Intuity™ Lodging

Property Management System Specifications

Issue 1
June 1999

Copyright © 1999, Lucent Technologies
All Rights Reserved
Printed in U.S.A.

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

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

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

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

Federal Communications Commission Statement
Part 15: Class B Statement. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio-frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving television or radio antenna where this may be done safely.
- To the extent possible, relocate the receiver with respect to the telephone equipment.
- Where the telephone equipment requires ac power, plug the telephone into a different ac outlet so that the telephone equipment and receiver are on different branch circuits.

Part 68: Network Registration Number. This equipment is registered with the FCC in accordance with Part 68 of the FCC Rules. It is identified by FCC registration number AS593M-11185-MF-E.

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

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

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

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

Trademarks
DEFINITY is a registered trademark of Lucent Technologies in the U.S. and throughout the world.

AUDIX is a registered trademark of Lucent Technologies.

Ordering Information

Call:	Lucent Technologies Publications Center	
	Voice 1 800 457-1235	International Voice 317 361-5353
	Fax 1 800 457-1764	International Fax 317 361-5355
Write:	Lucent Technologies Publications Center	
	P.O. Box 4100	
	Crawfordsville, IN 47933	
Order:	Document No. 585-313-803	
	Comcode 108344847	
	Issue 1, June 1999	

For additional documents, refer to the section entitled, "Related Documents" in "About This Book."

You can be placed on a Standing Order list for this and other documents you may need. Standing Order will enable you to automatically receive updated versions of individual documents or document sets, billed to account information that you provide. For more information on Standing Orders, or to be put on a list to receive future issues of this document, please contact the Lucent Technologies Publications Center.

Warranty
Lucent Technologies provides a limited warranty on this product. Refer to the "Limited use Software License Agreement" card provided with your package.

European Union Declaration of Conformity
Lucent Technologies Business Communications Systems declares that the equipment specified in this document conforms to the referenced European Union (EU) Directives and Harmonized Standards listed below:

EMC Directive89/336/EEC

Low Voltage Directive73/23/EEC

The "CE" mark affixed to the equipment means that it conforms to the above Directives.

Acknowledgment
This document was prepared by the Product Documentation Development group, Lucent Technologies, Denver, CO and Columbus, OH.

Contents

Contents **iii**

About This Information **vii**

- Purpose vii
- Intended Audiences vii
- Release History vii
- How to Use This Information viii
- Conventions Used in This Information viii
  - Terminology viii
  - Screen Displays ix
  - Data Entry Conventions ix
  - Safety and Security Alert Labels x
- Trademarks and Service Marks x
- Related Resources xi
  - Documentation xi
    - Release 5 xi
    - Release 4 xi
    - For Release 3 xii
    - For All Releases xii
  - Additional Resources xiii
- How to Comment about this Information xiii

1 Integration with PMS Systems Using a Dedicated Link **1-1**

- Overview 1-1
- Administration in the Integrated Environment 1-2
- Functionality in the Integrated Environment 1-3
- Features 1-3
- Lucent INTUITY Lodging PMS Demarcation and Policy 1-4
  - System and Hardware Demarcation 1-6
  - Installation Demarcation 1-6
  - PMS Training 1-8

2 Configuration **2-1**

- Overview 2-1
- Lodging System/PMS Integration Set Up 2-1

- Transparent Versus Normal Mode 2-1
- PMS to Lucent INTUITY Link 2-2
  - Connectivity Diagrams 2-2
  - Link Level Parameters 2-4
  - Device Name 2-4
  - Software Link Control 2-5
  - Link Activate Procedure 2-8
- Lodging System Parameters Screen 2-8
  - Message Indicator Controlled by 2-9
    - Choosing PMS to Control the MWI 2-9
    - Choosing Lodging (LDG) to Control the MWI 2-9
  - When PMS Is Down, Calls for Guests Handled by 2-10
    - Choosing the Attendant to Handle Calls 2-10
    - Choosing Lodging System to Handle Calls 2-10

3 Message Format and Ordering 3-1

- Overview 3-1
- Message Format Structure 3-2
- Message Data Ordering 3-3
  - Backward Ordering 3-3
  - Forward Ordering 3-4

4 Message and Process Codes 4-1

- Overview 4-1
- The Check-In Message (50) 4-2
- The Modify Message (51) 4-8
- The Check-Out Message (52) 4-10
- The Delete Extension Message (53) 4-12
- The Display Mailbox Message (54) 4-14
- The Purge Old Mailbox Message (55) 4-18
- The Activate Old Mailbox Message (56) 4-20
- The Display Old Mailbox Message (57) 4-22
- The Transfer/Merge Mailbox Message (58) 4-26
- The Swap Mailbox Message (59) 4-28
- The Add/Remove Text/Fax Notification Message (5A) 4-31
- The Display Suite Message (5B) 4-33
- The Create/Modify Suite Message (5C) 4-35

- The Delete Suite Message (5D) 4-37
- The Voice Message Notification Message (5E) 4-38
- The Link Status Inquiry Management Message (60) 4-40
- The PBX Link Restart Message (61) 4-42
- The Display Group List Message (62) 4-43
- The Create/Modify Group List Message (63) 4-45
- The Delete Group List Message (64) 4-47

5 Database Synchronization 5-1

- Overview 5-1
- Interface Basic Features 5-1
- Guest Information Synchronization 5-2
  - A Simplified Approach 5-3
  - Complete Database Update 5-3
  - Complete Database Update Similar to PBX<—>PMS Procedure 5-4
    - Forced Check-In Messages 5-4
    - Forced Check-Out Messages 5-6
- MWI Synchronization 5-6
  - MWI-Off Status Messages 5-7
  - MWI-On Status Messages 5-7

6 Error Reporting 6-1

- Overview 6-1
- Protocol Errors 6-1
- Message Text Content/Syntax Errors 6-2

7 PMS Communications Log 7-1

- Overview 7-1
- Accessing the PMS Communications Log 7-1
  - PMS Communications Log Options 7-2
    - Start the PMS Log 7-2
    - Stop PMS Log 7-3
    - Display PMS Log 7-3
    - Download PMS Log 7-3
- Interpreting the Log 7-4
- PMS Protocol Problems 7-7

A **Feature Message Set Summary** **A-1**
- Feature Messages A-1

GL **Glossary** **GL-1**

IN **Index** **IN-1**

About This Information

Purpose

This information contains the specifications used to integrate a property management system (PMS) with a Lucent INTUITY system through a link between the PMS and the Lucent INTUITY system.

NOTE:
This information does not apply to integrations that operate through a link from the PMS to the telephone system, such as the Lucent GuestWorks *server* and other DEFINITY® Communications Systems. For information about the protocol used to operate this configuration, see *DEFINITY Enterprise Communications Server Generic 1 and Generic 3, GuestWorks, and System 75 Property Management System Interface Specifications*, 555-231-601.

Intended Audiences

This information is intended for the PMS developer who will integrate the two systems.

Release History

This is the fifth release of this information. It is being re-issued to support Lucent INTUITY Lodging Release 2.1. It remains compatible with earlier releases of the Lodging product.

How to Use This Information

Developers should:

- Become familiar with the information contained in Chapters 1 and 2
- Use the remaining chapters to write the interface between the Lucent INTUITY system and the PMS

Conventions Used in This Information

This section describes the conventions used in this information.

Terminology

- 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 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 ENTER. For example, an instruction to type the letter “y” and press ENTER is shown as

  Enter **y** to continue.
- The word “select” means to move the cursor to the desired menu item and then press ENTER. For example, an instruction to move the cursor to the `Start Test` option on the Network Loop-Around Test screen and then press ENTER is shown as

  Select `Start Test`.

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:

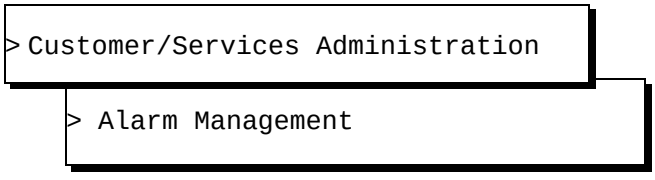
  > Enter the number of ports to be dedicated to outbound traffic in the `Maximum Simultaneous Ports:` field.

  Example 2:

  > The system displays the message `Alarm Form Update was successful.`

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

  > Start at the INTUITY Main menu and select

  > In this example, you access the Main menu and select the line item `Customer/Service Administration`. From the Customer/Service Administration menu that the system then displays, you select the line item `Alarm Management`.

- Screens shown in this information are examples only. The screens you see on your machine will be similar, but not exactly the same in all cases.

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:

  > Type **high** or **low** in the `Speed:` 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

This information 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 trademarks apply to this information. Additional trademarks and service marks provided with this documentation CD-ROM may also apply.

- INTUITY is a trademark of Lucent Technologies.
- Lucent is a trademark of Lucent Technologies.

Related Resources

This section describes additional resources available for the Lucent INTUITY Lodging application.

Documentation

The following contain information about Lucent INTUITY Lodging.

Release 5

The following provide information for Release 5 systems:

- Lucent *INTUITY Lodging Administration* for information about administering the Lodging application
- The Lucent INTUITY Release 5 documentation CD-ROM's table of contents for information about the Lucent INTUITY system and related applications
- *Guidebuilder Software for AUDIX Systems*, 585-310-745, Issue 3 or later, for guest, attendant, and administrator reference documents that can be customized for the Lodging site, printed, and copied

Release 4

The following provide information for Release 4 systems:

- Lucent *INTUITY Messaging Solutions Release 4 System Description*, 585-310-235, for general descriptions of the applications available with the Lucent INTUITY system, hardware available, and connectivity
- Lucent *INTUITY Lodging Administration*, 585-310-577, for information about administering the Lodging application
- Lucent *INTUITY Messaging Solutions Release 4 Alarm Logs and Messages*, 585-310-566, for alarm and administrative log information
- Lucent INTUITY Messaging Solutions installation books for information about the installation of Lodging:
  - *Lucent INTUITY Messaging Solutions Release 4 MAP/5P Installation, 585-310-185*
  - *Lucent INTUITY Messaging Solutions Release 4 MAP/40P Installation, 585-310-196*
  - *Lucent INTUITY Messaging Solutions Release 4 MAP/100 Installation, 585-310-173*
- *DEFINITY Enterprise Communications Server (ECS), GuestWorks™ server, and System 75 Property Management System Interface Specifications*, 555-231-601, for system integrated with a property management system that is connected by a link through the telephone system

For Release 3

The following provide information for Release 3 systems:

- Lucent *INTUITY Documentation Guide,* 585-310-540, Issue 3 or later, for a comprehensive listing of Lucent INTUITY documents
- Lucent *INTUITY New System Planning for Release 3.0,* 585-310-605, Issue 2, for information about setting up a new system, including information about installation and administration planning
- Lucent *INTUITY Release 3.0 Planning for Migrations,* 585-310-652, Issue 2, for information about moving to a new INTUITY system for another voice mail product
- Lucent *INTUITY MAP/5 Hardware Installation,* 585-310-146, Issue 3, for information about installing the MAP/5 hardware platform
- Lucent *INTUITY MAP/40 Hardware Installation,* 585-310-138, Issue 3, for information about installing the MAP/40 hardware platform
- Lucent *INTUITY MAP/100 Hardware Installation,* 585-310-139, Issue 3, for information about installing the MAP/100 hardware platform
- Lucent *INTUITY Software Installation for Release 3.0,* 585-310-160, Issue 3, for information about installing the Lucent INTUITY system, including INTUITY AUDIX and Lodging
- Lucent *INTUITY Release 3.0 Migration Procedures,* 585-310-233, Issue 2 or later, for procedures to move to a new Lucent INTUITY system from another voice mail product
- Lucent *INTUITY Platform Administration and Maintenance for Release 3.0,* 585-310-557, Issue 3, for information about alarms and system maintenance procedures
- Lucent *INTUITY Lodging Administration and Feature Operations,* 585-310-559, Issue 2, for information about administering and using Lodging

For All Releases

The following artwork packages are available for all releases:

- Lodging Artwork packages (Issue 2 or later), for camera-ready artwork that can be photocopied and used to provide instructions to guests
  - Lucent *INTUITY Lodging Artwork Package* – U.S. English, 585-310-739
  - Lucent *INTUITY Lodging Artwork Package* – U.S. English in A4 Sizing, 585-310-739A4
  - Lucent *INTUITY Lodging Artwork Package* – British English, 585-310-739ENB
  - Lucent *INTUITY Lodging Artwork Package* – Canadian French, 585-310-739FRC

— Lucent *INTUITY Lodging Artwork Package* – Latin Spanish, 585-310-739SPL

— Lucent *INTUITY Lodging Artwork Package* – Greek, 585-310-739GK

— Lucent *INTUITY Lodging Artwork Package* – Japanese, 585-310-739JA

— Lucent *INTUITY Lodging Artwork Package* – Mandarin, 585-310-739CHM

Additional Resources

Lucent Technologies offers the following:

- A training class for Lucent INTUITY Lodging Release 2.1 and earlier:

  Course No. BTC131H, Lucent INTUITY Lodging

- Technical assistance for the Lucent INTUITY system, depending upon your contract

NOTE:
Lucent does not test, certify, or warrant the operation of any PMS to Lucent INTUITY integration. Lab-to-lab testing is not available.

How to Comment about this Information

We are interested in your suggestions for improving this information. Use one of the following methods to communicate with us:

Method	Address
Email	octeltechpubs@lucent.com
Fax	303-538-9625

Please be sure to include the name of this information:

Lucent INTUITY Lodging Property Management Specifications, CD-ROM version, June 1999

Integration with PMS Systems Using a Dedicated Link

1

Overview

A Lucent INTUITY™ system integrated with a property management system (PMS) receives instructions for the Lodging application from the PMS. These instructions include directions to check guests in and out of the Lucent INTUITY Lodging database.

This chapter presents an overview of the integration, including:

- Administration
- Functionality
- Features
- Demarcation policy

The specifications in this book support:

- Lucent INTUITY Lodging Releases 1.0 and 1.1
- Lucent INTUITY Lodging Releases 2.0 and 2.1

NOTE:
The contents of this book only apply to systems with a dedicated RS-232 link between the PMS and the Lucent INTUITY system. For information about the protocol used to operate the integration to the PMS system through a link to a DEFINITY® switch, see *DEFINITY Enterprise Communications Server Generic 1 and Generic 3, GuestWorks, and System 75 Property Management System Interface Specifications*, 555-231-601.

Administration in the Integrated Environment

The purpose of the interface between the Lucent INTUITY Lodging system and the PMS is to perform guest mailbox administration using a common set of messages and commands that the Lucent INTUITY system is able to interpret. In order to interpret these messages, the Lucent INTUITY system must have the optional *vpms* software package installed. This software performs several internal procedures from the PMS to the Lucent INTUITY Lodging system database.

The Lucent INTUITY Lodging system/PMS interface allows the hotel to maintain Lodging guest mailboxes using the PMS screens. This eliminates the need for the hotel attendants to go from the PMS terminal to the Lucent INTUITY system console to do the same administrative tasks during the check in and check out process. Attendants performing the following tasks enter the information only on the PMS terminal, if you have provided the feature:

- Check in a guest mailbox
- Modify a guest mailbox
- Check out a guest mailbox
- Delete an extension from a database
- Display a mailbox
- Purge an old mailbox
- Activate an old mailbox
- Transfer a mailbox
- Swap mailboxes
- Add or remove text and fax notification
- Display a suite
- Create or modify a suite
- Delete a suite

NOTE:
The Message Waiting Indicator (MWI) notification is the only internal procedure initiated from the Lucent INTUITY Lodging system to the PMS database.

