for a system, including external connections, internal options, and peripheral equipment.

controller circuit card
   A circuit card used on a computer system that controls its basic functionality and makes the system operational. These cards are used to control magnetic peripherals, video monitors, and basic system communications.

COS
   See *class of service*.

coverage path
   The sequence of alternate destinations to which a call to a user on a Lucent INTUITY system is automatically sent when it is not answered by the user. This sequence is set up on the switch, normally with the Lucent INTUITY system as the last or only destination.

CPU

See *central processing unit.*

cross connect

Distribution-system equipment used to terminate and administer communication circuits.

cross connection

The connection of one wire to another, usually by anchoring each wire to a connecting block and then placing a third wire between them so that an electrical connection is made.

CSI

See *called subscriber information.*

CTS

See *clear to send.*

D

DAC

See *dial access code.*

database

A structured set of files, records, or tables. Also, a collection of filesystems and files in disk memory that store the voice and nonvoice (program data) necessary for Lucent INTUITY system operation.

data communications equipment (DCE)

Standard type of data interface normally used to connect to data terminal equipment (DTE) devices. DCE devices include the data service unit (DSU), the isolating data interface (IDI), and the modular processor data module (MPDM).

data communications interface unit (DCIU)

A switch device that allows nonvoice (data) communication between a Lucent INTUITY system and a Lucent switch. The DCIU is a high-speed synchronous data link that communicates with the common control switch processor over a direct memory access (DMA) channel that reads data directly from FP memory.

data link

A term used to describe the communications link used for data transmission from a source to a destination, for example, a telephone line for data transmission.

data service unit (DSU)

A device used to access digital data channels. DATAPHONE II 2500 DSUs are synchronous data communications equipment (DCE) devices used for extended-local Lucent INTUITY system connections. The 2600 or 2700 series may also be used; these support diagnostic testing and the DATAPHONE II Service network system.

data set

Another term for a modem, although a data set usually includes the telephone. See also *modem.*

data terminal equipment (DTE)

Standard type of data interface normally used for the endpoints in a connection. Normally the Lucent INTUITY system, most terminals, and the switch data link are DTE devices.

DBP

See *data base processor.*

DCE

See *data communications equipment*.

DCIU

See *data communications interface unit*.

DCP

See *digital communications protocol*.

DCS

See *distributed communications system*.

debug

See *troubleshooting*.

dedicated line

A communications path that does not go through a switch. A dedicated (hard-wired) path can be formed with directly connected cables. MPDMs, DSUs, or other devices can also be used to extend the distance that signals can travel directly through the building wiring.

default

A value that is automatically supplied by the system if no other value is specified.

default community

A group of telephone users administered with restrictions to prevent them from sending messages to or receiving messages from other communities. If a system is administered to use communities, the default community is comprised of all the AUDIX users defined on that system.

default print number

The user-administered extension to which autoprinted faxes are redirected upon their receipt into the user's mailbox. This default print destination is also provided as a print option when the user is manually retrieving and printing faxes from the mailbox.

delivered message

A message that has been successfully transmitted to a recipient's incoming mailbox.

demand testing

Testing performed on request (usually by service personnel).

diagnostic testing

A program run for testing and determining faults in the system.

dial-ahead/dial-through

The act of interrupting or preceding INTUITY AUDIX system announcements by typing (buffering) touch-tone commands in the order the system would normally prompt for them.

dial string

A series of numbers used to initiate a call to a remote AMIS machine. A dial string tells the switch what type of call is coming (local or long distance) and gives the switch time to obtain an outgoing port, if applicable

dialed number identification service (*DNIS_SVC)

An available channel service assignment on the Lucent INTUITY system. Assigning this service to a channel permits the Lucent INTUITY system to interpret information from the switch and operate the appropriate application for the incoming telephone call.

DID

See *direct inward dialing*.

digital communications protocol (DCP)

A 64-Kbps digital data transmission code with a 160-Kbps bipolar bit stream divided into two information (I) channels and one signaling (S) channel.

digital networking

A method of transferring messages between messaging systems in a digital format. See also *INTUITY AUDIX Digital Networking*.

digital signal processor (DSP)

A specialized digital microprocessor that performs calculations on digitized signals that were originally analog and then sends the results on.

DIP switch

See *dual in-line package switch*.

direct inward dialing (DID)

The ability for an outside caller to call an internal extension without having to pass through an operator or attendant.

direct memory access (DMA)

A quick method of moving data from a storage device directly to RAM, which speeds processing.

directory

1. A Lucent INTUITY AUDIX feature that allows you to hear a user's name and extension after pressing ☐ ☐ N at the activity menu. 2. A group of related files accessed by a common name in software.

display terminal

A data terminal with a screen and keyboard used for displaying Lucent INTUITY screens and performing maintenance or administration activities.

distributed communications system (DCS)

A network of two or more switches that uses logical and physical data links to provide full or partial feature transparency. Voice links are made using tie trunks.

distribution list

See *mailing list*.

