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AUDIX® Voice Power™ Lodging

Property Management System
Specifications

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Acknowledgment

This document was prepared by the GBCS Product Documentation Development group, AT&T Bell Laboratories, Denver, CO 80234-2703.

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About This Document

PURPOSE

This document describes the application level messages that are transmitted back and forth over the link between AUDIX® Voice Power™ Lodging and the Property Management System (PMS).

INTENDED AUDIENCE

This document is for the use of the PMS developer.

PREREQUISITE SKILLS AND KNOWLEDGE

This document assumes the reader is familiar with the transparent mode link level protocol of the AT&T PBX<-->PMS asynchronous interface. The terminology used here is identical to the protocol specifications in the *DEFINITY Communications System Generic 1 and System 75 Property Management System Interface Specifications, 555-200-925*. The PMS developer for the AUDIX Voice Power Lodging/PMS interface should follow this protocol for the data link level thoroughly, including the procedures for link error recovery and restoration.

This document also assumes that the reader is familiar with the operation of AUDIX Voice Power Lodging Release 1.0, 1.1, or 3.0 stand-alone and coresident lodging voice mail products. The Audix Voice Power Lodging product documentation explains in detail the functionality of AUDIX Voice Power Lodging in maintaining the guest mailboxes when the attendant performs functions such as checkin, checkout, and transfer.

HOW THIS DOCUMENT IS ORGANIZED

This document is divided into the following chapters:

- Chapter 1 — *Overview of AUDIX Voice Power Lodging/PMS Integration*, describes the purpose of the AUDIX Voice Power Lodging/PMS interface and highlights the main features of the integrated package.
- Chapter 2 — *Internal Configuration*, serves as an introduction to the transparent mode link level protocol and its hardware link.
- Chapter 3 — *Message Format*, provides information about the format and content of PMS/AUDIX Voice Power Lodging message packets.
- Chapter 4 — *Messages and Process Codes*, provides the messages and the associated process codes communicated between the PMS and AUDIX Voice Power Lodging systems.

- Chapter 5 — *Database Synchronization*, details the synchronization process between the PMS and the AUDIX Voice Power Lodging databases.
- Chapter 6 — *Error Reporting*, provides information concerning errors encountered with the synchronization of the PMS and AUDIX Voice Power Lodging databases.
- Appendix A — *Feature Message Set Summary*, provides a list of feature messages with their associated codes and what they indicate.
- Appendix B — *Message Data Ordering*, provides examples of backwards- and forwards-ordering message data.

CONVENTIONS USED IN THIS DOCUMENT

The following typographic conventions are used in this document:

- Terminal keys that you press are shown in rounded boxes. For example, an instruction to press the return, carriage return, or equivalent key is shown in this document as:

Press (RETURN).

- The word *enter* means to type a value and press (RETURN). For example, an instruction to type *y* and press (RETURN) is shown in this document as:

Enter *y* to continue.

- Two or three keys that you press at the same time (that is, you hold down the first key while pressing the second key and, if appropriate, the third key as well) are shown together in a rounded box and are separated by hyphens. For example, an instruction to press and hold ALT while typing the letter *d* is shown in this document as:

Press (ALT-d).

- Information that is displayed on your terminal screen — including screen displays, field names, prompts, and error messages — is shown in typewriter-style constant-width type. Information that you enter from your keyboard is shown in constant-width bold type. Here is an example:

At the Login ID? prompt, enter **snowfox**

- Variables that the system supplies or that you must supply are shown in italic type. For example, an error message that is displayed on the screen with one of your specific filenames might be shown generically in this document as:

Your file *filename* is formatted incorrectly.

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RELATED RESOURCES

Documentation for AUDIX Voice Power Lodging also includes:

- *AUDIX Voice Power Lodging R1.1 Installation, 585-310-125*
- *AUDIX Voice Power Lodging R1.1 Installation Checklist, 585-310-126*
- *AUDIX Voice Power Lodging Switch Interface to System 75 and DEFINITY Communications System Generic 1, 585-310-131*
AUDIX Voice Power Lodging R1.1 Administration, 585-310-525
- *AUDIX Voice Power Lodging R3.0 Administration, 585-310-541*
- *AUDIX Voice Power Lodging Guest Quick Reference Artwork, 585-310-707*
- *DEFINITY Communications System Generic 1 and System 75 Property Management System Interface Specifications, 555-200-925*
- *AUDIX Voice Power System R3.0 Switch Integration Toolkit, 585-310-208*

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1. Overview of AUDIX Voice Power Lodging/PMS Integration

This chapter presents an overview of attendant tasks in the integrated Property Management System (PMS)/AUDIX® Voice Power™ Lodging environment, functionality in the integrated environment, and feature enhancements and additions.