Functionality in the Integrated Environment

The integration of the Lucent INTUITY system with a PMS changes the functionality of the Lucent INTUITY system in other ways:

- Automatic database synchronization

  Using the automatic database synchronization procedure, the PMS creates the complete guest database on the Lucent INTUITY system when the PMS and the Lucent INTUITY system are first linked. This saves attendants a significant amount of data entry work.

- Manual database update

  A complete database update can be initiated manually at any time by the Lucent INTUITY system administrator or the attendants from the Command Menu.

- Mailbox administration using the Lucent INTUITY system screens

  The Lucent INTUITY Lodging system administrators or attendants are still able to complete all guest mailbox administration using the Lucent INTUITY system screens if the PMS link is down. Mailbox administration using the Lucent INTUITY system screens is also useful if the PMS and Lucent INTUITY system databases do not synchronize automatically. This feature allows the manual resolution of database discrepancies if the PMS was unsuccessful in its attempts.

- Automatic message waiting indicator (MWI) update

  When the PMS link is established, the MWI refresh mechanism brings the MWI status up to date.

- Automatic transfer to the attendant

  The Lucent INTUITY system can be set up to automatically transfer the guest caller to the attendant when the PMS link is down. Even if the PMS link is down, guests can still retrieve messages. Also, attendants can take down text messages, turn the MWI on and off manually, and use the Lucent INTUITY system screens to notify the guest of text or fax messages.

Features

The Lodging/PMS integration software contains several features. Not all of these features need to be implemented for each integration. Develop only those features specifically requested by the customer.

NOTE:
Lucent INTUITY Release 4 introduced Lucent INTUITY Lodging FAX Messaging for operation with the Lucent INTUITY Lodging Release 2 application. Administration for Lodging FAX Messaging is designed so that the administration does not change with checkin and checkout.

Administrators may set up the Lodging FAX Messaging administration once and allow the system to operate with those parameters. Therefore, since routine modification of Lodging FAX Messaging is not required, the PMS interface does not support protocol for the operation of Lodging FAX Messaging.

- A language code and 7 reserved bytes section in the message packet and returned message packet

  The language code feature allows the hotel attendant to enter the guest's choice of language for message retrieval. All prompts are then spoken in the guest's native or chosen language for telephone calls from the guest room extension and after login if the telephone call originates from another telephone. The attendant can also modify the language code for a mailbox. See "The Check-In Message (50)" and "The Modify Message (51)" in Chapter 4, "Message and Process Codes", for further information.

- Additional information about the software version of Lodging

  The status inquiry "heartbeat" message that the PMS sends to the Lucent INTUITY Lodging system periodically is used for providing additional information about the Lodging software version. See "The Link Status Inquiry Management Message (60)" in Chapter 4, "Message and Process Codes", for further information.

- Display Group List

  This feature allows you to display an existing group list that is saved in the system.

- Create/Modify Group List

  This feature allows you to create a new group list and/or modify an existing group list.

- Delete Group List

  This feature allows you to delete a group list that is no longer needed or was incorrect.

Lucent INTUITY Lodging PMS Demarcation and Policy

The following is a statement of Lucent and customer responsibilities.

Property Management Systems (PMSs) are systems that manage lodging establishments' guest records, reservations, room assignments, and billing information. These systems may operate with the INTUITY Lodging application to automate the short-term subscriber (guest) voice mail assignment and unassignment so that INTUITY Lodging administration is performed at the same time that the guest is being checked into and out of a lodging establishment. PMS integration with the INTUITY Lodging application allows lodging establishment personnel to use the PMS terminal(s) and application to register the guest and

provide the guest with voice mail service, including the assignment of the guest's preferred language for the voice mail retrieval prompts. Customers may operate the INTUITY Lodging application with or without PMS control. A PMS is not required to operate the INTUITY Lodging application.

PMS software that interacts with the INTUITY Lodging system and resides on the PMS computer is developed and marketed by vendors other than Lucent. Lucent does not certify, troubleshoot, or warrant the operation of any PMS system or any PMS to INTUITY Lodging application integration. All PMS interfaces must conform to the protocol specified in this information, Lucent *INTUITY Lodging Property Management Systems Specifications*. Protocol that does not conform to these specifications will not operate with the Lucent INTUITY system. Vendors and customers may use the PMS communications log on the Lucent INTUITY system for troubleshooting. This log records all transactions between Lucent INTUITY Lodging and the PMS, records errors in communications, and allows vendors and customers to monitor or to test the PMS system interface. This log may be viewed using the system administrator (sa) login.

In general, any PMS interface that operated with an AUDIX® Voice Power™ Lodging Release 1.0, 1.1, or 3.0 system will interface with the INTUITY Lodging Release 1.0, 1.0.1, 1.1, 2.0 and 2.1 applications. Customers should note that many PMSs have undergone revision and re-release so that different versions of these programs exist. Early versions may not contain the necessary parameters to select optional guest languages for guests. PMS interfaces that operated with AUDIX Voice Power Lodging will not operate with a PMS interface through the switch link. Customers should refer all questions about PMS operations, release numbers, and integrations to their PMS vendors.

Because Lucent does not certify, warrant, or troubleshoot any PMS interface, Lucent is unable to recommend any particular PMS vendor. The following list of vendors are companies that were known to have a working, certified PMS interface to AUDIX Voice Power Lodging systems:

- ITC
- HIS
- APTECH
- CLS
- Rollin
- Encore
- Audetel
- Fidelio
- Precision Data Systems
- Lodging Systems

System and Hardware Demarcation

The point of demarcation between the Lucent INTUITY system and the Property Management System is:

- The serial port into which the PMS link connects, or
- The adapter if the adapter directly connected to the INTUITY system serial port to provide a 25-pin termination was purchased from Lucent

The customer is responsible for providing and maintaining:

- The cable from the PMS to the INTUITY system demarcation point
- Any hardware such as a null modem that may be needed to connect the cable into the INTUITY serial port for the DTE to DTE connection
- Any hardware or software located on the other side of the adapter from the Lucent INTUITY system
- All desired settings for the Lucent INTUITY Lodging application's Property Management System Parameter Administration screen prior to the installation of the application

Installation Demarcation

Installation services will administer the parameters on the Lucent INTUITY system as a part of the standard installation, attach the PMS cable to the Lucent INTUITY system, and check the system for the start of database synchronization. Installation services, however, will not troubleshoot these settings to facilitate the operation of the PMS to Lucent INTUITY Lodging application interface. During installation, installation services will only attach the end of the PMS cable to the serial port or the 25-pin connector; they will not perform any hardware or software operations on the PMS computer.

Lucent requires Joint Acceptance Testing (JAT) for the installation of the PMS interface. JAT policy requires that the customer arrange to have the in-house developer, a representative knowledgeable about the PMS integration implementation, or the PMS vendor on site during the installation of the PMS link upon completion of the installation of the Lucent INTUITY Lodging application to the PMS demarcation point. This individual must be ready to perform troubleshooting procedures for the PMS interface should the database fail to synchronize. If the PMS interface fails at the time of connection to the INTUITY system, installation services will work for a limited period of time with the developer or vendor to isolate the problem to the Lucent equipment to the demarcation point or to the PMS equipment/interface.

If the customer does not provide a representative for the PMS interface at the time of acceptance testing during the installation, installation services will consider the installation complete. If installation services is required to return in order to perform the acceptance testing when a PMS representative is available, installation services will require an additional service order and charge.

Once the trouble is reasonably believed to be isolated to the customer-side of the demarcation point, installation services will continue with any remaining Lucent INTUITY system installation tasks. However, failure of the PMS interface impacts the completion of the installation, specifically placing the INTUITY Lodging application into service. Placing the application into service requires the completion of the switch administration to change the coverage paths to the INTUITY system if specified by contract. If PMS interface failure occurs during installation, the customer may elect to:

- Cut the system to service and administer the subscribers on the Lucent INTUITY Lodging application without the use of the PMS interface

  After installation services has completed the INTUITY system installation, the customer is responsible for changing the INTUITY Lodging parameters to allow guest subscribers to be administered directly on the INTUITY system instead of through the PMS. This approach allows the system to provide service while the PMS software is modified.

  CAUTION:
  If you use this approach, be sure that the PMS database is correctly populated when you place the PMS interface into operation. When the databases synchronize, the PMS database will overwrite the INTUITY Lodging database. If you have short-term subscribers in the INTUITY Lodging database but not in the PMS database, the short-term subscriber will lose all INTUITY Lodging services.

- Ask installation services to complete all remaining installation tasks, including any switch administration specified by contract

  The INTUITY system may be cut to service without an operational PMS link so that any switch/PBX administration specified by contract is completed. If this approach is chosen, incoming calls will be covered to the INTUITY Lodging application, and the caller will hear a message that the extension is not a checked-in guest. The system will disconnect the caller after playing out the message.

- Request that installation services return at a later time to complete the installation

  The customer may request that installation services return at a later time to complete the installation when the PMS interface is operational. This approach keeps the INTUITY Lodging application out-of-service until the PMS interface is corrected. Choosing this option will result in an additional charge.

When a customer or vendor representative is not available for JAT, installation services will test the INTUITY system internal functionality to the demarcation point and consider the installation of the PMS interface complete. If the customer requests that installation services return for JAT, an additional charge will be required.

NOTE:
If vendors or customers wish to test the link and the PMS interface before cutting to service, the link between the INTUITY system and the PMS may be placed into operation for a period of time prior to allowing the INTUITY Lodging application to provide service. To do this, install the PMS link, but do not administer the switch and the INTUITY system to answer calls for guests. During the test period, attendants should use the PMS to check in and check out guests for the INTUITY Lodging application. This will cause the INTUITY system and the PMS to synchronize and update databases and allow the vendor or customer to monitor the integration for errors with the PMS log. Using this approach, however, ***will require an additional charge for the installer to return to site to complete the switch administration needed to cut the INTUITY Lodging application to service***.

PMS Training

Lucent will not train customer personnel in PMS administration for the Lucent INTUITY Lodging application. The customer is responsible for obtaining any training related to the specific PMS product such as how to enter information into the PMS system from the PMS vendor.

Configuration 2

Overview

This chapter is an introduction to the transparent mode link level protocol and the hardware link.

Lodging System/PMS Integration Set Up

The Private Branch Exchange (PBX), the PMS, and the Lucent INTUITY™ Lodging system are all nodes.

NOTE:
On some properties, the PBX and the PMS do not communicate or are not linked. The design of the PMS and the identity of the PBX determines whether or not a link between the PBX and PMS is present.

Transparent Versus Normal Mode

The transparent mode protocol is an upgrade from the normal mode protocol used between the Lucent PBX and the PMS. At the link level, this protocol upgrade allows ASCII data transmissions to include control characters as part of the message data by escaping such characters with the data link escape (DLE) character.

PMS to Lucent INTUITY Link

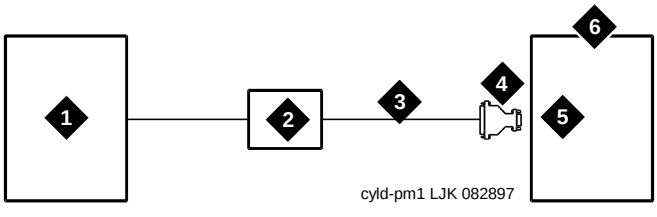
The hardware link between the Lucent INTUITY system and the PMS is an Electronic Industries Association (EIA) RS-232 serial data electrical interface. This link appears as a data communications equipment (DCE) unit with full duplex, 10-bit word frames (1 start bit, 8 data bits, 1 stop bit) and no parity checks. This cable is to be no longer than 50 feet. If the systems are separated by more than 50 feet, you must physically move one of the systems closer to the other. Failure to meet EIA communication standards will cause errors.

The link between the two systems is the customer's or vendor's responsibility.

Connectivity Diagrams

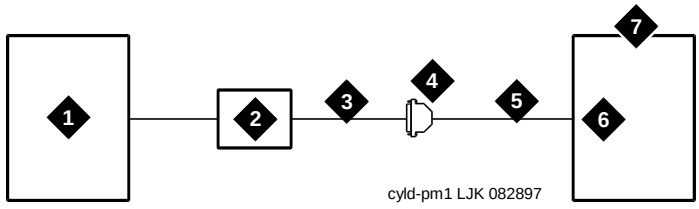
Figure 2-1 and Figure 2-2 show connectivity details between the Lucent INTUITY system and the PMS through a 9-pin COM port or one of the ports from the 8-port serial card. If you are installing a RS-232 cable to the MAP/5 COM1, you will not need a converter since the MAP/5 COM1 is a 25-pin termination. For the MAP/5P and the MAP/40 and MAP/100 series, you will need the converter.

NOTE:
The protocol in this document only applies to the configurations below.If you are developing software for use with an interface connection through a DEFINITY® switch or a GuestWorks™ server to the Lucent INTUITY system, see *DEFINITY Enterprise Communications Server Generic 1 and Generic 3, GuestWorks, and System 75 Property Management System Interface Specifications,* 555-231-601.



1. Property management system
2. Null modem
3. RS-232 cable (less than 15 m [50 feet])
4. 9 to 25 pin converter
5. COM1
6. Lucent INTUITY system

Figure 2-1. PMS Link Connectivity for COM1



1. Property management system
2. Null modem
3. RS-232 cable (less than 15 m [50 feet])
4. DTE adapter
5. 6-wire modular cable
6. Multiport circuit card
7. Lucent INTUITY system

Figure 2-2. PMS Link Connectivity for Multiport Circuit Card

Figure 2-3 shows the NULL modem pin-outs. Note that Lucent Technologies is not responsible for providing the null modem. Be sure that you or your customer have provided a null modem or the equivalent, if one is needed.

For information about installing the cable, see the Lucent INTUITY installation book for the release, or the installation information on the Release 5 documentation CD-ROM.

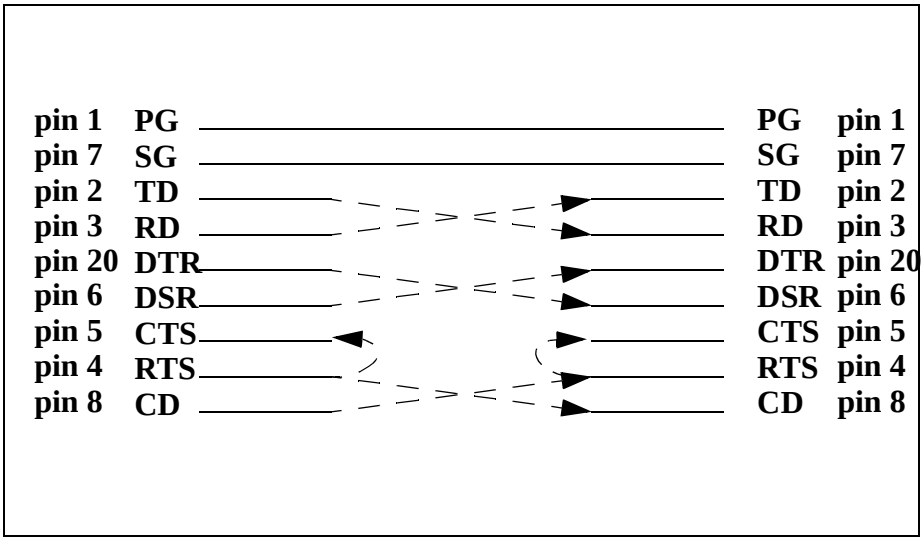


Figure 2-3. Pin-outs for RS-232 NULL Modem

Link Level Parameters

To modify any of the link level parameters, start at the Lucent INTUITY(TM) Administration menu (Release 3 systems) or the Lucent INTUITY Main menu (Release 4 and 5 systems) and select

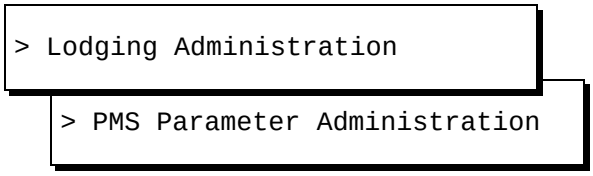


Table 2-1 describes the PMS link-level parameters. The settings for the integration need to be provided to the installer at the time of installation.