DMA

See *direct memory access*.

DNIS

See *dialed number identification service*.

domain

An area where data processing resources are under common control. The INTUITY AUDIX system is one domain and an e-mail system is another domain.

DSP

See *digital signal processor*.

DSU

See *data service unit*.

DTE

See *data terminal equipment*.

DTMF

See *dual tone multifrequency*.

dual in-line package (DIP) switch
A small switch, usually attached to a printed circuit card, in which there are only two settings: on or off (or 0 or 1). DIP switches are used to configure the card in a semipermanent way.

dual language greetings
The capability of INTUITY AUDIX users to create personal greetings in two different languages—one in a primary language and one in a secondary language. This capability exists when the multilingual feature is turned on, and the prompts for user mailboxes can be in either of the two languages.

dual tone multifrequency (DTMF)
A way of signaling consisting of a pushbutton or touch-tone dial that sends out a sound consisting of two discrete tones that can be picked up and interpreted by telephone switches.

E

EIA interface
A set of standards developed by the Electrical Industries Association (EIA) that specifies various electrical and mechanical characteristics for interfaces between electronic devices such as computers, terminals, and modems. Also known as *RS-232*.

ELA
See Enhanced-List Application.

electronic mail
See *e-mail*.

electrostatic discharge (ESD)
The discharge of a static charge on a surface or body through a conductive path to ground, ESD can damage integrated circuits.

e-mail
The transfer of a wide variety of message types across a computer network (LAN or WAN). E-mail messages may be text messages containing only ASCII files or may be complex multimedia messages containing embedded voice messages, software files, and images.

enabled/disabled
The state of a hardware device that indicates whether it is available for use by the Lucent INTUITY system. Devices must be equipped before they can be enabled (made active). See also *equipped/unequipped*.

endpoint
See *fax endpoint*.

enhanced call transfer
An INTUITY AUDIX feature that allows compatible switches to transmit messages digitally over the BX.25 (data) link. This feature is used for quick call transfers and requires a fully integrated digital switch. Callers can only transfer to other extensions in the switch dial plan.

Enhanced-List Application (ELA)
An INTUITY AUDIX option that facilitates message delivery to large numbers of recipients. There can be up to 100 enhanced lists per system, each of which can contain up to 1500 addresses.

enhanced serial data interface (ESDI)
A software-controlled and hardware-controlled method used to store data on magnetic peripherals.

equipped/unequipped
The state of a networking channel that indicates whether Lucent INTUITY software has recognized it. Devices must be equipped before they can be enabled (made active). See also *enabled/disabled*.

error message
A message on the screen indicating that something is wrong within the system and possibly suggesting how to correct it.

errors
Problems detected by the system during operation and recorded in the maintenance log. Errors can produce an alarm if they exceed a threshold.

escape from reply
The ability to quickly return to getting messages for a user who encounters a problem trying to respond to a message. To escape, the user presses #.

escape to attendant
An INTUITY AUDIX feature that allows users with the call answer feature to have a personal attendant or operator administered to pick up their unanswered calls. A system-wide extension could also be used to send callers to a live agent.

ESD
See *electrostatic discharge*.

ESDI
See *enhanced serial data interface*.

event
An informational messages about the system's activities. For example, an event is logged when the system is rebooted. Events may or may not be related to errors and alarms.

F

facilities restriction level (FRL)
A value that determines which types of calls the users of a switch are allowed to make.

facility out-of-service (FOOS)
State of operation during which the current channel is not receiving a dial tone and is not functioning.

facsimile
1. A digitized version of written, typed, or drawn material transmitted over telephone lines and printed out elsewhere. 2. Computer-generated text or graphics transmitted over computer networks. A computer-generated fax is typically printed to a fax machine, but can remain stored electronically.

fax
See *facsimile*.

fax addressing prefix
Uniquely identifies a particular fax nodepoint to the Lucent INTUITY system. Used by the system as a "template" to differentiate all call-delivery machines on the network from each other.

fax endpoint

Any device capable of receiving fax calls. Fax endpoints include fax machines, individual PC fax modems, fax ports on LAN fax servers, and ports on fax-enabled messaging systems.

fax print destination prefix

A dial string that the Lucent INTUITY system adds to the fax telephone number the user enters to print a fax. The system takes the full number (fax print destination prefix + fax telephone extension) and hunts through the machine translation numbers until it finds the specific fax endpoint.

field

An area on a screen, menu, or report where information can be typed or displayed.