ADMINISTRATION IN THE INTEGRATED ENVIRONMENT

The purpose of the interface between AUDIX Voice Power Lodging and the Property Management System (PMS) interface is to perform guest mailbox administration using a common set of messages and commands between the PMS and AUDIX Voice Power Lodging.

The AUDIX Voice Power Lodging/PMS interface allows the hotel to maintain mailboxes for its guests on AUDIX Voice Power Lodging using the PMS screens. This eliminates the need for the hotel attendants to go from the PMS terminal to the AUDIX Voice Power Lodging console to do the same administrative tasks during checkin and checkout.

Because AUDIX Voice Power Lodging/PMS Integration Software (IS) software performs several internal procedures from the PMS to the AUDIX Voice Power Lodging database, attendants performing the following tasks enter the information only on the PMS terminal:

- 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 Lamp (MWL) notification is the only internal procedure initiated from AUDIX Voice Power Lodging to the PMS database.

FUNCTIONALITY IN THE INTEGRATED ENVIRONMENT

The integration of AUDIX Voice Power Lodging with a PMS changes the functionality of the system in other ways that the AUDIX Voice Power Lodgings system administrator should also note:

- Automatic database synchronization. Using the automatic database synchronization procedure, the PMS creates the complete guest database on AUDIX Voice Power Lodging when the PMS and AUDIX Voice Power Lodging 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 AUDIX Voice Power Lodging system manager or the attendants from the `COMMAND MENU` screen.
- Mailbox administration using AUDIX Voice Power Lodging screens. The AUDIX Voice Power Lodging system manager is still able to complete all guest mailbox administration using the AUDIX Voice Power Lodging screens if the PMS link is down. Mailbox administration using AUDIX Voice Power Lodging screens is also useful if the PMS and AUDIX Voice Power Lodging 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 lamp (MWL) update. When the PMS link is established, the MWL refresh mechanism brings the MWL up to date.
- Automatic transfer to the attendant. AUDIX Voice Power Lodging 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 MWL on and off manually, and use the AUDIX Voice Power Lodging screens to notify the guest of text or fax messages.

FEATURE ENHANCEMENTS AND ADDITIONS

The AUDIX Voice Power Lodging/PMS Integration Software (IS) Release 1.1 and Release 3.0 contain several feature enhancements and additions not present in AUDIX Voice Power Lodging/PMS Integration Software Release 1.0.

NOTE

Although these enhancements and additions are part of AUDIX Voice Power Lodging/PMS IS, the PMS software does not require that all the changes be implemented or developed. Develop only those features specifically requested by the customer. If the system that you are developing requires the use of the language packages, you must use PMS R1.1 or R3.0.

Feature Enhancements

The following is a list of the feature enhancements that have been made in the AUDIX Voice Power Lodging/PMS interface since Release 1.0. A reference of where to find these enhancements in this document is included.

- A language code and 7 reserved bytes section have been added in the message packet, as well as an additional process code for checkin. 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. See the section titled *The Check-in Message* in Chapter 4, *Messages and Process Codes* for further information.
- A language code and 7 reserved bytes section have been added in the returned message packets in Display Mailbox and Display Old Mailbox. See the sections titled *The Display Mailbox Message* and *The Display Old Mailbox Message* in Chapter 4, *Messages and Process Codes* for further information.
- An attendant can now modify the language code for a mailbox. See the section titled *The Modify Message* in Chapter 4, *Overview of Messages and Process Codes* for further information.
- The Transfer Mailbox message packet now includes merge capabilities. As a result, three process codes (C, D, and F) have been added. Merge allows an attendant to combine a guest's current voice mail with a room that the guest is transferring to. See the section titled *The Transfer/Merge Mailbox Message* in Chapter 4, *Messages and Process Codes* for further information.
- Additional information about which software version of AUDIX Voice Power Lodging is being used is provided in the status inquiry "heartbeat" message that the PMS sends to the AUDIX Voice Power Lodging system periodically. See the section titled *Status Inquiry* in Chapter 4, *Messages and Process Codes* for further information.
- If a guest does not choose a password for his or her mailbox during checkin, the guest name is used for comparison during database synchronization. See the section titled *Forced Check-In Messages* in Chapter 5, *Database Synchronization* for further information.