Table 2-1. PMS Link-Level Parameters

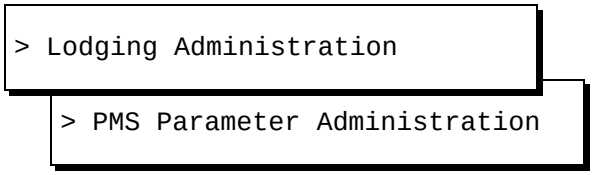
Parameter	Range	Default
tty device name	Several possible entries	tty00
Maximum protocol errors	0 to 50	50
Link acknowledgment timeout (LAT)	5 to 20 sec	10
Link idle timeout (LIT)[1]	5 to 99 sec	40
Link maximum retransmissions (MR)	1 to 5	5
Link maximum retransmission requests (MRR)	1 to 5	5
Baud rate	1200 to 9600	9600

1. The link idle timeout (or equivalent) on the PMS side should be between 5 and 35 seconds *less* than the link idle timeout on the Lucent INTUITY system side.

Device Name

The PMS integration software will select an available serial port on the Lucent INTUITY system during installation. This port will either be tty00 or a port on the serial ports card. The physical connection must be made to this port.

To change the selected port, start at the Lucent INTUITY Administration menu (Release 3 systems) or the Lucent INTUITY Main menu (Release 4 and 5 systems) and select



Software Link Control

In software link control, the PMS system is the master and the Lucent INTUITY system is the slave. In order to keep the link between the PMS and Lucent INTUITY system alive, the PMS system initiates communication and maintains it.

The general steps for communication between the PMS and the Lucent INTUITY system are:

1. The sender (PMS or Lucent INTUITY system) sends a packet.
2. The receiver reads the packet.
3. The receiver sends an ACK.
4. The receiver processes the packet for correct format such as valid room numbers, valid process codes, valid Byte Check Codes, etc.
5. The receiver returns the same packet, but with a different process code.
6. The original sender receives the packet with the different process code.
7. The original sender responds to the received packet with an ACK.

Under this system, there are three additional transmissions across the link for every correct original message sent:

- The ACK
- The repeated message with a different process code
- Another ACK to acknowledge the returned packet

If the format of the original message sent to the Lucent INTUITY system is incorrect, the Lucent INTUITY system sends a NAK. The NAK is also a request to the PMS to retransmit the message.

The only exception to the above process occurs when the PMS sends one of the following:

- A (60,3) packet to start database synchronization
- A (60,4) packet to end database synchronization

When this occurs, the Lucent INTUITY system returns only an ACK. No packet with a different process code or the accompanying ACK is sent.

NOTE:
In this book, (x,y) is used to represent a data packet where x is the feature code, and y is the process code. The packet formats are described in detail in Chapter 3, "Message Format and Ordering".

During the course of communication on the PMS link, the link can be placed in various states. Figure 2-4 is a state diagram of the PMS link-level protocol; Table 2-2 describes these protocol states.

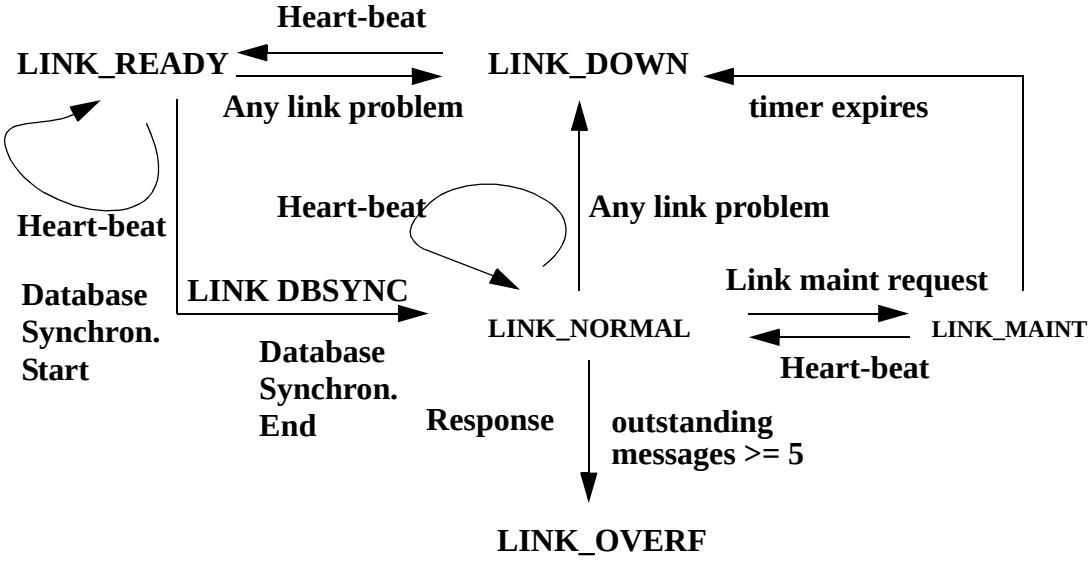


Figure 2-4. PMS Protocol State Diagram

Table 2-2. PMS Protocol States

State	Description
LINK DOWN	The Lucent INTUITY system responds only to heart-beat packets. The database synchronization procedure must be followed to bring the link back into the LINK NORMAL state. The link will enter the LINK DOWN state if: ■ The Link Idle Time (LIT) exceeds the value administered on the PMS System Parameters screen. ■ If there are 50 protocol errors. ■ Internal queues are filled. ■ The Maximum Retry Limit has been reached.
LINK NORMAL	This is the state in which all normal communication on the link is carried out. The Lucent INTUITY system does not reply to any message from the PMS except a HEART-BEAT, which causes the link to go back to LINK NORMAL without performing a database re-synchronization.
LINK READY	This is an intermediate state in which any heart beat received will cause the Lucent INTUITY system to send a request to re-synchronize the PMS link.
LINK MAINT	The PMS can request that the link be put into the LINK MAINT state, if the PMS needs to be taken down and cannot communicate on the link for the next half an hour. This communication includes no HEART-BEAT message.
LYNK DBSYNC	This is the state when the database synchronization operation is in progress. No MWI updates are sent to the PMS; however, all other PMS administration messages are processed.
LINK OVERF	The link enters this state if more than five messages from the PMS have been received while the previous messages are being processed by the Lucent INTUITY system. The Lucent INTUITY system continues to accept more messages, but all messages waiting to be updated are withheld until the link is no longer in the LINK OVERF state. Also, a reply to ENQ (0x-5) will be not be sent in this state.

Link Activate Procedure

When the Lucent INTUITY system/PMS link is down or the system is being put in place for the first time, the following scenario should take place:

1. The PMS sends the HEARTBEAT (60,0) packet.
2. The Lucent INTUITY system receives the packet from the PMS. This heartbeat puts the link into the LINK READY state for the Lucent INTUITY system.
3. If the packet is in the correct format, the Lucent INTUITY system sends an ACK to the PMS and a (60,1) or (60,2) message, depending upon the state of the link before it got the heartbeat.
4. The PMS responds to the Lucent INTUITY system's (60,1) or (60,2) packet with a DATABASE START (60,3) packet.
5. The Lucent INTUITY system receives the (60,3) packet from the PMS.
6. The Lucent INTUITY system returns an ACK to the PMS. The state of the link should now be LINK DBSYNC.
7. The PMS sends the CURRENT state of all rooms in the hotel to the Lucent INTUITY system. This information consists of the CHECKINS and CHECKOUTS.

   NOTE:
   If the state of the database has not changed, the PMS moves directly to the next step.

8. The PMS sends a DATABASE END (60,4) packet to signal the end of the checkin and checkout information.

   The state of the LINK is set to LINK NORMAL.
9. The Lucent INTUITY system sends message-waiting packets for all the rooms in the hotel to the PMS system.

Lodging System Parameters Screen

Two application-level parameters on the Lodging System Parameters screen relate to the PMS:

- `Message Lamp Controlled by:`
- `When PMS Is Down, Calls for Guests Handled by:`

These parameters do not appear on this screen if the integration software *vpms* is not installed. For information about the other parameters that appear on this screen, see:

- For Release 3: Chapter 3, “Administrator’s Activities,” in Lucent *INTUITY Lodging Administration and Features Operation*, 585-310-559
- For Release 4: Chapter 3, “Basic System Administration,” in Lucent *INTUITY Lodging Administration*, 585-310-577
- For Release 5: Lucent *INTUITY Lodging Administration*, Chapter 3, “Basic System Administration on the Release 5 documentation CD-ROM

Message Indicator Controlled by

This parameter allows the MWI to be controlled by the Lucent INTUITY system (Lodging application, LDG) or the PMS. The default for this entry is LDG.

NOTE:
The System 75/DEFINITY G1 and G3 Communications System features Leave Word Calling (LWC), which also controls the MWI. The Lodging application does not support LWC.

Choosing PMS to Control the MWI

Normally, the PMS is connected to the PBX. This is why Lucent recommends that the PMS control the MWI for the messages. If the PMS is controlling the MWI, it is actually controlling the PMS component of the MWI. If the PMS normally activates the MWI for text and/or fax messages, it must be able to distinguish between these and messages to control the MWI effectively.

Choosing Lodging (LDG) to Control the MWI

When the Lucent INTUITY system controls the MWI for messages, it is actually controlling the AUDIX® component of the MWI. In cases where the PMS is not connected to the PBX, the Lucent INTUITY system can control the MWI for the messages. These components are independent. PMS cannot control the AUDIX component nor can the Lucent INTUITY system control the PMS component of the MWI.

NOTE:
Although the Lucent INTUITY system does not control the MWI for text or fax messages, it can be administered to give a message prompt, either through the Lodging or the PMS screens, for text or fax message notification when a guest calls or logs into a mailbox.

After taking down a text message or receiving a fax message for a particular guest, the attendant should manually turn the MWI on for the guest mailbox. The attendant should then either use the PMS or the Lodging Mailbox screen to tell the Lucent INTUITY system to turn on the text and fax message notification.

When PMS Is Down, Calls for Guests Handled by

This parameter allows the Lucent INTUITY system to automatically transfer the guest caller to the attendant when the PMS link is down. The default for this entry is LDG.

Choosing the Attendant to Handle Calls

If the Lucent INTUITY system transfers the guest caller to the attendant, the attendant takes down text messages and turns on the MWI manually. The guest is still allowed to retrieve messages. This facilitates better database synchronization when the PMS link is down and reduces discrepancies between the Lucent INTUITY system and the PMS databases. See Chapter 5, ‘‘Database Synchronization’’, for additional information.

Choosing Lodging System to Handle Calls

The Lucent INTUITY system will continue to handle calls when the PMS link is down if this option is chosen.

CAUTION:
This option can cause discrepancies between the Lucent INTUITY system and the PMS databases.

Message Format and Ordering

3

Overview

Message packets of variable-length bytes are transmitted as the start-of-text (STX - 0x02) character followed by the message text followed by the end-of-text (ETX - 0x03) character and the byte-check code (BCC). The DLE (0x10) character must precede any control character (0x00 - 0x1F, nonprintable characters) in the message text—that is, any character between the STX and the ETX.

Since an STX can be part of a message text, escaping it with a DLE character differentiates this STX from the beginning STX of a message packet. Message packet length ranges from 6 to 760 bytes (not including the DLE characters).

Figure 3-1 shows the general format of a message packet.

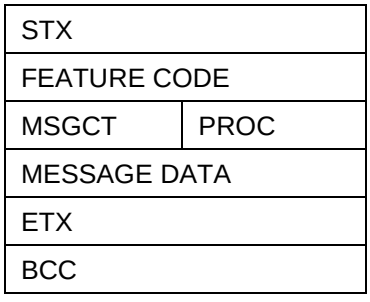


Figure 3-1. General Format of a Message Packet

Message Format Structure

The following information explains the components of the message format in Figure 3-1:

STX (start of text)	Indicates the beginning of the message packet.
FEATURE CODE	Specifies which of the possible variable-length feature message formats applies to the message data. See Chapter 4, ‘‘Message and Process Codes’’, for a description of valid values.
PROC (process code)	Consists of the least significant 4-bit nibble of the third byte of the message packet. This code represents a specific action or process for that feature code. This book uses the (FEATURE CODE, PROC) notation to represent a specific action or processing for that feature message.
MSGCT (message count)	Consists of a 4-bit message counter ranging from 0x2 to 0xB, relative to the originator. This is the high 4-bit nibble of the third byte of the message packet. The message counter eliminates the acceptance of duplicate messages. It is reset to a value of 2 at the beginning of a database synchronization.
MESSAGE DATA	Consists of two 4-bit encoded digits per 8-bit character or may contain ASCII characters. If all 4 bits in the nibble are 1’s, the field is null. The symbol NULL is used for these fields, which are used to pad out frames with only one 4-bit information digit. This means that the null pads are the most significant 4-bit field. The padding character for ASCII data is the space (0x20). For example, name characters or room-name characters are left-justified in their respective MESSAGE DATA fields and padded with space characters if there are extra characters that can be filled out. The range of ASCII characters includes all printable ASCII characters (0x20 - 0x7E). It is optional for the PMS to fill up the ASCII fields with useful data. If no useful data is available, all these fields are spaces.
ETX (end of text)	Indicates the end of the message packet.
BCC (byte check code)	Consists of an 8-bit octet that always follows an ETX. The BCC is an exclusive OR of all octets following the STX through and including ETX (the STX is not included in the BCC calculation).

Message Data Ordering

Many of the feature messages require an extension. For consistency with the PMS/PBX interface, the maximum number of extension digits is limited to five. Each of these digits occupies a nibble in the message text.

There are two methods of transmitting data:

- Backward ordering
- Forward ordering

Extensions digits/nibbles are transmitted from the least significant to the most significant digit. An extension like 35789 maps to EXTN5, EXTN4, EXTN3, EXTN2, and EXTN1. It is transmitted as nibbles containing 9, 8, 7, 5, and 3 in that order. This is known as “backwards ordering.”

Any message data other than the extension—such as room-name characters, name characters, or passwords—are ordered in the way they are spelled. This is known as “forwards ordering.” If a password of 1234 is used, it maps to PASSWD1, PASSWD2, PASSWD3, and PASSWD4.

This section contains examples of both of these types of message data ordering.

Backward Ordering

Extension digits (nibbles) are transmitted from the least significant to the most significant digit. This is referred to as *backward ordering.* The following three diagrams illustrate backward ordering.

NOTE:
Only extension numbers use backward ordering. As used in this document, “extension” is represented by the following variables: EXTN, SUITE MEMBER EXTN, TO_EXTN, FROM_EXTN, FIRST_EXTN, SECOND_ EXTN, and LIST_EXTN.

The diagram below shows how extension 12345 is entered in the message packet. The “f” represents NULL or four 1-bits of data.

4	5
2	3
f	1

The diagram below shows how extension 1234 is entered in the message packet.

3	4
1	2
f	f

The diagram below shows how extension 123 is entered in the message packet.

2	3
f	1
f	f

Forward Ordering

Any message data other than the extension—such as room characters, name characters or password—is ordered as it is spelled. This is referred to as *forward ordering.* The following four diagrams illustrate forward ordering.

The diagram below shows how password 1234 is entered in the message packet.

2	1
4	3

The diagram below shows how no password (or NULL) is entered in the message packet. “No password” means you will not be prompted for a password. Any password under four digits is illegal for Lodging.

f	f
f	f

The diagram above shows how a room number (321) is entered in the message packet. The <sp> is the 0x20 space character.

3	02
1	2

See Figure 4-2 to see how a name is entered in the message packet.