FIFO

See *first-in/first-out*.

file

A collection of data treated as a basic unit of storage.

filename

Alphanumeric characters used to identify a particular file.

file redundancy

See *mirroring*.

file system

A collection of related files (programs or data) stored on disk that are required to initialize a Lucent INTUITY system.

first-in/first-out (FIFO)

A method of processing telephone calls or data in which the first call or data to be received is the first call or data to be processed.

F key

See *function key*.

FNPAC

See *foreign numbering-plan area code*.

FOOS

See *facility out-of-service*.

foreign exchange (FX)

A central office (CO) other than the one providing local access to the public telephone network.

foreign numbering-plan area code (FNPAC)

An area code other than the local area code that must be dialed to call outside the local geographical area.

format

To set up a disk, floppy diskette, or tape with a predetermined arrangement of characters so that the system can read the information on it.

FRL

See *facilities restriction level*.

function

Individual steps or procedures within a mailbox activity.

function key (F key)
A key on a computer keyboard programmed to perform a defined function when pressed. The user interface for the Lucent INTUITY system defines keys F1 through F8.

FX
See *foreign exchange*.

G

Generic 1, 2, or 3
Lucent switch system software releases, designed for serving large communities of System 75 and System 85 users.

generic tape
A copy of the standard software and stand-alone tape utilities that is shipped with a new Lucent INTUITY system.

GOS
See *grade of service.*

grade of service (GOS)
A parameter that describes the delays in accessing a port on the Lucent INTUITY system. For example, if the GOS is P05, 95% of the callers hear the system answer and 5% hear ringing until a port becomes available to answer the call.

guaranteed fax
A feature of Lucent INTUITY FAX Messaging that temporarily stores faxes sent to a fax machine. In cases where the fax machine is busy or does not answer a call, the call is sent to an INTUITY AUDIX mailbox.

guest password
A feature that allows callers who are not INTUITY AUDIX users to leave messages on the system by dialing a user's extension and entering a system-wide guest password.

H

hard disk drive
A high-capacity data-storage and data-retrieval device that is located inside a computer. A hard disk drive stores data on nonremovable high-density magnetic media based on a predetermined format for retrieval by the system at a later date.

hardware
The physical components of a computer system. The central processing unit, disks, tape, and floppy drives are all hardware.

header
Information that the system creates to identify a message. A message header includes the originator or recipient, type of message, creation time, and delivery time.

help
A command run by pressing (HELP) or (CTRL) (?) on a Lucent INTUITY display terminal to show the options available at your current screen position. In the INTUITY AUDIX system, press ▢ (H) on the telephone keypad to get a list of options. See also *on-line help*.

host switch
The switch directly connected to the Lucent INTUITY system over the data link. Also, the physical link connecting a Lucent INTUITY system to a distributed communications system (DCS) network.

hunt group
A group of analog ports on a switch usually administered to search for available ports in a circular pattern.

I

I/O
Input/output.

IDI
See *isolating data interface*.

IMAPI
See *INTUITY messaging application programming interface*.

INADS
See *initialization and administration system*.

information service
See *bulletin board*.

initialization
The process of bringing a system to a predetermined operational state. The start-up procedure tests hardware; loads the boot filesystem programs; locates, mounts, and opens other required filesystems; and starts normal service.

initialization and administration system (INADS)
A computer-aided maintenance system used by remote technicians to track alarms.

initialize
To start up the system for the first time.

input
A signal fed into a circuit or channel.

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

integrated voice processing CELP (IVC6) card
A computer circuit card that supports both fax processing and voice processing capabilities. It provides two analog ports to support six analog channels. All telephone calls to and from the Lucent INTUITY system are processed through the IVC6 card.

interface
The device or software that forms the boundary between two devices or parts of a system, allowing them to work together. See also *user interface*.

internal e-mail
Software on a PC that provides messaging capability between users on the same AUDIX system, or to administered remote AUDIX systems and users. Users can create, send, and receive a message that contains multiple media types; specifically, voice, fax, text, or file attachments (software files, such as a word processing or spreadsheet file).

interrupt request (IRQ)
Within a PC, a signal sent from a device to the CPU to temporarily suspend normal processing and transfer control to an interrupt handling routine.

INTUITY AUDIX Digital Networking
A Lucent INTUITY feature that allows customers to link together up to 500 remote Lucent INTUITY machines for a total of up to 500,000 remote users. See also *digital networking*.

INTUITY Message Manager
A Windows-based software product that allows INTUITY AUDIX users to receive, store, and send their voice/FAX messages from a PC. The software also enables users to create and send multimedia messages that include voice, fax, file attachments, and text.

INTUITY messaging application programming interface (IMAPI)
A software function-call interface that allows INTUITY AUDIX to interact with Lucent INTUITY Message Manager.

IRQ
See *interrupt request*.