Feature Additions

Group List Administration provides the voice mail system administrator with the capabilities to address voice mail to a group of guests. The following are new Group List Administration features that have been added to the AUDIX Voice Power Lodging/PMS interface:

- 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.

Lab-to-Lab Testing

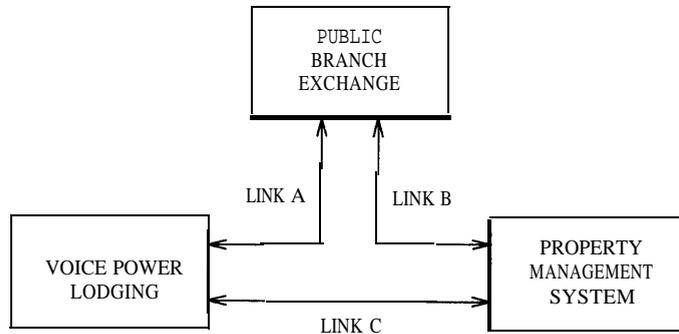
AT&T Bell Laboratories provides lab-to-lab testing opportunities for PMS vendors developing the AUDIX Voice Power Lodging interface. Lab-to-lab testing uses a dial-up modem arrangement and limited to one hour per week per PMS vendor.

2. Internal Configuration

The following chapter is an introduction to the transparent mode link level protocol and its hardware link.

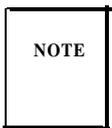
AUDIX VOICE POWER LODGING/PMS INTEGRATION SETUP

The Private Branch Exchange (PBX), the PMS, and AUDIX Voice Power Lodging are all nodes. Figure 2-1 shows how these nodes are interconnected.



LINK A SWITCH COMMUNICATION LINK (RS232)
LINK B: PBX ↔ PMS LINK (RS232)
LINK C: AUDIX Voice Power Lodging ↔ PMS LINK (RS232)

Figure 2-1. AUDIX Voice Power Lodging/PMS Integration Setup



On some properties, the PBX and the PMS do not communicate or are not linked. The design of the PMS determines whether or not link B is present.

TRANSPARENT VERSUS NORMAL MODE

The transparent mode protocol is an upgrade from the normal mode protocol used between the AT&T 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.

HARDWARE LINK

The hardware link between the AUDIX Voice Power Lodging system and the PMS is an Electronic Industries Association (EIA) RS232 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. This link is the customer's responsibility. Failure to meet EIA communication standards will cause errors.

Link Level Parameters

There is a PMS parameters UNIX® flat file on AUDIX Voice Power Lodging that you can modify using a "vi" or "cd" editor. This file (/usr/lgdb/.pmsparam) allows the administration of all the PMS link level parameters listed below. The suggested range follows the parameter.

Parameter	Range	Default
tty device name	Several possible entries	tty01
Maximum protocol errors	0 to 50	50
Link acknowledgment timeout (LAT)	5 to 20 sec	20
Link idle timeout (LIT)*	5 to 20 sec	20
Link maximum retransmissions (MR)	1 to 5	5
Link maximum retransmission requests (MRR)	1 to 5	5
Baud rate	1200 to 9600	9600

* The link idle timeout (or equivalent) on the PMS side should be between 5 and 10 seconds less than the link idle timeout on the AUDIX Voice Power Lodging side.

AUDIX Voice Power Lodging support personnel will work with the PMS vendor if these default values have to be changed. When these values are changed, select AUDIX Voice Power Lodging/PMS Link Restart from the LODGING MENU COMMAND window. The AUDIX Voice Power Lodging link level processes will use the new values.

When prompted during PMS installation for the PMS connection, the alternative to modifying this file is to use a free tty device name or port. Do not automatically choose the default value of tty01. Instead, refer to the following section and choose an appropriate value for the device name.

If you have an Intelligent Ports Card (IPC), use a free IPC serial port. If not use tty01 for the PMS connection.

NOTE

If you use the second serial port (tty01) for the PMS, you cannot use the Digital Communications Protocol (DCP) card for co-residency with the AUDIX Voice Power Release 2.1.1 package. Additionally, some systems use a modem through the tty01 serial port connection and/or connect switch integration devices (SIDs) to the IPC serial ports. Before assigning a serial port to the PMS, verify the overall system configuration.