Message and Process Codes

4

Overview

This chapter explains the messages and the process codes that are communicated over the Lucent INTUITY™ Lodging system/PMS interface. The *message* is the information sent to the Lucent INTUITY system from the PMS or from the PMS to the Lucent INTUITY system. The MWI notification is the only status message initiated from the Lucent INTUITY system to the PMS. The *process codes* are the responses received that indicate if the command sent was successful.

The receiver of the message text checks the BCC to ensure that the complete packet of data was received. If the check zone is not valid, the receiver returns a negative acknowledgment (NAK) and requests that the message be sent again. If the check zone is valid, the receiver returns a positive acknowledgment (ACK) and goes on to validate the fields of the message. If the receiver determines that any of the fields are invalid, it returns the entire message packet with the most significant bit of feature code set to 1. If all fields are valid, the contents of the message are processed.

The Lucent INTUITY system uses the guest extension as its primary database key. If you plan to convert guest room numbers to guest extensions when communicating with the Lucent INTUITY system, keep the following in mind:

- Some guest extensions do not match the room numbers.
- Room number-to-extension conversions must be made in both directions of transmission: data going to the Lucent INTUITY system and data coming from the Lucent INTUITY system.

The Check-In Message (50)

The check-in message is used to check-in new guests. This message packet is sent from the PMS to the Lucent INTUITY system whenever the attendant completes the PMS check-in form by entering the new guest information.

Figure 4-1 shows the message format for a check-in message. Table 4-1 shows the associated process codes.

STX	
5	0
MSGCT	PROC
EXTN2	EXTN1
EXTN4	EXTN3
NULL	EXTN5
ROOM CHAR 1 through	
ROOM CHAR 6	
NAME CHAR 1 through	
NAME CHAR 15	
PASSWD 2	PASSWD 1
PASSWD 4	PASSWD 3
LANGUAGE CODE	
7 RESERVED BYTES	
ETX	
BCC	

Figure 4-1. Format for the Check-in Message

Table 4-1. Process Codes for the Check-in Message

Process Code	Message Direction	Indications
1	PMS –> Lucent INTUITY Lodging	Checkin guest
2	Lucent INTUITY Lodging –> PMS	Command successful
3	Lucent INTUITY Lodging –> PMS	System failed to execute command successfully
4	Lucent INTUITY Lodging –> PMS	Messaging system is not running
5	Lucent INTUITY Lodging –> PMS	Guest extension/room already checked in
6	Lucent INTUITY Lodging –> PMS	This action cannot be done on the administrator's extension
7	Lucent INTUITY Lodging –> PMS	This action cannot be done on a suite member extension
8	Lucent INTUITY Lodging –> PMS	This action cannot be done on the attendant's extension
9	Lucent INTUITY Lodging –> PMS	The Lucent INTUITY system agrees with the PMS during database synchronization regarding check-in status and guest password; the mailbox has no mail messages
A	Lucent INTUITY Lodging –> PMS	The Lucent INTUITY system agrees with the PMS during database synchronization regarding check-in status and guest password; the mailbox has mail messages
B	Lucent INTUITY Lodging –> PMS	The Lucent INTUITY system disagrees with the PMS during database synchronization regarding check-in status—that is, the PMS claims the mailbox is checked in while the Lucent INTUITY system claims otherwise; the Lucent INTUITY system checks in the mailbox successfully

Continued on next page

Table 4-1. Process Codes for the Check-in Message — *Continued*

Process Code	Message Direction	Indications
C	Lucent INTUITY Lodging –> PMS	The Lucent INTUITY system disagrees with the PMS during database synchronization regarding the guest password; the Lucent INTUITY system checks out its old guest and checks in the new guest; the old guest has no mail messages
D	Lucent INTUITY Lodging–> PMS	The Lucent INTUITY system disagrees with the PMS during database synchronization regarding guest password; the Lucent INTUITY system checks out its old guest and checks in the new guest; the old guest has mail messages
E	Lucent INTUITY Lodging –> PMS	Language package is not installed; The system default language is used.

Note the additional byte field for guest language.This field ranges from 0x20-0xff, which maps to 223 language codes. The system reserves 7 extra bytes for future use for Class of Service and other feature enhancements.

NOTE:
The preallocation of these fields also ensures that compatibility is not an issue for future releases.

Because they are not used at the present time, the nibbles of these 7 bytes are set to NULL (0xF). The (50,E) return message indicates to the PMS that the language package selected is not installed and the system default language is to be used as the language for this guest. When interfacing with the PMS systems operating with older versions, the absence of the language field causes the Lucent INTUITY system/PMS integration software to use the default system language as the preferred language.

The guest mailbox password must be exactly four digits. If the fields PASSWD1 through PASSWD are NULL, the Lucent INTUITY system will not prompt for the guest password. From the message format shown above in Table 4-1, the following are explanations of fields in the message not previously encountered.

The last five process codes (9, A, B, C, and D) are explained further in Chapter 5, "Database Synchronization".

ROOM CHAR 1-6	Represents 6 bytes of room-name ASCII information. This is an optional informational field to identify the room. In most properties, room name and extension number will match. If the room number is less than six characters, the remaining bytes must be filled with the ASCII space character (0x20).
NAME CHAR 1-15	Represents 15 bytes of guest name ASCII information. If the name is less than 15 characters, the remaining bytes must be filled with the ASCII space character (0x20).
PASSWD1-PASSWD4	Represents that the guest mailbox password should be exactly four digits. If the fields PASSWD1-4 are NULL, the Lucent INTUITY system will not prompt for the guest password.
LANGUAGE CODE	Ranges from 0x20 -0xff, which maps to 223 language codes. The lower limit for this field is 0x20 because an extra DLE character is needed for transmitting this field according to the link level protocol. If a language code is not installed, the default language is used as the guest language. The following table illustrates the two-digit language codes used to specify a specific guest language.

Language Code	Language	Transmit
00	American English	0x20
01	Japanese	0x21
02	Spanish	0x22
03	Greek	0x23
04	Mandarin	0x24
05	Hindi*	0x25
06	UK English	0x26
07	Canadian French	0x27
08	Brazilian Portuguese	0x28
* This language is not yet available; however, the code has been reserved for this language.		

7 RESERVED BYTES — The nibbles of these 7 bytes are set to NULL (0xf) since the reserved bytes are not used at this time.

An example of the format message of a check-in is given in Figure 4-2. This checkin is of guest Gary Johnson in room 12345 with extension 12345 and password 1234. Mr. Johnson has selected U.S. English as the preferred guest language.

STX	
5	0
3	1
4	5
2	3
NULL	1
1	
2	
3	
4	
5	
2	0
G	
A	
R	
Y	
2	0
J	
O	
H	
N	
S	
O	
N	
2	0
2	0
2	0
2	1
4	3
2	0
NULL	NULL
NULL	NULL
NULL	NULL
NULL	NULL
NULL	NULL
NULL	NULL
NULL	NULL
ETX	
BCC	

Figure 4-2. Message Format of a Sample Guest Check-in

The Modify Message (51)

The modify message changes the information of the guest whose name or extension is entered. This message packet is sent from the PMS to the Lucent INTUITY system whenever the attendant modifies a guest mailbox.

Figure 4-3 shows the message format for a modify message. Table 4-2 shows the associated process codes. Note that the guest mailbox password must be exactly four digits.

STX	
5	1
MSGCT	PROC
EXTN2	EXTN1
EXTN4	EXTN3
NULL	EXTN5
ROOM CHAR 1 through	
ROOM CHAR 6	
NAME CHAR 1 through	
NAME CHAR 15	
PASSWD2	PASSWD1
PASSWD4	PASSWD3
LANGUAGE CODE	
7 RESERVED BYTES	
ETX	
BCC	

Figure 4-3. Format for the Modify Message

Table 4-2. Modify Process Codes

Process Code	Message Direction	Indications
1	PMS –> Lucent INTUITY Lodging	Modify
2	Lucent INTUITY Lodging –> PMS	Command successful
3	Lucent INTUITY Lodging –> PMS	System failed to execute command successfully
4	Lucent INTUITY Lodging –> PMS	Messaging system is not running
5	Lucent INTUITY Lodging –> PMS	Guest extension/room not checked in
6	Lucent INTUITY Lodging –> PMS	This action cannot be done on the administrator's extension
7	Lucent INTUITY Lodging –> PMS	This action cannot be done on a suite member extension
8	Lucent INTUITY Lodging –> PMS	This action cannot be done on the attendant's extension
E	Lucent INTUITY Lodging –> PMS	Language package not installed; system default language will be used.

The Check-Out Message (52)

The check-out message checks out the guest whose extension is entered. The guest mailbox is deactivated and any leftover mail messages are moved into the old mailbox.

Figure 4-4 shows the format for a check-out message. Table 4-3 shows the associated process codes.

STX	
5	2
MSGCT	PROC
EXTN2	EXTN1
EXTN4	EXTN3
NULL	EXTN5
ETX	
BCC	

Figure 4-4. Format for a Check-Out Message

Table 4-3. Checkout Message Process Codes

Process Code	Message Direction	Indications
1	PMS –> Lucent INTUITY Lodging	Check-out guest
2	Lucent INTUITY Lodging –> PMS	Mailbox has no mail messages; the Lucent INTUITY system checks out mailbox successfully
3	Lucent INTUITY Lodging –> PMS	System failure to execute command successfully

Continued on next page

4	Lucent INTUITY Lodging –> PMS	Messaging system is not running
5	Lucent INTUITY Lodging –> PMS	Guest extension/room not checked in

Table 4-3. Checkout Message Process Codes — *Continued*

Process Code	Message Direction	Indications
6	Lucent INTUITY Lodging –> PMS	This action cannot be done on the administrator's extension
7	Lucent INTUITY Lodging –> PMS	This action cannot be done on a suite member extension
8	Lucent INTUITY Lodging –> PMS	This action cannot be done on the attendant's extension
9	Lucent INTUITY Lodging –> PMS	Mailbox has new or saved mail messages; the Lucent INTUITY system checks out mailbox successfully
A	Lucent INTUITY Lodging –> PMS	The Lucent INTUITY system agrees with the PMS during database synchronization regarding checkout status
B	Lucent INTUITY Lodging –> PMS	The Lucent INTUITY system disagrees with the PMS during database synchronization regarding check-out status—that is, the PMS claims mailbox is checked out while the Lucent INTUITY system claims otherwise; mailbox has no mail messages; the Lucent INTUITY system checks out the mailbox successfully
C	Lucent INTUITY Lodging –> PMS	The Lucent INTUITY system disagrees with PMS during database synchronization regarding checkout status—that is, the PMS claims mailbox is checked out while the Lucent INTUITY system claims otherwise; mailbox has mail messages; the Lucent INTUITY system checks out the mailbox successfully
E	Lucent INTUITY Lodging –> PMS	Guest is retrieving messages; try again later

Three of the process codes (A, B, and C) are explained in more detail in Chapter 5, "Database Synchronization".

A response like (52,9) or (52,C) indicates to the PMS that the MWI should be turned off. The PMS can send the MWI-off message to the switch at this time or wait for the Voice Message Notification command (5E,1) from the Lucent INTUITY system and send the message then. The (5E,1) immediately follows the response (52,9) or (52,C).

The Voice Message Notification command is described later in this chapter.

When a guest who is part of a group list checks out, the extension of that guest is removed from the group list. If a group list becomes empty through guest checkouts, the group list id is removed from the Lucent INTUITY system database. It is recommended that the PMS perform these same group list updates.

The Delete Extension Message (53)

The delete extension message deletes a mailbox extension number from the database. If the extension is a suite member, this message is not successful. This message should be used if there is an incorrect extension or no need for a mailbox for that room, in the Lucent INTUITY system.

Figure 4-5 shows the message format for the delete extension message. Table 4-4 shows the associated process codes.

STX	
5	3
MSGCT	PROC
EXTN2	EXTN1
EXTN4	EXTN3
NULL	EXTN5
ETX	
BCC	

Figure 4-5. Format for the Delete Extension Message

Table 4-4. Process Codes for the Delete Extension Message

Process Code	Message Direction	Indications
1	PMS –> Lucent INTUITY Lodging	Delete extension from database
2	Lucent INTUITY Lodging –> PMS	Command successful
3	Lucent INTUITY Lodging –> PMS	System failure to execute command successfully
4	Lucent INTUITY Lodging –> PMS	Messaging system is not running
5	Lucent INTUITY Lodging –> PMS	Guest extension/room checked in
6	Lucent INTUITY Lodging –> PMS	This action cannot be done on the administrator's extension
7	Lucent INTUITY Lodging –> PMS	This action cannot be done on a suite member extension
8	Lucent INTUITY Lodging –> PMS	This action cannot be done on the attendant's extension
9	Lucent INTUITY Lodging –> PMS	Old mailbox has messages and needs to be purged

The Display Mailbox Message (54)

The display mailbox message is used to display all guest status information for the entered extension number. Figure 4-6 shows the message format for a display mailbox message. Table 4-5 shows the associated process codes.

STX	
5	4
MSGCT	PROC
EXTN2	EXTN1
EXTN4	EXTN3
NULL	EXTN5
ETX	
BCC	

Figure 4-6. Format for the Display Mailbox Message

Table 4-5. Process Codes for the Display Mailbox Message

Process Code	Message Direction	Indications
1	PMS –> Lucent INTUITY Lodging	Display mailbox
2	Lucent INTUITY Lodging –> PMS	Command successful
3	Lucent INTUITY Lodging –> PMS	System failure to execute command successfully
4	Lucent INTUITY Lodging –> PMS	Messaging system is not running
5	Lucent INTUITY Lodging –> PMS	Guest extension/room not checked in
6	Lucent INTUITY Lodging –> PMS	This action cannot be done on the administrator's extension

If the display command is successful, the Lucent INTUITY system returns the message shown in (Figure 4-7) to the PMS (process code 2).

STX	
5	4
MSGCT	2
EXTN2	EXTN1
EXTN4	EXTN3
NULL	EXTN5
ROOM CHAR 1 through	
ROOM CHAR 6	
NAME CHAR 1 through	
NAME CHAR 15	
PASSWD2	PASSWD1
PASSWD4	PASSWD3
LANGUAGE CODE	
7 RESERVED BYTES	
VOICE	
FAX	TEXT
MBXUSG2	MBXUSG1
NULL	MBXUSG3
SUITE2	SUITE1
SUITE4	SUITE3
NULL	SUITE5
ETX	
BCC	

Figure 4-7. Format for the Returned Display Mailbox Message

From the message format shown above, the following are explanations of fields in the message not previously encountered.

LANGUAGE CODE	Ranges from 0x20-0xFF, which will map to 223 language codes. The lower limit for this field is 0x20 because an extra DLE character is needed for transmitting this field according to the link level protocol. If a language code is not installed, American English is used as the default language. See the table in "The Check-In Message (50)" above for the two-digit language code and its associated language.
7 RESERVED BYTES	The nibbles of these 7 bytes are set to NULL (0xF) since the reserved bytes are not used at this time.
VOICE	Ranges from 0x00 to 0xFF (decimal 255) indicating the number of messages in the guest mailbox. If the number is between 0x00 and 0x19, it will be delimited by DLE.
TEXT and FAX	Indicates if there are any messages of that type for this guest. The following values are chosen to avoid any possibility of an extra DLE character transmission. A value of 0x2 in the nibble indicates that there are no messages of that type. A value of 0x3 in the nibble indicates that there exists messages of that type for this guest.
MBXUSG	Represents the mailbox capacity usage percentage. A value of 83% usage is represented as 0x00 in the MBXUSG1 field, 0x08 in the MBXUSG2 field, and 0x03 in the MBXUSG3 field. Three nibbles for mailbox capacity usage are needed. This is because it is possible to have capacity usage greater than 100% as the Lucent INTUITY system allows a complete maximum message length recording when a mailbox is almost full. MBXUSG2 and MBXUSG1 byte may be delimited by DLE if number is between UX00 and UX19.
SUITE	Represents the suite extension if this extension is part of a suite. If the extension is not part of a suite, all these fields/nibbles are NULL (0x0F).