ISDN
See *integrated services digital network*.

isolating data interface (IDI)
A synchronous, full duplex data device used for cable connections between a Lucent INTUITY GPSC-AT/E card and the switch data communications interface unit (DCIU).

IVC6
See *integrated voice processing CELP (IVC6) card.*

J

jumper
Pairs or sets of small prongs or pins on circuit cards and mother boards the placement of which determines the particular operation the computer selects. When two pins are covered, an electrical circuit is completed. When the jumper is uncovered, the connection is not made. The computer interprets these electrical connections as configuration information.

K

L

label
The name assigned to a disk device (either a removable tape cartridge or permanent drive) through software. Cartridge labels may have a generic name (such as "3.3") to show the software release, or a descriptive name if for back-up copies (such as "back01"). Disk drive labels usually indicate the disk position (such as "disk00" or "disk02").

LAN
See *local area network*.

last-in/first-out (LIFO)
A method of processing telephone calls or data in which the last call (or data) received is the first call (or data) to be processed.

LCD
See *liquid crystal display*.

leave word calling (LWC)
A switch feature that allows the calling party to leave a standard (nonvoice) message for the called party using a feature button or dial access code.

LED
See *light emitting diode*.

LIFO
See *last-in/first-out*.

light emitting diode (LED)
A light on the hardware platform that shows the status of operations.

liquid crystal display (LCD)
The 10-character alphanumeric display that shows the status of the system, including alarms.

load
The process of reading software from external storage (such as disk) and placing a copy in system memory.

local area network (LAN)
A network of PCs that communicate with each other and that normally share the resources of one or more servers. Operation of Lucent INTUITY Message Manager requires that the INTUITY AUDIX system and the users' PCs be on a LAN.

local AUDIX machine
The Lucent INTUITY system where a user's INTUITY AUDIX mailbox is located. All users on this home machine are called *local users*.

local installation
A switch, adjunct, or peripheral device installed physically near the host switch or system. See also *collocated*.

local network
An INTUITY AUDIX Digital Network in which all Lucent INTUITY systems are connected to the same switch.

login
A unique code a user must enter to gain approved access to the Lucent INTUITY system. See also *password.*

login announcement
A feature enabling the system administrator and other designated users to create a mail message that is automatically played to all INTUITY AUDIX users every time they log in to the system.

Lotus Notes
Information management software for work groups that allows individuals to share and manipulate information over a local or wide area network

LWC
See *leave word calling.*

M

magnetic peripherals
Data storage devices that use magnetic media to store information. Such devices include hard disk drives, floppy disk drives, and cartridge tape drives.

mailbox
A portion of disk memory allotted to each Lucent INTUITY system user for creating and storing out-going and incoming messages.

mailing list
A group of user addresses assigned a list ID# and public or private status. A mailing list may be used to simplify the sending of messages to several users.

maintenance
The process of identifying system errors and correcting them, or taking steps to prevent problems from occurring.

major alarm
An alarm detected by Lucent INTUITY software that affects at least one fourth of the Lucent INTUITY ports in service. Often a major alarm indicates that service is affected.

MANOOS
See *manually out-of-service.*

manually out-of-service
State of operation during which a unit has been intentionally taken out of service.

MAP
See *multi-application platform.*

mean time between failures
The average time a manufacturer estimates will elapse before a failure occurs in a component or system.

media type
The form a message takes. The media types supported by the Lucent INTUITY system are voice, text, file attachments, and fax.

memory
A device that stores logic states such that data can be accessed and retrieved. Memory may be temporary (such as system RAM) or permanent (such as disk).

menu
A list of options displayed on a computer terminal screen or spoken by a voice processing system. Users choose the option that reflects what action they want the system to take.

menu tree
The way in which nested automated attendants are set up.

message categories
Groups of messages in INTUITY AUDIX users' mailboxes. Categories include *new*, *unopened*, and *old* for the incoming mailbox and *delivered*, *accessed*, *undelivered*, *undeliverable* (not deliverable), and *file cabinet* for the outgoing mailbox.

message component
A media type included in a multimedia message. These types include voice, text, file attachments, and fax messages.

message delivery
An optional Lucent INTUITY feature that permits users to send messages to any touch-tone telephone, as long as the telephone number is in the range of allowable numbers. This feature is an extension of the AMIS analog networking feature and is automatically available when the AMIS feature is activated.

Message Manager
See *INTUITY Message Manager*.

message waiting indicator (MWI)
An indicator that alerts Lucent INTUITY users that they have received new mail messages. An MWI can be an LED or neon lamp, or an audio tone (stutter dial tone).

message waiting lamp (MWL)
See *message-waiting indicator*.

migration
An installation that moves data to the Lucent INTUITY system from another type of Lucent messaging system, for example, from AUDIX R1, DEFINITY AUDIX, or AUDIX Voice Power.

minor alarm
An alarm detected by maintenance software that affects less than one fourth of the Lucent INTUITY ports in service, but has exceeded error thresholds or may impact service.

mirroring
A Lucent INTUITY system feature that allows data from crucial filesystems to be continuously copied to back-up (mirror) filesystems while the system is running. If the system has some problem where an original filesystem cannot be used, the backup filesystem is placed in service automatically.