Device Name

The default value for the device name in the `/usr/lgdb/.pmsparam` file is `tty01`. During the PMS software installation, you are prompted for the device name you will use for the PMS connection or you can access the `/usr/lgdb/.pmsparam` file to change the device name (`/dev/`) entry or the other parameters.

Systems using the 6386 or the 6386E Work Group System (WGS) have only one serial port on the mother board (device name `tty00`). Systems using the 6386/SX, 6386/25, 6386/33, or Multi-Application Platform (MAP) have two serial ports (`tty00` and `tty01`). With the installation of the IPC, the following additional device names are added:

- `ttys01, ttyh01`
- `ttys02, ttyh02`
- `ttys03, ttyh03`
- `ttys04, ttyh04`
- `ttys05, ttyh05`
- `ttys06, ttyh06`
- `ttys07, ttyh07`
- `ttys08, ttyh08`

Each of the above numbers corresponds to an IPC port number labeled on the outside of the card. The "s" represents software flow control and the "h" represents hardware flow control. We recommend that you use the "ttys" type device name to be specific to the software.

Be sure that the device name you specify in the `/usr/lgdb/.pmsparam` file corresponds to the cable's IPC serial port number. For example, if you specify `ttys04` in the `/usr/lgdb/.pmsparam` file, connect the cable to port number 4 on the IPC.

Modifying the PMS Parameters File

NOTE

Consult with PMS support before changing the values in this file.

Use the following procedure to access the PMS parameters file and change the device name or the default values for the PMS parameters. The defaults are given earlier in this chapter in the section titled *Link Level Parameters*.

1. From the `CONSOLE LOGIN` prompt, type `root`.
2. Type the root password and press `(ENTER)`.

The system responds with the UNIX system prompt.

3. Type `vi /usr/lgdb/.pmsparam` and press `(ENTER)`. If you use an “ed” editor, type `ed /usr/lgdb/.pmsparam` and press `(ENTER)`.

The following file appears on the screen:

```
/dev/tty01      /* /dev/tty01 device used for link */
50              /* 50 maximum link error allowed */
20              /* 20 Link Acknowledgment timeout */
20              /* 20 Link Idle timeout */
5               /* 5 MR Maximum retransmission */
5               /* 5 MRR Maximum retransmission requests */
B9600           /* B9600 Baudrate */
```

4. If the left-most field on any line is not the value you want to use, change the value. Make sure that the new value falls into the range specified in the section titled *Link Level Parameters* that appears earlier in this chapter.
5. Save and exit the file.

If you are unsure how to use the editor, call your field service representative.

Software Link Control

In software link control, the PMS system is the master and AUDIX Voice Power Lodging is the slave. In order to keep the link between the PMS and AUDIX Voice Power Lodging alive, the PMS system initiates communication. The procedure in use is not an ENQ-ACK protocol: AUDIX Voice Power Lodging does not respond to ENQs.

The general steps for communication between the PMS/AUDIX Voice Power Lodging system are:

1. The sender (PMS or AUDIX Voice Power Lodging) 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, and another ACK to acknowledge the returned packet. If the format of the original message sent to AUDIX Voice Power Lodging is incorrect, AUDIX Voice Power Lodging 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 a (60,3) packet to start database synchronization or a (60,4) packet to end database synchronization. When this occurs, the AUDIX Voice Power Lodging sends only an ACK back. No packet with a different process code or the accompanying ACK is sent.

During the course of exchanging packets, AUDIX Voice Power Lodging will remove the link between itself and the PMS if AUDIX Voice Power Lodging does not receive an expected ACK within a certain time. If the expected ACK is not received, AUDIX Voice Power Lodging waits and does not send any response to the PMS to alert the PMS. If the PMS continues to fail to send a response to AUDIX Voice Power Lodging, AUDIX Voice Power Lodging removes the link. In order for the link to be restarted, the PMS must bring it up by using the heartbeat procedure.

When the AUDIX Voice Power Lodging/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,f) packet.

NOTE

The HEARTBEAT (60,f) packet should have the PROTOCOL field as 0x0 for PMS R1.1 or PMS R3.0 or 0xf for PMS R1.0.