The Purge Old Mailbox Message (55)

The purge old mailbox message is used to manually delete an old mailbox from the databases. This message packet is sent from the PMS to the Lucent INTUITY system whenever the attendant wants to delete an old mailbox before the message purge time has expired.

Figure 4-8 shows the message format for a purge old mailbox message. Table 4-6 shows the associated process codes.

STX	
5	5
MSGCT	PROC
EXTN2	EXTN1
EXTN4	EXTN3
NULL	EXTN5
ETX	
BCC	

Figure 4-8. Format for the Purge Old Mailbox Message

Table 4-6. Process Codes for the Purge Old Mailbox Message

Process Code	Message Direction	Indications
1	PMS –> Lucent INTUITY Lodging	Purge old mailbox
2	Lucent INTUITY Lodging –> PMS	Command successful
3	Lucent INTUITY Lodging –> PMS	System failed to execute command successfully
4	Lucent INTUITY Lodging –> PMS	Messaging system is not running
5	Lucent INTUITY Lodging –> PMS	Old mailbox has no messages

If the guest extension fields EXTN1 through EXTN5 are all NULL, all old mailboxes must be purged. Do this only when the Lucent INTUITY system has reached its maximum mail storage capacity due to the presence of several full mailboxes and several old mailboxes with a lot of unretrieved messages. The first indication that capacity has been reached is that many callers are unable to leave mail and their calls are transferred by the Lucent INTUITY system to the front desk for text messages.

The Lucent INTUITY system administrator should generate usage reports on the Lucent INTUITY system periodically to monitor usage and thus prevent this problem.

NOTE:
The fact that a few guest mailboxes are full does not necessarily mean that the system capacity has been reached.

The Activate Old Mailbox Message (56)

The activate old mailbox message is used to reactivate an old mailbox extension. This message packet is sent from the PMS to the Lucent INTUITY system when the attendant wants to reactivate an old mailbox extension. This is most useful when a previous guest checks back into the hotel.

Figure 4-9 shows the message format for the activate old mailbox message. Table 4-7 shows the associated process codes.

STX	
5	6
MSGCT	PROC
TO_EXTN2	TO_EXTN1
TO_EXTN4	TO_EXTN3
NULL	TO_EXTN5
ROOM CHAR 1 through	
ROOM CHAR 6	
FROM_EXTN2	FROM_EXTN1
FROM_EXTN4	FROM_EXTN3
NULL	FROM_EXTN5
ETX	
BCC	

Figure 4-9. Format for the Activate Old Mailbox Message

Table 4-7. Process Codes for the Activate Old Mailbox Message

Process Code	Message Direction	Indications
1	PMS –> Lucent INTUITY Lodging	Activate Old Mailbox
2	Lucent INTUITY Lodging –> PMS	Command successful
3	Lucent INTUITY Lodging –> PMS	System failure to execute command successfully
4	Lucent INTUITY Lodging –> PMS	Messaging system is not running
5	Lucent INTUITY Lodging –> PMS	Room has no old mailbox
6	Lucent INTUITY Lodging –> PMS	Room activating to is the administrator's extension
7	Lucent INTUITY Lodging –> PMS	Room activating to is a suite member extension
8	Lucent INTUITY Lodging –> PMS	Room activating to is an attendant's extension
9	Lucent INTUITY Lodging –> PMS	Room activating to is checked in

The following are explanations for fields not already encountered:

TO_EXTN The extension number the guest is activating to.

FROM_EXTN The extension number the guest is activating from.

The Display Old Mailbox Message (57)

The display old mailbox message is used to display all guest status information for the extension number entered in the message packet. This message packet is sent from the PMS to the Lucent INTUITY system when the attendant wants to view all guest status information for an entered extension.

Figure 4-10 shows the message format for the displaying an old mailbox message. Table 4-8 shows the associated process codes.

STX	
5	7
MSGCT	PROC
EXTN2	EXTN1
EXTN4	EXTN3
NULL	EXTN5
ETX	
BCC	

Figure 4-10. Format for the Display Old Mailbox Message

Table 4-8. Process Codes for the Display Old Mailbox Message

Process Code	Message Direction	Indications
1	PMS –> Lucent INTUITY Lodging	Display mailbox
2	Lucent INTUITY Lodging –> PMS	Command successful
3	Lucent INTUITY Lodging –> PMS	System failure to execute command successfully
4	Lucent INTUITY Lodging –> PMS	Messaging system is not running
5	Lucent INTUITY Lodging –> PMS	Guest extension/room has no old mailbox

If the display command is successful, the Lucent INTUITY system returns the message shown in Figure 4-11 to the PMS (process code 2).

STX	
5	7
MSGCT	2
EXTN2	EXTN1
EXTN4	EXTN3
NULL	EXTN5
ROOM CHAR 1 through	
ROOM CHAR 6	
NAME CHAR 1 through	
NAME CHAR 15	
PASSWD2	PASSWD1
PASSWD4	PASSWD3
LANGUAGE CODE	
7 RESERVED BYTES	
MONTH1	MONTH2
DAY1	DAY2
YEAR1	YEAR2
HOUR1	HOUR2
MIN1	MIN2
VOICE	
MBXUSG2	MBXUSG1
NULL	MBXUSG3
SUITE2	SUITE1
SUITE4	SUITE3
NULL	SUITE5
ETX	
BCC	

Figure 4-11. Format for the Returned Display Old Mailbox Message

The following are explanations of fields in the message shown above:

LANGUAGE CODE	Ranges from 0x20-0xFF, which maps to 223 language codes. The lower limit for this field is 0x20 because an extra DLE character is needed for transmitting this field according to the link level protocol. If a language code is not installed, the system default language is used.
7 RESERVED BYTES	The nibbles of these 7 bytes are set to NULL (0xF) since the reserved bytes are not used at this time.
MONTH1-2	Represents the nibbles for the month (range 01-12).
DAY1-2	Represents the nibbles for the day (range 01-31).
YEAR1-2	Represents the nibbles for the year (range 00-99).
HOUR1-2	Represents the nibbles for the hour (military time with the range 00-23).
MIN1-2	Represents the nibbles for the minutes of the checkout time (range 00-59).
VOICE	Ranges from 0x00 to 0xFF (decimal 255) indicating the number of messages in the old mailbox.
MBXUSG1-MBXUS 3	Represents the old mailbox capacity usage percentage. A value of 83% usage is represented as 0x00 in the MBXUSG1 field, 0x08 in the MBXUSG2 field, and 0x03 in the MBXUSG3 field. Three nibbles are needed for mailbox capacity usage. This is because it is possible to have capacity usage greater than 100% as the Lucent INTUITY system allows a complete maximum message length recording when a mailbox is almost full.
SUITE1-SUITE5	Represents the suite extension if this extension is part of a suite. If the extension is not part of a suite, all these fields/nibbles are NULL (0x0F).

The Transfer/Merge Mailbox Message (58)

The transfer or merge mailbox message is used if a guest transfers from one room to another. This message packet is sent from the PMS to the Lucent INTUITY system when the attendant wants to transfer the guest's mailbox.

Figure 4-12 shows the message format for the transfer or merge mailbox message. Table 4-9 shows the associated process codes.

STX	
5	8
MSGCT	PROC
TO_EXTN2	TO_EXTN1
TO_EXTN4	TO_EXTN3
NULL	TO_EXTN5
ROOM CHAR 1 through	
ROOM CHAR 6	
FROM_EXTN2	FROM_EXTN1
FROM_EXTN4	FROM_EXTN3
NULL	FROM_EXTN5
ETX	
BCC	

Figure 4-12. Format for the Transfer/Merge Mailbox Message

Table 4-9. Process Codes for the Transfer/Merge Mailbox Message

Process Code	Message Direction	Indications
1	PMS –> Lucent INTUITY Lodging	Transfer/merge mailbox
2	Lucent INTUITY Lodging –> PMS	Command successful
3	Lucent INTUITY Lodging –> PMS	System failure to execute command successfully
4	Lucent INTUITY Lodging –> PMS	Messaging system is not running
5	Lucent INTUITY Lodging –> PMS	Room moving into is checked in
6	Lucent INTUITY Lodging –> PMS	Room moving into is the administrator's extension
7	Lucent INTUITY Lodging –> PMS	Room moving into is a suite member extension
8	Lucent INTUITY Lodging –> PMS	Room moving into is an attendant's extension
9	Lucent INTUITY Lodging –> PMS	Room moving out of is the administrator's extension
A	Lucent INTUITY Lodging –> PMS	Room moving out of is a suite member extension
B	Lucent INTUITY Lodging –> PMS	Room moving out of is an attendant's extension
C	PMS –> Lucent INTUITY Lodging	Merge mail with room moving into if it is already checked in; otherwise perform the regular transfer
D	Lucent INTUITY Lodging –> PMS	Room moving out of is not checked in
E	Lucent INTUITY Lodging –> PMS	Guest is retrieving messages from moving into room
F	Lucent INTUITY Lodging –> PMS	Guest is retrieving messages from moving out of room

The (58,C) command from PMS requests the transfer with merge operation if the room the guest is moving into is checked in.

NOTE:
The Lucent INTUITY system allows the mailbox to exceed its capacity because of this merge operation. If the mailbox becomes full, further calls to the guests sharing the room are transferred to the front desk.

NOTE:
The Transfer/Merge Mailbox command does not update mailing lists to the newly assigned mailbox. Updates to mailing lists must be made individually.

The following are explanations for the fields in the transfer/merge mailbox message:

TO_EXTN1-5	Extension number the guest is moving to
FROM_EXTN1-5	Extension number the guest is moving from

The Swap Mailbox Message (59)

The swap mailbox message is used if guests exchange or swap rooms. This message packet is sent from the PMS to the Lucent INTUITY system when the attendant wants to change the mailboxes.

Figure 4-13 shows the message format for the swap mailbox message. Table 4-10 shows the associated process codes.

STX	
5	9
MSGCT	PROC
FIRST_EXTN2	FIRST_EXTN1
FIRST_EXTN4	FIRST_EXTN3
NULL	FIRST_EXTN5
SECOND_EXTN2	SECOND_EXTN1
SECOND_EXTN4	SECOND_EXTN3
NULL	SECOND_EXTN5
ETX	
BCC	

Figure 4-13. Format for the Swap Mailbox Message

Table 4-10. Process Codes for the Swap Mailbox Message

Process Code	Message Direction	Indications
1	PMS –> Lucent INTUITY Lodging	Swap mailbox
2	Lucent INTUITY Lodging –> PMS	Command successful
3	Lucent INTUITY Lodging –> PMS	System failure to execute command successfully
4	Lucent INTUITY Lodging –> PMS	Messaging system is not running
5	Lucent INTUITY Lodging –> PMS	Second extension/room is not checked in
6	Lucent INTUITY Lodging –> PMS	Second extension/room is the administrator's extension

Continued on next page

7	Lucent INTUITY Lodging –> PMS	Second extension/room is a suite member extension

Table 4-10. Process Codes for the Swap Mailbox Message — *Continued*

Process Code	Message Direction	Indications
8	Lucent INTUITY Lodging –> PMS	Second extension/room is an attendant's extension
9	Lucent INTUITY Lodging –> PMS	First extension/room is the administrator's extension
A	Lucent INTUITY Lodging –> PMS	First extension/room is a suite member extension
B	Lucent INTUITY Lodging –> PMS	First extension/room is an attendant's extension
C	Lucent INTUITY Lodging –> PMS	First extension/room is not checked in
E	Lucent INTUITY Lodging –> PMS	Guest is retrieving messages from first extension room
F	Lucent INTUITY Lodging –> PMS	Guest is retrieving messages from second extension room

NOTE:
The Swap Mailbox command does not update mailing lists to the newly assigned mailbox. Updates to mailing lists must be made individually.

The Add/Remove Text/Fax Notification Message (5A)

The add/remove text/fax notification message is used to add or deliver text or fax messages for guests. This message packet is sent from the PMS to the Lucent INTUITY system when the attendant wants to add or remove text or fax messages for the guest.

NOTE:
If the system is operating Lodging FAX Messaging, do not add and remove fax messages. Use text for all paper messages.

Figure 4-14 shows the message format for the add/remove text/fax notification message. Table 4-11 shows the associated process codes.

STX	
5	A
MSGCT	PROC
EXTN2	EXTN1
EXTN4	EXTN3
NULL	EXTN5
ADD/REM	TXT/FAX
ETX	
BCC	

Figure 4-14. Format for the Add/Remove Text/Fax Notification Message

Table 4-11. Process Codes for the Add/Remove Text/Fax Notification Message

Process Code	Message Direction	Indications
1	PMS –> Lucent INTUITY Lodging	Add/remove text/fax message notification
2	Lucent INTUITY Lodging –> PMS	Command successful
3	Lucent INTUITY Lodging –> PMS	System failure to execute command successfully
4	Lucent INTUITY Lodging –> PMS	Messaging system is not running
5	Lucent INTUITY Lodging –> PMS	Guest extension/room not checked in

The following are explanations of fields in the message from the message format shown above. These values are chosen for the fields to avoid any possibility of an extra DLE character transmission.

ADD/REM — Represents addition or removal of the text or fax notification. A value of 0x2 means add and a value of 0x3 means remove.

TXT/FAX — Represents the text or fax notification. A value of 0x2 means text, a value of 0x3 means fax, and a value of 0x4 means both.

NOTE:
The value 0x4 is used only for remove. You cannot add both text and fax messages simultaneously. Two separate messages are needed to add text and fax messages to a guest mailbox.

The Display Suite Message (5B)

The display suite message is used to display group extensions given the suite extension number. This message is sent from the PMS to the Lucent INTUITY system when the attendant wants to find out what extension numbers are connected to a specific suite number.

Figure 4-15 shows the message format for the display suite message. Table 4-12 shows the associated process codes.

STX	
5	B
MSGCT	PROC
SUITE2	SUITE1
SUITE4	SUITE3
NULL	SUITE5
ETX	
BCC	

Figure 4-15. Format for the Display Suite Message

Table 4-12. Process Codes for the Display Suite Message

Process Code	Message Direction	Indications
1	PMS –> Lucent INTUITY Lodging	Display suite
2	Lucent INTUITY Lodging –> PMS	Command successful
3	Lucent INTUITY Lodging –> PMS	System failure to execute command successfully
4	Lucent INTUITY Lodging –> PMS	Messaging system is not running
5	Lucent INTUITY Lodging –> PMS	There is no suite for this extension

If the display command is successful, the Lucent INTUITY system returns the following message to the PMS (process code 2), as shown in Figure 4-16.

STX	
5	B
MSGCT	PROC
SUITE2	SUITE1
SUITE4	SUITE3
NULL	SUITE5
TEN SUITE	
MEMBER EXTNS	
NULL	NULL
ETX	
BCC	

Figure 4-16. Format for the Returned Display Suite Message

The TEN SUITE MEMBER EXTNS are the 10 6-nibble groups of SUITE1 through SUITE5 for the 10 suite member extensions. If there are less than 10 extensions, the other extensions/nibbles are padded as NULLs.

The Create/Modify Suite Message (5C)

The create/modify suite message is used to make any necessary changes to the extensions numbers contained in the suite mailbox. This message packet is sent from the PMS to the Lucent INTUITY system when the attendant wants to create or modify a suite mailbox.

Figure 4-17 shows the message format for create/modify suite message. Table 4-13 shows the associated process codes.