ML
MERLIN LEGEND application identifier. See *application identifier*.

mode code
A string of touch-tones from a MERLIN LEGEND switch. A mode code may send the INTUITY AUDIX system information such as call type, calling party, called party, and on/off signals for message waiting indicators.

modem
A device that converts data from a form that is compatible with data processing equipment (digital) to a form compatible with transmission facilities (analog), and vice-vera.

modular
A term that describes equipment made of plug-in units that can be added together to make the system larger, improve its capabilities, or expand its size.

modular processor data module (MPDM)
A data device that converts RS-232C or RS-449 protocol signals to digital communications protocol (DCP) used by System 75/85, Generic1, and Generic 3 switches. MPDMs can connect the Lucent INTUITY system to a switch DCIU or SCI link or connect terminals to a switch port card.

MPDM
See *modular processor data module*.

MT
Maintenance application identifier. See *application identifier*.

MTBF
See *mean time between failures*.

multi-application platform (MAP)
The computer hardware platform used by the Lucent INTUITY system.

multilingual feature
A feature that allows announcement sets to be active simultaneously in more than one language on the system. Mailboxes can be administered so that users can hear prompts in the language of their choice.

MWI
See *message waiting indicator*.

N

networking
See *INTUITY AUDIX Digital Networking*.

networking prefix
A set of digits that identifies a Lucent INTUITY machine.

night attendant
The automated attendant created on a MERLIN LEGEND switch that automatically becomes active during off-hours. The night attendant substitutes for one or more daytime attendants.

not deliverable message
A message that could not be delivered after a specified number of attempts. This usually means that the user's mailbox is full.

NPA
See *numbering plan area*.

NT

Networking application identifier. See *application identifier*.

MWL

See *message waiting lamp*.

numbering plan area

Formal name for 3-digit telephone area codes in North America. Within an area code, no two tele-phone lines may have the same 7-digit phone number. The code is often designated as *NXX*, to indicate the three digits.

O

off-hook

See *switch hook*.

on-hook

See *switch hook*.

on-line help

A Lucent INTUITY system feature that provides information about user interface windows, screens, and menus by pressing a predetermined key. See also *help*.

open systems interconnection (OSI)

An internationally accepted framework of standards for communication between systems made by different vendors.

operating system (OS)

The set of software programs that runs the hardware and interprets software commands.

option

A choice selected from a menu, or an argument used in a command line to specify program output by modifying the execution of a command. When you do not specify any options, the command executes according to its default options.

OS

See *operating system*.

OSI

See *open systems interconnection*.

outcalling

A Lucent INTUITY system feature that allows the system to dial users' numbers to inform them they have new messages.

outgoing mailbox

A storage area on the Lucent INTUITY system where users can keep copies of messages for future reference or action.

P

parallel transmission

The transmission of several bits of data at the same time over different wires. Parallel transmission of data is usually faster than serial transmission.

password

1. A word or character string recognized automatically by the Lucent INTUITY system that allows a user access to his/her mailbox or a system administrator access to the system data base. 2. An alphanumeric string assigned to local and remote networked machines to identify the machines or the network. See also *login.*

password aging

An INTUITY AUDIX feature that allows administrators to set a length of time after which a user's AUDIX password or the administrator's system password expires. The user or administrator must then change the password.

PBX

See *private branch exchange.*

PC

See *power converter.*

PDM (processor data module)

See *modular processor data module (MPDM).*

peripheral device

Equipment such as a printer or terminal that is external to the Lucent INTUITY cabinet, but necessary for full operation and maintenance of the system. Also called a *peripheral.*

personal directory

An INTUITY AUDIX feature that allows each user to create a private list of customized names.

personal fax extension

See *secondary extension.*

PI

See *processor interface.*

PIB

See *processor interface.*

pinouts

The signal description per pin number for a particular connector.

PMS

See *property management system.*

port

A connection or link between two devices that allows information to travel to a desired location. For example, a switch port connects to a Lucent INTUITY voice port to allow a caller to leave a message.

POST

See *power-on self test.*

power on self test (POST)
    A set of diagnostics stored in ROM that tests components such as disk drives, keyboard, and memory each time the system is booted. If problems are identified, a message is sent to the screen.

priority call answer
    An INTUITY AUDIX feature that allows users to designate a call answer message as a priority message. To make a message a priority message, the caller presses ② after recording.

priority messaging
    An INTUITY AUDIX feature that allows some users to send messages that are specially marked and preferentially presented to recipients. See also *priority outcalling*.

priority outcalling
    An INTUITY AUDIX feature that works with the priority messaging feature by allowing the message recipient to elect to be notified by outcalling only when a priority message has been received. See also *priority messaging*.

private branch exchange (PBX)
    An analog, digital, or electronic telephone switching system where data and voice transmissions are not confined to fixed communications paths, but are routed among available ports or channels. See also *switch*.

private mailing list
    A list of addresses that only the Lucent INTUITY system user who owns it can access.

private messaging
    A feature of INTUITY AUDIX that allows a user to send a message that cannot be forwarded by the recipient.

processor data module (PDM)
    See *modular processor data module (MPDM)*.

processor interface (PI)
    A System 75, Generic 1, Generic 3i, Generic 3s, and Generic 3vs switch data link. Also called *processor interface board (PIB)*.

programmed function key
    See *function key*.

property management system (PMS)
    A product used by lodging establishments to automate the management of guest records, reservations, room assignments, and billing. In an integrated PMS environment, special software links the PMS to the Lucent INTUITY Lodging system so that both systems share a common set of messages and commands.

protocol
    A set of conventions or rules governing the format and timing of message exchanges (signals) to control data movement and the detection and possible correction of errors.

public mailing list
    A list of addresses that any INTUITY AUDIX user can use if that user knows the owner's list ID number and extension number. Only the owner can modify a public mailing list.

pulse-to-tone converter
    A device connected to the switch that converts signals from a rotary pulses to touch tone signals. This device allows callers to use rotary telephones to access options in a Lucent INTUITY user's mailbox or in an automated attendant.

R

RAM

See *random access memory.*

random access memory (RAM)

The memory used in most computers to store the results of ongoing work and to provide space to store the operating system and applications that are actually running at any given moment.

read-only memory (ROM)

A form of computer memory that allows values to be stored only once; after the data is initially recorded, the computer can only read the contents. ROM is used to supply constant code elements such as bootstrap loaders, network addresses, and other more or less unvarying programs or instructions.

reboot

See *boot.*

remote access

Sending and receiving data to and from a computer or controlling a computer with terminals or PCs connected through communication (that is, telephone) links.

remote installation

A system, site, or piece of peripheral equipment that is installed in a different location from the host switch or system.

remote maintenance

The ability of Lucent personnel to interact with a remote computer through a telephone line or LAN connection to perform diagnostics and some system repairs. See also *remote service center.*

remote network

A network in which the systems are integrated with more than one switch.

remote service center

A Lucent or Lucent-certified organization that provides remote support to Lucent INTUITY customers. Depending upon the terms of the maintenance contract, your remote service center may be notified of all major and minor alarms and have the ability to remotely log in to your system and remedy problems. See also *remote maintenance.*

remote terminal

A terminal connected to a computer over a telephone line.

remote users

INTUITY AUDIX users whose mailboxes reside on a remote INTUITY AUDIX Digital Networking machine.

REN

See *ringer equivalence number.*

reply loop escape

An INTUITY AUDIX feature that allows a user the option of continuing to respond to a message after trying to reply to a nonuser message.

reply to sender

An INTUITY AUDIX feature that allows users to immediately place a call to the originator of an incoming message if that person is in the switch's dial plan.

request to send (RTS)
One of the control signals on an EIA-232 connector that places the modem in the originate mode so that it can begin to send.

restart
1. A Lucent INTUITY feature that allows INTUITY AUDIX users who have reached the system through the call answer feature to access their own mailboxes by entering the ☐ R̄ (Restart) command. This feature is especially useful for long-distance calls or for users who want to access the Lucent INTUITY system when all the ports are busy. 2. The reinitialization of certain software, for example, *restarting* the messaging system.

restore
The process of recovering lost or damaged files by retrieving them from available back-up tapes, floppy diskette, or another disk device.

retention time
The amount of time messages are saved on disk before being automatically deleted from a user's mailbox.

reusable upgrade kit (RUK)
A package shipped to the customer's site prior to an upgrade that contains materials the technician needs to complete the installation. This package includes an A/B switch box, a keyboard, a 25-foot coaxial cable, two T adapters, and terminations to a LAN circuit card. It remains the property of Lucent once the installation is finished.

right-to-use (RTU) fee
A charge to the customer to access certain functions or capacities that are otherwise restricted, for example, additional voice or networking ports or hours of speech storage. Lucent Technologies personnel can update RTU parameters either at the customer's site or remotely via a modem.

ringer equivalence number (REN)
A number required in the United States for registering your telephone equipment with a service provider.