STX	
5	C
MSGCT	PROC
SUITE2	SUITE1
SUITE4	SUITE3
NULL	SUITE5
TEN SUITE	
MEMBER EXTNS	
NULL	BAD_EXTN_INDEX
ETX	
BCC	

Figure 4-17. Format for the Create/Modify Suite Message

Table 4-13. Process Codes for the Create/Modify Suite Message

Process Code	Message Direction	Indications
1	PMS –> Lucent INTUITY Lodging	Create/modify suite
2	Lucent INTUITY Lodging –> PMS	Command successful
3	Lucent INTUITY Lodging –> PMS	System failed to execute command successfully
4	Lucent INTUITY Lodging –> PMS	Messaging system is not running
5	Lucent INTUITY Lodging –> PMS	Extension pointed by BAD_EXTN_INDEX is checked in
6	Lucent INTUITY Lodging –> PMS	Extension pointed by BAD_EXTN_INDEX is administrator's extension
7	Lucent INTUITY Lodging –> PMS	Extension pointed by BAD_EXTN_INDEX is part of another suite
8	Lucent INTUITY Lodging –> PMS	Extension pointed by BAD_EXTN_INDEX is an attendant

The Ten Suite Member Extns field should be entered in "sorted order;" that is, lowest extension to highest—for example, 1000, 1001, 1002. This is because the BAD_EXTN_INDEX flag that the Lucent INTUITY system returns to the PMS is based on the sorted list and, if an error occurs when the TEN SUITE MEMBER EXTNS is not in sorted order, this flag may not point to the invalid extension.

When a modify is done (after a display or otherwise), the BAD_EXTN_INDEX nibble is used as a return code for the index to bad extension in the extension list, in addition to the process code return value.

If the BAD_EXTN_INDEX is NULL, it refers to the suite extension. It ranges from 0x00 to 0x09 to refer to 1 of the 10 suite member extensions. If 1 or more of the 10 suite member extensions is invalid, this command fails.

NOTE:
An extension is classified as "bad" if it is already checked in, is part of another suite, or belongs to the system administrator or an attendant.

The Delete Suite Message (5D)

The delete suite message is used to check out a suite mailbox. This message packet is sent from the PMS to the Lucent INTUITY system when the attendant enters the main suite extension.

Figure 4-18 shows the message format for a delete suite message. Table 4-14 shows the associated process codes.

STX	
5	D
MSGCT	PROC
SUITE2	SUITE1
SUITE4	SUITE3
NULL	SUITE5
ETX	
BCC	

Figure 4-18. Format for the Delete Suite Message

Table 4-14. Process Codes for the Delete Suite Message

Process Code	Message Direction	Indications
1	PMS –> Lucent INTUITY Lodging	Delete suite
2	Lucent INTUITY Lodging –> PMS	Command successful
3	Lucent INTUITY Lodging –> PMS	System failure to execute command successfully
4	Lucent INTUITY Lodging –> PMS	Messaging system is not running
5	Lucent INTUITY Lodging –> PMS	There is no suite for this extension
6	Lucent INTUITY Lodging –> PMS	Suite is checked in

The Voice Message Notification Message (5E)

Any time a new message is deposited in the guest mailbox, a message to turn the MWI on is sent on the link to the PMS.

Turning off the MWI depends on the LAMP ON FOR NEW MESSAGES ONLY option specified in the System Parameters Administration window. If yes is chosen as the option and the guest listens to all of the new messages, a message to turn the MWI off is sent to the PMS. If no is chosen as the option and the guest deletes all of the messages in the mailbox, a message to turn the MWI off is sent to the PMS.

Figure 4-19 shows the message format for a voice message notification message. Table 4-15 shows the associated process codes.

STX	
5	E
MSGCT	PROC
EXTN2	EXTN1
EXTN4	EXTN3
NULL	EXTN5
NULL	VOICE
ETX	
BCC	

Figure 4-19. Format for the Voice Message Notification Message

The VOICE flag value is 0x2 for no mail messages in the mailbox and 0x3 for change from zero mail messages to one. These values are chosen to be consistent with similar flags in other message packets.

Table 4-15. Process Codes for the Voice Message Notification Message

Process Code	Message Direction	Indications
1	Lucent INTUITY Lodging–> PMS	Voice message notification
2	PMS –> Lucent INTUITY Lodging	Command successful; MWI turned on or off depending on VOICE flag (see below)
3	PMS –> Lucent INTUITY Lodging	System failure to execute command successfully
4	PMS–> Lucent INTUITY Lodging	Extension is not checked in; cannot turn MWI on
5	PMS –> Lucent INTUITY Lodging	Extension is a suite member

Depending on the Lucent INTUITY system command, the PMS should turn on or off the MWI for the guest extension/mailbox by sending a command to the switch. If the PMS is not controlling the MWI, these messages serve as status messages.

The PMS will return process code (5E,2) if the MWI has been turned on when the VOICE flag is 0x3 for checked-in rooms or if the MWI has been turned off when the VOICE flag is 0x2 (no messages) for any room checked in or checked out.

NOTE:
The PMS should take necessary actions to update its database regarding the MWI status for the guest mailbox and control the MWI status on the switch.

The Link Status Inquiry Management Message (60)

The link status inquiry message is used to check database synchronization between the PMS and the Lucent INTUITY system. For additional information, see Chapter 2, ‘‘Configuration’’.

Figure 4-20 shows the message format for a link status inquiry message. Table 4-16 shows the associated process codes.

STX	
6	0
MSGCT	PROC
NULL	PROTOCOL
ETX	
BCC	

Figure 4-20. Format for the Link Status Inquiry Message

Table 4-16. Process Codes for the Link Status Inquiry Message

Process Code	Message Direction	Indications
F	PMS –> Lucent INTUITY Lodging	Heartbeat message
0	Lucent INTUITY Lodging –> PMS	Acknowledgment of heartbeat message; Lucent INTUITY system and PMS are in an idle (no data to send) state
1	Lucent INTUITY Lodging –> PMS	Acknowledgment of heartbeat message; Lucent INTUITY system is starting fresh (for the first time or after a power failure); start database synchronization
2	Lucent INTUITY Lodging –> PMS	Acknowledgment of heartbeat message; the PMS or link failed and came back up; start database synchronization
3	PMS –> Lucent INTUITY Lodging	Start of database synchronization (complete database update)
4	PMS –> Lucent INTUITY Lodging	End of database synchronization (sent when the PMS finishes a complete database update)
5	PMS –> Lucent INTUITY Lodging	Release of the data link requested for maintenance
6	PMS –> Lucent INTUITY Lodging	Release of the data link granted
7	Lucent INTUITY Lodging –> PMS	The Lucent INTUITY system demands database synchronization be started; the Lucent INTUITY system expects a (60,3) response; the “dbsync” command is being executed on the Lucent INTUITY system

The (60,F) with PROC value of 0xF is the heartbeat “Are you alive?” message from the PMS. This packet has the PROTOCOL version number (nibble) for the PMS Vendor Interface Protocol between the PMS and the Lucent INTUITY system. The PROTOCOL field is 0x0 for the Lucent INTUITY system/PMS IS. Since extra reserved fields have been allocated in the check-in message, this protocol version number will not change for future releases until all these reserved fields have been utilized.

The PBX Link Restart Message (61)

The PBX link restart message packet sent from PMS to the Lucent INTUITY system requests a restart of the link between the switch and the Lucent INTUITY system.

Figure 4-21 shows the message format for a PBX link restart message. Table 4-17 shows the associated process codes.

STX	
6	1
MSGCT	PROC
NULL	NULL
ETX	
BCC	

Figure 4-21. Format for the PBX Link Restart Message

Table 4-17. Process Codes for the PBX Link Restart Message

Process Code	Message Direction	Indications
1	PMS –> Lucent INTUITY Lodging	PBX link restart
2	Lucent INTUITY Lodging –> PMS	Command successful
3	Lucent INTUITY Lodging –> PMS	System failure

The Display Group List Message (62)

The display group list message is used to display all group list information for the entered group list id. Figure 4-22 shows the message format for a display group list message. Table 4-18 shows the associated process codes.

STX	
6	2
MSGCT	PROC
LISTID2	LISTID1
LISTID4	LISTID3
LISTID6	LISTID5
ETX	
BCC	

Figure 4-22. Format of the Display Group List Message

Table 4-18. Process Codes for the Display Group List Message

Process Code	Message Direction	Indications
1	PMS –> Lucent INTUITY Lodging	Display group list
2	Lucent INTUITY Lodging –> PMS	Command successful
3	Lucent INTUITY Lodging –> PMS	System failure to execute command successfully
4	Lucent INTUITY Lodging –> PMS	Messaging system is not running
5	Lucent INTUITY Lodging –> PMS	There is no group list for this list ID

The LISTID1 through LISTID6 fields represent the 6-digit group list id in the forwards ordering scheme (see Chapter 3, "Message Format and Ordering", for further information). If the group list is invalid (that is, if each LISTID nibble is not in the range 0x0 through 0x9), the entire message packet is returned with the same process code and the protocol violation bit set. If the display command is successful, the Lucent INTUITY system returns the message shown in Figure 4-23 to the PMS (process code 2).

STX	
6	2
MSGCT	PROC
LISTID2	LISTID1
LISTID4	LISTID3
LISTID6	LISTID5
NO. OF ENTRIES	
LIST_EXTN2	LIST_EXTN1
LIST_EXTN4	LIST_EXTN3
NULL	LIST_EXTN5
(REPEATED FOR	
NO. OF ENTRIES)	
BAD_EXTN_INDEX	
ETX	
BCC	

Figure 4-23. Format for the Returned Display Group List Message

The LIST_EXTN1 through LIST_EXTN5 fields represent the 5-digit group member extension in the backwards ordering scheme (like the one used for the extension field). The BAD_EXTN_INDEX is not used for the display group list. This byte is set to NULL (0xff). The NO. OF ENTRIES field tells the PMS the total number of group list member extensions in the message packet. This field ranges from 1 to 250.

The Create/Modify Group List Message (63)

The create or modify group list message allows you to create a new group list in your system or modify an existing group list.

Figure 4-24 shows the message format for the create/modify group list message. Table 4-19 shows the associated process codes.

STX	
6	3
MSGCT	PROC
LISTID2	LISTID1
LISTID4	LISTID3
LISTID6	LISTID5
NO. OF ENTRIES	
LIST_EXTN2	LIST_EXTN1
LIST_EXTN4	LIST_EXTN3
NULL	LIST_EXTN5
(REPEATED FOR	
NO. OF ENTRIES)	
BAD_EXTN_INDEX	
ETX	
BCC	

Figure 4-24. Format for the Create/Modify Group List Message

Table 4-19. Process Codes for the Create/Modify Group List Message

Process Code	Message Direction	Indications
1	PMS –> Lucent INTUITY Lodging	Create/modify group list
2	Lucent INTUITY Lodging –> PMS	Command successful
3	Lucent INTUITY Lodging –> PMS	System failure to execute command successfully
4	Lucent INTUITY Lodging –>PMS	Messaging system is not running
5	Lucent INTUITY Lodging –> PMS	Extension pointed by BAD_EXTN_ INDEX is not checked in

The LISTID1 through LISTID6 fields represent the 6-digit group list id in the forwards ordering scheme (see Chapter 3, "Message Format and Ordering", for further information). If the group list is invalid (that is, if each LISTID nibble is not in the range 0x0 through 0x9), or if 1 or more of the 10 group list member extensions is invalid, the entire message packet is returned with the same process code with the protocol violation bit set.

When a create/modify is done (after a display or otherwise), the BAD_EXTN_ INDEX byte is used as a return code for the index to the empty room/mailbox extension in the member extension list. This is in addition to the process code of 5 as the return value. The BAD_EXTN_INDEX ranges from 0x00 to 0xF9 to refer to one of the 250 group list member extensions. The NO. OF ENTRIES field tells the Lucent INTUITY system the total number of group list member extensions in the message packet. This field ranges from 1 to 250.

The Delete Group List Message (64)

The delete group list message allows you to delete a group list from your system. Figure 4-25 shows the message format for the delete group list message. Table 4-20 shows the associated process codes.

STX	
6	4
MSGCT	PROC
LISTID2	LISTID1
LISTID4	LISTID3
LISTID6	LISTID5
ETX	
BCC	

Figure 4-25. Format for the Delete Group List Message

Table 4-20. Process Codes for the Delete Group List Message

Process Code	Message Direction	Indications
1	PMS –> Lucent INTUITY Lodging	Delete group list
2	Lucent INTUITY Lodging –> PMS	Command successful
3	Lucent INTUITY Lodging –> PMS	System failure to execute command successfully
4	Lucent INTUITY Lodging –> PMS	Messaging system is not running
5	Lucent INTUITY Lodging –> PMS	There is no group list for this list id

If the group list is invalid (that is, if each LISTID nibble is not in the range 0x0 through 0x9), the entire message packet is returned with the same process code with the protocol violation bit set.

Database Synchronization

5

Overview

The Lucent INTUITY™ Lodging and PMS databases include check-in, check-out, and message waiting indicator (MWI) information. The main objective of the database synchronization procedure is to synchronize the PMS and Lodging databases quickly with little human intervention.

Interface Basic Features

The Lucent INTUITY system provides the following features for database synchronization:

- Using the database synchronization procedure, the PMS has the capability to create or populate the complete guest database on the Lucent INTUITY system when the link comes up. This saves the attendants a significant amount of data entry work on the Lucent INTUITY system.
- If for some reason the databases do not synchronize using the database synchronization procedure, the Lucent INTUITY system administrator can administer guest mailboxes and use the Lucent INTUITY system screens to resolve discrepancies manually.
- The attendants are allowed to turn the text or fax message notification on or off for a particular guest during PMS down times.
- The command-menu on the Lucent INTUITY system provides a database synchronization command to facilitate manual initiation of a complete database update by the system administrator or the attendants. This command (**dbsync**) is used in cases where the databases go out of synchronization even though both systems are up running. It forces the Lucent INTUITY system to initiate a database synchronization procedure by sending a (60,7) to the PMS.

NOTE:
PMS vendors should also provide a similar command in their user interface. In fact, this command is more useful from the PMS screens as the attendants do not need to use the Lucent INTUITY system screens at all.

- Because the database synchronization takes care of synchronizing the MWI status information on both systems, the Lucent INTUITY system throws away “stale” MWI status messages that accumulate during PMS downtime.
- Lucent INTUITY system can automatically transfer the guest caller to the attendant when the PMS link is down. The guest will still be allowed to retrieve messages. The attendant can record text messages and turn the MWI on and off manually. This feature reduces the possibility of database synchronization errors. If it is not used, messages for a new guest checked in during link failure might be moved into the old mailbox during database synchronization because the guest information between the Lucent INTUITY system and PMS does not match.

Guest Information Synchronization

A PMS vendor can choose any one of the following three specific procedures for guest information synchronization depending on the development constraints and the features needed:

- Shut down the Lucent INTUITY system completely when the PMS goes down
- Have the PMS send a display/lookup command to each Lucent INTUITY system extension
- Have the PMS send each record to the Lucent INTUITY system for update

It is recommended that the PMS vendor follow one of the last two methods listed above.

NOTE:
Regardless of which method is used, guest information packets should be sent in alphanumeric order for efficient synchronization.

These procedures involve a series of guest information exchange packets—such as display/checkin/checkout—between the (60,3) and (60,4) envelope sent by the PMS. The PMS performs the synchronization when it receives a (60,1) or a (60,2) from the Lucent INTUITY system. If the PMS knows that the databases did not change during the downtimes, it can, upon receiving these messages, choose to send (60,3) immediately followed by a (60,4) with no messages in between.

A Simplified Approach

To simplify guest information synchronization and reduce PMS development, a hotel may choose to shut down the Lucent INTUITY system during periods of PMS downtime or change the call coverage path for the guests to go to the attendants instead of the Lucent INTUITY system. In either case, the caller cannot leave mail messages for the guest. If the Lucent INTUITY system is shut down, the guest cannot retrieve mail messages during the periods of PMS downtimes.