ROM
See *read-only memory.*

RS-232
See *EIA interface.*

RTS
See *request to send.*

RUK
See *reusable upgrade kit.*

S

scan
To automatically play mail messages, headers, or both.

scheduled delivery time
A time and/or date that an INTUITY AUDIX user can assign to a message that tells the system when to deliver it. If a delivery time is omitted, the system sends the message immediately.

screen

That portion of the Lucent INTUITY user interface through which most administrative tasks are performed. Lucent INTUITY screens request user input in the form of a command from the `enter command:` prompt.

SCSI

See *small computer system interface*.

secondary extension

A second, fax-dedicated extension that directs incoming faxes directly into a user's mailbox without ringing the telephone. The secondary extension shares the same mailbox as the voice extension, but acts like a fax machine. Also called *personal fax extension*.

serial transmission

The transmission of one bit at a time over a single wire.

server

A computer that processes and stores data that is used by other smaller computers.   For Lucent INTUITY Message Manager, INTUITY AUDIX is the server. See also *client*.

shielded cables

Cables that are protected from interference with metallic braid or foil.

SID

See *switch integration device*.

SIMM

See *single in-line memory module*.

simplified message service interface (SMSI)

Type of data link connection to an integrated 1A ESS or 5ESS switch in the Lucent INTUITY system.

simplified message desk interface (SMDI)

Also known as station message desk interface. Type of data link from the central office that contains information and instructions for the Lucent INTUITY system. With SMDI, the caller need not re-enter the called number once the call terminates to the Lucent INTUITY system. See also *simplified message service interface*.

single in-line memory module (SIMM)

A method of containing random access memory (RAM) chips on narrow strips that attach directly to sockets on the CPU circuit card. Multiple SIMMs are sometimes installed on a single CPU circuit card.

small computer systems interface (SCSI)

An interface standard defining the physical, logical, and electrical connections to computer system peripherals such as tape and disk drives.

SMDI

See *station message desk interface*.

SMDR

See *station message detail recording*.

SMSI

See *simplified message service interface*.

SP

signal processor

SSP

scaleable signal processor

station message desk interface (SMDI)

See *simplified message desk interface*.

station message detail recording

See *call detail recording (CDR)*.

subscriber

A Lucent INTUITY user who has been assigned the ability to access the INTUITY AUDIX Voice Messaging system.

surge

A sudden rise and fall of voltage in an electrical circuit.

surge protector

A device that plugs into the telephone system and the commercial AC power outlet to protect the telephone system from damaging high-voltage surges.

SW

Switch integration application identifier. See *application identifier*.

switch

An automatic telephone exchange that allows the transmission of calls to and from the public telephone network. See also *private branch exchange (PBX)*.

switched access

A connection made from one endpoint to another through switch port cards. This allows the endpoint (such as a terminal) to be used for several applications.

switch hook

The device at the top of most telephones that is depressed when the handset is resting in the cradle (that is, when the telephone is *on hook*). This device is raised when the handset is picked up (that is, when the telephone is *off hook*).

switch-hook flash

A signaling technique in which the signal is originated by momentarily depressing the switch hook.

switch integration

Sharing of information between a messaging system and a switch to provide a seamless interface to callers and system users. A fully integrated INTUITY AUDIX system, for example, answers each incoming telephone call with information taken directly from the switch. Such information includes the number being called and the circumstances under which the call was sent to it, for example, covered from a busy or unanswered extension.

switch integration device (SID)

A combination of hardware and software that passes information from the switch to the Lucent INTUITY system thus allowing it to share information with non-Lucent switches. The operation of a SID is unique to the particular switch with which it interfaces.

switch network

Two or more interconnected switching systems.

synchronized mailbox

A mailbox that is paired with a corresponding mailbox in another domain and linked via software that keeps track of changes to either mailbox. When the contents of one mailbox change, the software replicates that change in the other mailbox.

synchronizer

The name given to the trusted server by the e-mail vendor, Lotus Notes.

synchronous communication

A method of data transmission in which bits or characters are sent at regular time intervals, rather than being spaced by start and stop bits. See also *asynchronous communication*.

synchronous transmission

A type of data transmission where the data characters and bits are exchanged at a fixed rate with the transmitter and receiver synchronized. This allows greater efficiency and supports more powerful protocols.

System 75

An advanced digital switch manufactured by Lucent Technologies that supports up to 800 lines for voice and data communications.

System 85

An advanced digital switch manufactured by Lucent Technologies that supports up to 3000 lines for voice and data communications.

system configuration

See *configuration*.

T

T.30

The standard for Group III fax machines that covers the protocol used to manage a fax session and negotiate the capabilities supported by each fax endpoint.

tape cartridge

One or more spare removable cartridges required to back up system information.

tape drive

The physical unit that holds, reads, and writes to magnetic tape.

TCP/IP

See *transmission control protocol/internet protocol*.

TDD

See *telecommunications device for the deaf*.

TDM

See *time division multiplexing*.

telecommunications device for the deaf (TDD)

A device with a keyboard and display unit that connects to or substitutes for a telephone. The TDD allows a deaf or hearing-impaired person to communicate over the telephone lines with other people who have TDDs. It also allows a deaf person to communicate with the INTUITY AUDIX system.

terminal

See *display terminal*.

terminal type

A number indicating the type of terminal from which a user is logging in to the Lucent INTUITY system. Terminal type is the last required entry before gaining access to the Lucent INTUITY display screens.

terminating resistor
A grounding resistor placed at the end of a bus, line, or cable to prevent signals from being reflected or echoed.

time division multiplexing (TDM)
A method of serving multiple channels simultaneously over a common transmission path by assigning the transmission path sequentially to the channels, with each assignment being for a discrete time interval.

tip/ring
A term used to denote the analog telecommunications interface.

tone generator
A device acoustically coupled to a rotary telephone used to produce touch-tone signals.

traffic
The flow of attempts, calls, and messages across a telecommunications network.

translations
Software assignments that tell a system what to expect on a certain voice port or the data link, or how to handle incoming data. Translations customize the Lucent INTUITY system and switch features for users.

transmission control protocol/internet protocol (TCP/IP)
A suite of protocols that allow disparate hosts to connect over a network. Transmission control protocol (TCP) organizes data on both ends of a connection and ensures that the data that arrives matches that which was sent. Internet protocol (IP) ensures that a message passes through all the necessary routers to the proper destination.

T/R
See *tip/ring.*

troubleshooting
The process of locating and correcting errors in computer programs (also called *debugging)* or systems.

trusted server
A server that uses IMAPI to access an INTUITY AUDIX mailbox on behalf of a user and is empowered to do everything to a user message that INTUITY AUDIX can do.

TTS
Text-to-Speech

U

UCD
See *uniform call distribution.*

Undelete
An INTUITY AUDIX feature that allows users to restore the last message deleted by pressing ☐ Ⓤ.

undelivered message
A message that has not yet been sent to an INTUITY AUDIX user's incoming mailbox. The message resides in the sender's outgoing mailbox and may be modified or redirected by the sender.

unequipped

See *equipped/unequipped*.

unfinished message

A message that was recorded but not approved or addressed, usually as the result of an inter-rupted INTUITY AUDIX session. Also called *working message*.

uniform call distribution (UCD)

The type of call-distribution group (or hunt group) of analog port cards on some switches that con-nects users to the INTUITY AUDIX system. System 75, Generic 1, Generic 3, and some central office switches use UCD groups. See also *call-distribution group*.

uninterruptable power supply (UPS)

An auxiliary power unit that provides continuous power in cases where commercial power is lost.

UNIX operating system

A multi-user, multi-tasking computer operating system.

upgrade

An installation that moves a Lucent INTUITY system to a newer release.

untouched message

An INTUITY AUDIX feature that allows a user to keep a message in its current category by using the ☐ ☐ Ⓗ (Hold) command. If the message is in the new category, message-waiting indication remains active (for example, the message-waiting lamp remains lit).

UPS

See *uninterruptable power supply*.

U. S. 123

An alternate announcement set in U. S. English whose prompts use numbers, not letters, to iden-tify telephone keypad presses. For example, a prompt might say, "*Press star three,*" instead of, *"Press star D.*"

user interface

The devices by which users access their mailboxes, manage mailing lists, administer personal greetings, and use other messaging capabilities. Types of user interfaces include a touch-tone telephone keypad and a PC equipped with Lucent INTUITY Message Manager.

user population

A combination of different types of users on which Lucent INTUITY configuration guidelines are based.

V

vector

A customized program in the switch for processing incoming calls.

VM

Voice messaging application identifier. See *application identifier*.

voice link

The Lucent INTUITY analog connection(s) to a call-distribution group (or hunt group) of analog ports on the switch.

voice mail
See *voice message*.

voice mailbox
See *mailbox*.

voice message
Digitized information stored by the Lucent INTUITY system on disk memory. Also called *voice mail*.

voice port
The IVC6 port that provides the interface between the Lucent INTUITY system and the analog ports on the switch.

voice terminal
A telephone used for spoken communications with the Lucent INTUITY system. A touch-tone telephone with a message-waiting indicator is recommended for INTUITY AUDIX users.

voicing
1. Speaking a message into the Lucent INTUITY system during recording. 2. Having the system play back a message or prompt to a user.

VP
Voice platform application identifier. See *application identifier*.

VR
Voice response application identifier. See *application identifier*.

W

WAN
See *wide area network*.

wide area network (WAN)
A data network typically extending a local area network (LAN) over telephone lines to link with LANS in other buildings and/or geographic locations.

window
That portion of the Lucent INTUITY user interface through which you can view system information or status.

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