The objective here is to eliminate the need for guest information synchronization. The PMS should send (60,3) immediately followed by a (60,4) with no messages in between since it does not have any synchronization procedure.

Also, the PMS cannot create the guest mailbox database on the Lucent INTUITY system the first time it comes up, due to the lack of synchronization messages. Attendants must do this data entry work manually the first time using the PMS screens or the system administrator must do it using the Lucent INTUITY system terminal screens.

Complete Database Update

Another method of synchronizing the databases is to have the PMS send a display/look-up command to every extension on the Lucent INTUITY system. This is very time consuming.

Depending on the Lucent INTUITY system data for a guest extension/room, the PMS can issue further commands like checkin/modify/checkout to solve discrepancies and synchronize the databases. The PMS knows which database is current and can do the synchronization accordingly as it has the knowledge whether the PMS or the Lucent INTUITY system went down. All these commands should be sent within the (60,3) and (60,4) envelope.

If the Lucent INTUITY system goes down, the attendants can continue to do their check-in and check-out activities on the PMS. The PMS will not be able to administer guest mailboxes, however, because of link failure. In this case, the PMS initiates the database synchronization when the Lucent INTUITY system comes up—that is, when the PMS receives a (60,1). The PMS knows that its own database is current.

If the PMS goes down, the Lucent INTUITY system administrator can use the Lucent INTUITY system terminal screens to administer guest mailboxes. In this case, the PMS gets a (60,2) from the Lucent INTUITY system after it comes up. This tells the PMS to start the database synchronization and that the Lucent INTUITY system database is current.

The PMS must decide how to synchronize the guest information. Therefore, it may take time for this procedure to do the update for properties over 1000 rooms. Also, a complete database update must be done if either system went down and there were few database changes.

Complete Database Update Similar to PBX<—>PMS Procedure

NOTE:
Most PMS developers use the following procedure when updating the databases using database synchronization.

In the existing PMS<—>Lucent PBX database synchronization procedure, the PMS always uses the most current database. Using this approach, the PMS dictates to the Lucent INTUITY system what the current database should be doing. The PMS will not update its database using the Lucent INTUITY system database by doing look-ups even if it is current.

When the PMS goes down, attendants should enter all changes like checkin, checkout, and transfer on the PMS after it comes up. The PMS starts using the Lucent INTUITY system interface only after collecting these database changes and coming with up two bundles of database records:

- A list of current checked-in extensions
- A list of current checked-out extensions

The PMS queues all these records and sends them one at a time to the Lucent INTUITY system for that system to update its records. The PMS initiates the database synchronization by sending a (60,3). The PMS then sends these records followed by a (60,4). The Lucent INTUITY system accepts all the valid feature code messages during the database synchronization. If any of the forced check-in or check-out messages results in a failure, the same return process codes used for the normal checkin or checkout are sent back to the PMS. For example, a forced checkin on a suite member extension will result in a failure (50, 7).

In contrast to the forced check-in messages, the synchronization decisions here are left to the rules built in to the Lucent INTUITY system. However, that system does not have to exercise these rules because the PMS takes control—that is, does a checkout or a modify—depending on the information it gets using the display command.

It can also take time for this procedure to do the update for properties over 1000 rooms. Also, the PMS must do a complete database update on the Lucent INTUITY system even if there are only a few database changes (taken down by the attendants) during link failure.

Forced Check-In Messages

Some check-in messages become forced check-in messages if there is a mismatch on the password. If the guest does not choose a password, the guest name is used for the comparison. The Lucent INTUITY system performs a checkout followed by a checkin in case of a mismatch.

Whenever such built-in rules are enforced, an audible beep is provided on the Lucent INTUITY system console in addition to error logging. The attendant or the administrator has the responsibility to look at the database discrepancy errors using the Lucent INTUITY system reports screen.

If the guest does choose a password, that password is used for database matching instead of the name. This is because it is possible to have two people staying in a room using the same guest extension/mailbox and password. If one of these guests checks out of the room when the PMS link is down, the system performs a forced checkout on the mailbox and a checkin on the name mismatch.

If this forced checkout happens, messages for the person continuing to stay are put into the old mailbox. (An alternative rule could be to use the name for matching and, upon a mismatch, execute a modify command, but the Lucent INTUITY system will not do this).

The (50,1) within a (60,3) and (60,4) envelope is treated as a forced checkin if password or name do not match. The following are the responses taken from Table 4-1:

- Response (50,9) from the Lucent INTUITY system indicates that it agrees with the PMS during database synchronization regarding check-in status and guest password. The mailbox has no mail messages.
- Response (50,A) from the Lucent INTUITY system indicates that the Lucent INTUITY system agrees with the PMS during database synchronization regarding check-in status and guest password. The mailbox has mail messages.
- Response (50,B) from the Lucent INTUITY system indicates that the Lucent INTUITY system disagrees with the PMS during database synchronization regarding check-in status— that is, the PMS claims the mailbox is checked in while the Lucent INTUITY system claims otherwise. The Lucent INTUITY system checks in the mailbox successfully.
- Response (50,C) from the Lucent INTUITY system indicates that the Lucent INTUITY system disagrees with the PMS during database synchronization regarding the guest password. The Lucent INTUITY system checks out its old guest and checks in the new guest. The old guest has no mail messages.
- Response (50,D) from the Lucent INTUITY system indicates that the Lucent INTUITY system disagrees with the PMS during database synchronization regarding the guest password. The Lucent INTUITY system checks out its old guest and checks in the new guest. The old guest has mail messages.

NOTE:
If the PMS is in control of the MWI, it should send a command to the switch to update its database regarding the MWI status for the guest mailbox and controlling the MWI status on the switch.

Forced Check-Out Messages

The (52,1) within a (60,3) and (60,4) envelope is treated as a forced checkout. The following are the responses taken from Table 4-3:

- Response (52,A) from the Lucent INTUITY system indicates that the Lucent INTUITY system agrees with the PMS during database synchronization regarding checkout status.
- Response (52,B) from the Lucent INTUITY system indicates that the Lucent INTUITY system disagrees with the PMS during database synchronization regarding checkout status—that is, the PMS claims the mailbox is checked out while the Lucent INTUITY system claims otherwise. The mailbox has no mail messages. The Lucent INTUITY system checks out the mailbox successfully.
- Response (52,C) from the Lucent INTUITY system indicates that the Lucent INTUITY system disagrees with the PMS during database synchronization regarding checkout status—that is, PMS claims the mailbox is checked out while the Lucent INTUITY system claims otherwise. The mailbox has mail messages. The Lucent INTUITY system checks out the mailbox successfully.

  NOTE:
  If the PMS is in control of the MWI, it should send a command to the switch to update its database regarding the MWI status for the guest mailbox and controlling the MWI status on the switch.

Although a response like (52,C) indicates to the PMS that the MWI should be turned off, the PMS can send the MWI-off message to the switch at this time or wait for the Voice Message Notification command (5E,1) from the Lucent INTUITY system and send the message at that time. The (5E,1) will immediately follow the response (52,C).

MWI Synchronization

The Lucent INTUITY system automatically initiates a MWI synchronization procedure following guest information synchronization (60,3 to 60,4). Because MWI messages are not saved or sent to the PMS during guest information synchronization, the Lucent INTUITY system sends a room-by-room (extension) status of the MWI to the PMS.

Specifically, it sends a (5E,1) to the PMS for each room in its guest database, for a response from the PMS, then goes to the next room.

MWI-Off Status Messages

For MWI-off status messages, the Lucent INTUITY system sends a (5E,1) with the VOICE field equal to 0x2. The PMS is then expected to complete the following procedure:

1. Respond with a (5E,2) for any extension.
2. Check the validity of the extension.
3. If the extension is in the PMS database, the PMS turns the MWI off if it is controlling the MWI. At this point, the Lucent INTUITY system and the PMS are synchronized for this extension and the procedure is complete.
4. If the extension is not in the PMS database, PMS sends a DEL_EXTN (53,1) to the Lucent INTUITY system.
5. If the extension is an administrator or an attendant extension, the Lucent INTUITY system responds with a (53,6) or (53,8). PMS should accept this message without error and turn the MWI off if it is controlling the MWI.
6. If the Lucent INTUITY system returns a (53,2), it is synchronized with the PMS for this room.

MWI-On Status Messages

For MWI-on status messages, the Lucent INTUITY system sends a (5E,1) with the VOICE field equal to 0x3. The PMS is expected to complete the following procedure:

1. Respond with a (5E,2) for any extension.
2. Check the validity of the extension.
3. If the extension is in the PMS database, the PMS turns the MWI on if it is controlling the MWI. At this point, the Lucent INTUITY system and PMS are synchronized for this extension and the procedure is completed.
4. If the extension is not in the PMS database, PMS sends a check-out message (52,1) and a DEL_EXT (53,1) to the Lucent INTUITY system.
5. If the extension is an administrator or an attendant extension, the Lucent INTUITY system responds with a (52,6) or (52,8). PMS should accept this message without error and turn the MWI on if it is controlling the MWI.
6. If the Lucent INTUITY system returns a (52,2), it is synchronized with the PMS for this room.

NOTE:
A check-out message automatically generates a MWI-off message from the Lucent INTUITY system to PMS. This message is processed as described in the procedure for MWI-off status messages, where the extension is deleted.

Error Reporting

6

Overview

The Lucent INTUITY™ Lodging/PMS integration features the following types of error reporting:

- Protocol errors
- Message text/content syntax errors
- Invalid operation errors

Protocol Errors

Both the Lucent INTUITY system and the PMS should keep track of protocol errors and drop the link if the total number of those errors reaches 50. The counter is incremented by one for any of the following events:

- A control character received without a DLE in front of it
- A noncontrol character received outside of the STX/ETX frame
- An ETX received when a message was not being received
- An incorrect MSGCT value
- An invalid BCC

A negative acknowledgment (NAK - 0x15) is transmitted back to the sender if a message with an invalid BCC is received. The sender must resend the packet.

When a good message is received, the protocol errors counter is decreased by one.

Message Text Content/Syntax Errors

The receiver of a message packet can set the most significant bit of the FEATURE CODE to a logical 1 when content errors exist in the message. These kinds of errors include invalid encoding for characters interpreted as nibbles, invalid feature codes, invalid process codes, invalid extensions, invalid passwords, and invalid characters for fields interpreted as ASCII.

The receiver sends the message packet back to the sender with this bit set. The sender of the invalid feature message has the responsibility of appropriately logging the individual violation messages for later correction.

This error logging is done for errors other than content errors, such as invalid operations. For example, one cannot check in an extension that is already checked in. Invalid operations are transmitted back to the sender using different process codes.

PMS Communications Log

7

Overview

The PMS Communications Log on the Lucent INTUITY™ Lodging system can be very useful for debugging problems with the PMS protocol implementation. It shows all data, good or bad, sent or received by the Lucent INTUITY system. An explanation is also printed for every data packet exchanged between the PMS and the Lucent INTUITY system. This log is accessible through the system administration (sa) login on the Lucent INTUITY system and can be displayed, printed or downloaded onto a diskette.

Accessing the PMS Communications Log

The PMS Communications Log can be accessed from the Lucent INTUITY console or from a remote terminal. To access the PMS Communications Log screen from the console:

1. Start at the Lucent INTUITY(TM) Administration screen (Release 3) or the Lucent INTUITY Main menu (Release 4 and 5) and select

```
> Lodging Administration
```

2. Press F7 (Cmd-Menu).

   The system displays the Command menu (Figure 7-1).

Figure 7-1. Command Menu

3. Select `PMS Communications Log`

   The system displays the PMS Communications Log menu (Figure 7-2).

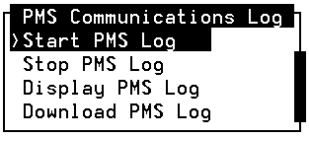


Figure 7-2. PMS Communications Log Menu

PMS Communications Log Options

The PMS Communications Log menu provides the following options.

Start the PMS Log

This option will start the capture of the PMS Log. When this menu item is selected, the system displays the Select Level window (Figure 7-3).

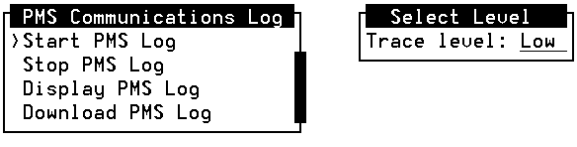


Figure 7-3. PMS Communications Log Menu and Select Level Window

1. Enter **high** or **low** in the `Trace Level` field.

   All data sent or received by the Lucent INTUITY system will be displayed under the high option. If the low option is chosen, only the data sent out by the Lucent INTUITY system is shown with brief explanations for data received.

2. Press F3 (Save).

   The system displays an information window (Figure 7-4).

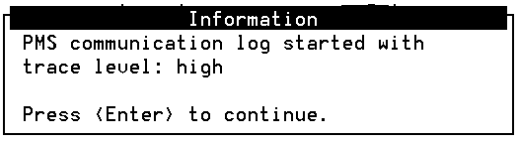


Figure 7-4. Information Window

3. Press ENTER to continue.

   The system returns to the Select Level window.

4. Press F6 (Cancel) to return to the PMS Communications Log menu.

Stop PMS Log

This option stops the capture of the PMS Log. If the capture is not stopped, the system automatically stops the capture after 1.5 mega bytes of data is collected. A 1.5 mega byte log contains data from the last 3 to 7 hours, depending on the rate at which the data is being exchanged on the link.

Display PMS Log

This option will display the currently captured log on the terminal. The log captured is not stopped while the log is being displayed. Use the spacebar to continue displaying data.

Download PMS Log

Use this option to get a printout of the log or to download it onto a diskette. The system displays a Download PMS Log menu (Figure 7-5) when the download option is chosen.

Figure 7-5. Download PMS Log Menu

1. Select Printer or Diskette from the Download PMS Log menu.

   Before the log is actually sent to the printer or the Download PMS Log menu is displayed, the log may have to be formatted. The system will display a Confirmation window (Figure 7-6) at this time informing the user that log needs to be formatted and the approximate time to complete the format.

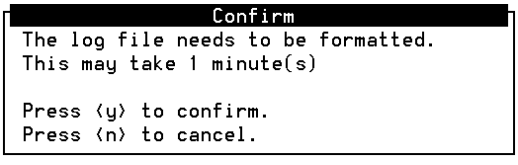


Figure 7-6. Confirmation Window

2. To continue with the download, enter **y** or press **n** to cancel.

   The log may be downloaded on a DOS or a UNIX diskette. The file is placed on the UNIX diskette as a “cpio” archive.

Interpreting the Log

The PMS Communications Log shows data sent and received by the Lucent INTUITY system on the PMS link. It also displays an explanation of each message sent or received. As protocol problems arise, they are indicated in the log with an appropriate explanation.

- Each message sent or received by the Lucent INTUITY system must be acknowledged with an ACK character.
- If an ACK is not received, an ENQ character will be sent after the Link Acknowledgment Time-out.
- Sent and received data is shown only when the high trace level is selected. The low level trace only shows the data sent with a brief explanation for messages received from the PMS.

- The data shown corresponds to the packet structures for each message type. Each byte of data sent or received is shown as two alphanumeric characters with space in between.
- The data received does not show the STX, ETX, and any DLE characters received. These characters are shown in the data sent.
- Link status is shown frequently in the PMS Communications Log. The status corresponds to the states shown in the PMS protocol schematic.

Figure 7-7 shows a sample display of the PMS Communications Log. In this display:

- Each message line has a time stamp:

  ```
  09/21  14:27:07
  ```

- The left arrow indicates data received:

  ```
  <==
  ```

- The right arrow indicates data sent:

  ```
  ==>
  ```

- The message type sent or received is shown in parenthesis:

  `(ACK sent)` or `(ACK received)`

```
09/21 14:27:07  PMS Link Status:  Link Down
09/21 14:27:07  <== 60 2f f0
09/21 14:27:07  RCVD:  (STAT_INQ) “  Heart-Beat
09/21 14:27:07  ==> 06  (ACK sent)
09/21 14:27:07  ==>  02 60 21 f0 03 b2
09/21 14:27:07  SENT:(STAT_INQ):ACK Hear-Beat: Request to start DB Sync
09/21 14:27:07  PMS Link Status:  LINK READY
09/21 14:27:09  <== 60 33 f0
09/21 14:27:09  RCVD:  (STAT_INQ) : Start DB Sync
09/21 14:27:09  ==> 06 (ACK sent)
09/21 14:27:09  PMS LINK Status:  LINK DBSYNC
09/21 14;27:13  <== 60 44 f0
09/21 14:27:13  RCVD:  (STAT_INQ) : End DB Sync
09/21 14:27:13  ==> 06 (ACK sent)
09/21 14:27:13  ==> 02 5e 81 10 05 20 ff f2 03 e4
09/21 14:27:13  SENT: (MWL) Ext: 2005:  Status: OFF
09/21 14:27:13  PMS Link Status:  LINK NORMAL
09/21 14:27:14  <== 06 (ACK received)
09/21 14:27:14  PMS Link Status:  LINK NORMAL
09/21 14:27:14  <== 5E A2 05 20 FF F2
09/21 14:27:14  RCVD: (MWL) :Ext: 2005: Done
09/21 14:27:14  ==> 06 (ACK sent)
09/21 14:27:14  PMS Link Status:  LINK NORMAL
09/21 14:28:53  <== 50 51 02 20 ff 32 30 30 32 20 20 4e 61 6d 65 32 30 30 32 20
09/21 14:28:53     20 20 20 20 20 20 02 20 20 ff ff ff ff ff ff ff
09/21 12:28:53  RCVD:  (CHECKIN)  :Ext:  2002
09/21 14:28:53  ==> 06 (ACK sent)
09/21 14:28:53  PMS Link Status:  LINK NORMAL
09/21 14:28:53  ==>  02 50 35 10 02 20 ff 32 30 30 32 20 20 4e 61 6d 65 32 30 30
09/21 14:28:53       32 20 20 20 20 20 20 20 10 02 20 20 ff ff ff ff ff ff ff 03
09/21 14:28:53       41
09/21 14:28:53  SENT:  (CHECKIN)  :Ext:  2002
09/21 14:28:53  PMS Link Status:  LINK NORMAL
09/21 14:28:53  <== 06  (ACK received)
```

Figure 7-7. Sample of the PMS Communications Log

PMS Protocol Problems

The following is a list of the log entries that identify potential problems with the PMS interface and their possible resolutions.

- `Request not processed. PMS must send a Heart-Beat`

  This entry will appear in the log when a valid Lodging administration message, such as CHECKIN, was received from the PMS when the link was not in the LINK NORMAL state. This message is not acknowledged by the Lucent INTUITY system. The PMS must bring the link back into the LINK NORMAL state by sending the STATUS (Heart-beat) message.

- `Illegal character before/after STX`

  The protocol requires that all data packets must start with STX (0x02) and end with BCC with the EXT (0x03) character just before the BCC, except for the ACK (0x06), NAK (0x15) or ENQ (0x05) characters. If any other character is received before the STX character, it will be identified in the log as such. On the other hand, within a data packet all control characters (characters between 0x00 and 0x1F) must be preceded with the DLE (0x10) character. If a control character is received within a data packet without a preceding DLE, this will be identified as “illegal character after STX”. This problem may also result from mis-matched baud rates and other physical problems on the link.

- `BCC check failed: Rcvd BCC=xx Calculated BCC=yy`

  This message will appear in the log when the BCC check fails. The BCC character at the end of a data packet is the exclusive OR of all octets following the STX through and including ETX (the STX is not included in the BCC calculation).

- `Reply to PMS queued: Waiting for an ACK: xx msg(s) in queue`
  `MWL Update queued: Waiting for and ACK: xx MWL updates in queue`

  The Lucent INTUITY system maintains two queues for outgoing messages to PMS. One queue holds replies to normal administration messages such as CHECKINs and the other queue holds message waiting indicator updates which need to be sent to PMS. As the Lucent INTUITY system sends messages to the PMS it expects an acknowledgment for every message. If acknowledgments are not received, but the PMS continues to send other administration messages, the Lucent INTUITY system will process each request but queue the reply until an acknowledgment to the last message is received. Similarly if a message waiting update needs to go out but the Lucent INTUITY system is waiting for an acknowledgment, it will queue the message waiting indicator update. Each queue can only hold 200 messages after which the link is taken into the LINK DOWN state. The symptom of this problem is delayed message waiting lamp updates.

- `CODE VIOLATION: Msg received contains incorrect data`

  If a received administration message contains incorrect number of fields or if one of the fields contains illegal data, this results into CODE VIOLATION. The Lucent INTUITY system acknowledges this message but sends the whole packet back to the PMS with the most significant bit of the "FEATURE CODE" octet set (to '1'). The number of the fields and the value in each field must correspond to the protocol specifications.

- `EVENT:`

  Each "EVENT" entry in the log will be followed by an explanation. The following events are reported in the PMS Communications Log.

  ```
  PMS Link Idle Time-out.

  Garbage on the PMS link.

  No more room to queue messages for PMS.

  Max retransmit requests.

  Max tries to transmit.

  Internal data corruption.

  Too long in the MAINT state.
  ```

  NOTE:
  30 minutes is the limit for the link to remain in the maintenance state.

  Each of these events is preceded by other entries the log which will provide more information about the cause of the problem. The link is taken into the LINK DOWN state on any one these EVENTS.

- `ENQ Sent / ENQ received`

  An ENQ character is sent by the Lucent INTUITY system when it is expecting an ACK and the Link Acknowledgment Time-out expires. If there are numerous "ENQ Sent" entries in the log, this may indicate a problem whereby the Acts from PMS are not being received.

- `NAK Sent / NAK received`

  A NAK is sent by either the PMS or the Lucent INTUITY system when the BCC check fails on the received data. If there are numerous "NAK Sent" or "NAK received" entries in the log, the PMS link integrity must be checked. Also try reducing the communication baud rate.

- Extension received by Lucent INTUITY Lodging has digits backwards

  This is not an entry which will appear in the PMS Communications Log. However, if the digits of the extension are printed backwards in the PMS log, make sure that the extension characters received from the PMS were entered in the reverse order. See "Message Data Ordering" in Chapter 3, "Message Format and Ordering".

Feature Message Set Summary

A

Feature Messages

Table A-1 summarizes the list of feature messages used for the PMS Lucent INTUITY™ Lodging interface.

Table A-1. Feature Message Set Summary

Operational Feature	Feature Code	Purpose
Checkin	50	PMS tells the Lucent INTUITY Lodging system to check in a guest
Modify	51	PMS tells the Lucent INTUITY Lodging system to modify guest information
Checkout	52	PMS tells the Lucent INTUITY Lodging system about guest mailbox checkout
Delete extension	53	PMS tells the Lucent INTUITY Lodging system to delete an extension
Display mailbox	54	PMS tells the Lucent INTUITY Lodging system to send mailbox information
Purge	55	PMS tells the Lucent INTUITY Lodging system to purge an old mailbox or all old mailboxes

Continued on next page

Table A-1. Feature Message Set Summary — *Continued*

Operational Feature	Feature Code	Purpose
Activate	56	PMS tells the Lucent INTUITY Lodging system to activate an old mailbox
Display old mailbox	57	PMS tells the Lucent INTUITY Lodging system to send old mailbox information
Transfer/merge	58	PMS tells the Lucent INTUITY Lodging system to transfer/merge a guest
Swap	59	PMS tells the Lucent INTUITY Lodging system to swap guests
Text/fax	5A	PMS tells the Lucent INTUITY Lodging system to notify guest about text/fax
Display suite	5B	PMS tells the Lucent INTUITY Lodging system to send suite information
Create/modify suite	5C	PMS tells the Lucent INTUITY Lodging system to modify/create a suite
Delete suite	5D	PMS tells the Lucent INTUITY Lodging system to delete suite
MWI on/off	5E	The Lucent INTUITY Lodging system tells PMS on room MWI status
Status inquiry	60	Data link maintenance/database synchronization
PBX link restart	61	PMS tells the Lucent INTUITY Lodging system to restart the link between the PBX and the Lucent INTUITY Lodging system
Display group list	62	PMS tells the Lucent INTUITY Lodging system to send group list information
Create/modify group list	63	PMS tells the Lucent INTUITY Lodging system to create or modify a group list
Delete group list	64	PMS tells the Lucent INTUITY Lodging system to delete group list information

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 * A (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 connec-

tions. The 2600 or 2700 series may also be used; these support diagnostic testing and the DATA-PHONE 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 outgoing 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 telephone 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 * R (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 * U.

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 interrupted 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 connects 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 * * H (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 identify 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.

Index

A

ACK, see positive acknowledgement
activate old mailboxes, 4-20
adapter, 25-pin, 1-6
add text or fax, 4-31
add/remove text/fax notifications, 4-31
administration
  available through the PMS, 1-2
  mailboxes, 1-3
attendants
  tasks, 1-2
  transfers to, 1-3, 2-10
AUDIX Voice Power Lodging, 1-5
automatic transfer to the attendant, 1-3, 2-10

B

BCC, see byte-check code
book
  resources, xi
byte-check code, 3-1, 4-1, 6-1, 7-7, 7-8

C

call handling
  Lodging, 2-10
  PMS down, 2-10
certification, 1-5
check-in messages, 4-1, 4-2, 5-4
check-out messages, 4-10, 5-6
code violation, 7-8
configuration, 2-1
create/modify suites, 4-35
creating
  group lists, 4-45

D

data ordering
  backward ordering, 3-3
  extensions, 3-3
  forward ordering, 3-4
data packets, format, 2-6
database key, 4-1
database synchronization
  checking, 4-40
  content, 5-1

link status, 2-8
starting up, 2-8
database synchronizations
automatic, 1-3
manual, 1-3
datalink escape, 2-1, 3-1
deactivating a mailbox, 4-10
DEFINITY integrations, 1-1, 2-2
deleting
extensions, 4-12
group lists, 4-47
suites, 4-37
demarcation, 1-4, 1-6
installation, 1-6
training, 1-8
device name, 2-4
displaying, 7-3
group lists, 4-43
mailboxes, 4-14
old mailboxes, 4-22
suites, 4-33
displaying guest information, 4-14
DLE, see datalink escape
downloading, 7-3

E

end-of-text, 3-1
ENQ, see enquiry, 7-8
enquiry sent, 7-8
errors, 7-7
incorrect data, 7-8
invalid operation, 6-2
maintenance state, 7-8
message text/syntax, 6-2
negative acknowledgement, 7-8
protocol, 6-1
protocol counter, 6-1
reporting, 6-1
ETX, see end-of-text
events, 7-8
exchanging guest mailboxes, 4-28
extensions
backwards digits, 7-8
incorrect, 4-12
suites, 4-33

F

fax messages, 4-31
FAX Messaging, 1-4
fax notifications
adding and removing, 4-31
forced messages
checkin, 5-4

checkout, 5-4
format
general, 3-2

G

glossary, GL-1
group extensions
changing, 4-35
displaying, 4-33
group lists
creating or modifying, 1-4, 4-45
deleting, 1-4, 4-47
displaying, 1-4, 4-43
invalid, 4-47
updates, 4-12
guest
check-in, 4-1
checkout, 4-10
information display, 4-14
mailbox passwords, 4-4
guest extensions
conversion, 4-1
GuestWorks servers
specifications, xi

H

hardware
demarcation, 1-6
hardware link, 2-2
heartbeat, 2-8
definition, 4-41
error, 7-7
status, 4-42
status message, 1-4

I

illegal characters, 7-7
incorrect data, 7-8
incorrect extensions, 4-12
installation
demarcation, 1-6
joint acceptance testing (JAT), 1-6
options, 1-7
invalid operation errors, 6-2

J

JAT, see joint acceptance testing, 1-6

L

languages
codes, 1-4
default, 4-4
field, 4-4
modifying, 1-4
optional, 1-4
leave word calling
link
messages, 2-6
links
acknowledgement timeout, 7-8
activate, 2-8
control, 2-5
garbage transmitted, 7-8
hardware, 2-2
idle timeout, 2-4, 7-8
parameter defaults, 2-4
parameters, 2-4
protocol, 2-1
restart, 4-42
status inquiries, 2-8
status inquiry management, 4-40
Lodging FAX Messaging, 1-4
Lodging releases
Lodging 1.0, 1-1, 1-5
Lodging 1.1, 1-1, 1-5
Lodging 2.0, 1-1, 1-5
LWC, see leave word calling

M

mailboxes
activating old, 4-20
administration, 1-3
checking out suites, 4-37
deactivation, 4-10
display, 4-14
displaying old, 4-22
merging, 4-26
modification, 4-8
purging, 4-18
suite
creating or modifying, 4-35
swapping, 4-28
transferring, 4-26
maintenance state, 7-8
message queue, 7-8
message waiting indicator
controlling, 4-39
message waiting indicators
controlling, 2-8
lamp on for new messages, 4-38
notification, 1-2

off message, 4-12
synchronization procedures, 5-6
updates, 1-3
waiting for acknowledgement, 7-7
messages
activate old mailboxes, 4-20
add text or fax, 4-31
backward ordering, 3-3
check-in, 4-2
check-out, 4-10
create suites, 4-35
creating group lists, 4-45
data ordering, 3-3
delete extensions, 4-12
delete suites, 4-37
display group list, 4-43
display mailbox, 4-14
display old mailboxes, 4-22
display suites, 4-33
forced check-in, 5-4
forced check-out, 5-6
format, 3-2
forward ordering, 3-4
group lists, 4-45, 4-47
languages, 1-4
link status inquiry, 2-8
merge mailboxes, 4-26
modify, 4-8
modify suites, 4-35
modifying group lists, 4-45
notification, 4-38
ordering, 4-36
purge old mailboxes, 4-18
remove text or fax messages, 4-31
status, 4-1
swap mailboxes, 4-28
text errors, 6-2
transfer mailboxes, 4-26
modify message, 4-8
MWI, see message waiting indicators

N

NAK, see negative acknowledgement
negative acknowledgement, 4-1, 6-1, 7-8
null modems, 1-6

O

old mailboxes, 4-18, 4-20

P

parameter administration
customer responsibility, 1-6
parameters
link, 2-4
system, 2-8
password
guest mailboxes, 4-4
PBX
interconnection, 2-1
link restart message, 4-42
PMS communications logs, 7-2, 7-3, 7-4
events, 7-8
stopping, 7-3
policy
demarcation, 1-4
port number, 2-4
positive acknowledgement, 4-1
printing, 7-4
process codes, 4-1
property management system
definition, 1-4
operation with Lodging, 1-5
property management systems
AUDIX Voice Power Lodging integration, 1-5
protocol, 7-7
protocol counter, 6-1
protocol errors, 6-1
protocol states, 2-6
purge old mailboxes, 4-18

R

releases
supported, 1-1, 1-5
remove text or fax, 4-31
request not processed, 7-7
resources
books, xi
responsibilities
customer, 1-4
restarting the link, 4-42

S

starting, 7-2
start-of-text, 3-1
suites, 4-33
swap mailboxes, 4-28

T

text messages, 4-31
text notifications
    adding and removing, 4-31
text/fax message notification, 4-31
training
    property management systems, 1-8
transfer/merge mailboxes, 4-26
transfers
    automatic, 1-3, 2-10
    mailboxes, 4-26
    when link is down, 2-10
transparent mode, 2-1
troubleshooting
    policy, 1-5

V

voice message notification, 4-12
voice message notifications, 4-38
vpms, 1-2

W

waiting for acknowledgement, 7-7