2. AUDIX Voice Power Lodging receives the packet from the PMS. This heartbeat puts the link into the LINK READY state for AUDIX Voice Power Lodging.
3. If the packet was in the correct format AUDIX Voice Power Lodging 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. PMS responds to AUDIX Voice Power Lodging's (60,1) or (60,2) packet with a DATABASE START (60,3) packet.
5. AUDIX Voice Power Lodging receives the (60,3) packet from the PMS.
6. AUDIX Voice Power Lodging returns an ACK to the PMS. The state of the link should now be NORMAL.
7. PMS sends the CURRENT state of all rooms in the hotel to AUDIX Voice Power Lodging. This information consists of the CECKINS and/or CHECKOUTS.
8. PMS sends a DATABASE END (60,4) packet.
9. AUDIX Voice Power Lodging sends message waiting packets for all the rooms in the hotel to the PMS system.

AUDIX VOICE POWER LODGING SYSTEM PARAMETERS SCREEN

There are two additional application level parameters in the AUDIX Voice Power Lodging SYSTEM PARAMETERS screen:

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

Message Lamp Controlled by

This parameter allows the Message Waiting Lamp (MWL) to be controlled by either AUDIX Voice Power Lodging or PMS. The default for this entry is PMS.

NOTE

The System 75/DEFINITY G1 Communications System features Leave Word Calling (LWC) which also controls the MWL.

Choosing PMS to Control the MWL

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

Choosing AUDIX Voice Power Lodging to Control the MWL

When AUDIX Voice Power Lodging controls the MWL for voice messages, it is actually controlling the AUDIX component of the MWL. In cases where the PMS is not connected to the PBX, AUDIX Voice Power Lodging can control the MWL for the voice messages. These components are independent. PMS cannot control the AUDIX component nor can AUDIX Voice Power Lodging control the PMS component of the MWL.

NOTE

Although AUDIX Voice Power Lodging does not control the MWL for text or fax messages, it can be administered to give a voice message prompt, either through the AUDIX Voice Power Lodging or PMS screens, for text or fax message notification when a guest calls or logs into his or her mailbox.

After taking down a text message or receiving a fax message for a particular guest the attendant should manually turn the MWL on for the guest mailbox. The attendant should then either use the PMS screen or the AUDIX Voice Power Lodging administration screen to inform AUDIX Voice Power Lodging about turning on the text and fax message notification.

When PMS Is Down, Calls for Guests Handled by

This second parameter addition allows AUDIX Voice Power Lodging to automatically transfer the guest caller to the attendant when the PMS link is down. The default for this entry is Attendant.

Choosing the Attendant to Handle Calls

If AUDIX Voice Power Lodging transfers the guest caller to the attendant the attendant takes down text messages and turns on the MWL manually. The guest is still allowed to retrieve messages.

This option facilitates better database synchronization when the PMS link is down and reduces discrepancies between the AUDIX Voice Power Lodging and the PMS databases.

This option is discussed further in Chapter 5, *Database Synchronization*.

Choosing AUDIX Voice Power Lodging to Handle Calls

AUDIX Voice Power Lodging will continue to handle calls when the PMS link is down if this option is chosen.



This option can cause discrepancies between the AUDIX Voice Power Lodging and the PMS databases.

3. Message Format

Message packets of variable-length bytes are transmitted as the start-of-text (STX - 0X02) character followed by 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).

MESSAGE FORMAT STRUCTURE

Figure 3-1 shows the general format of a message packet as defined in the *DEFINITY Communications System Generic 1 and System 75 Property Management System Interface Specifications* document 555-200-925:

STX	
FEATURE CODE	
MSGCT	PROC
MESSAGE DATA	
ETX	
BCC	

Figure 3-1. General Format of a Message Packet

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, <i>Message and Process Codes</i> , 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. The (FEATURE CODE, PROC) notation is used in this document 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 to be specified. To be consistent with the PMS/PBX interface document (*DEFINITY Communications System Generic 1 and System 75 Property Management System Interface Specifications, 555-200-925*), the maximum number of extension digits is limited to five. Each of these digits occupies a nibble in the message text.

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.

See Appendix B, *Message Data Ordering*, for further information about message data ordering.

4. Messages and Process Codes

This section explains the messages and the process codes that are communicated over the AUDIX Voice Power Lodging/PMS interface. The *message is* that which is sent to AUDIX Voice Power Lodging from the PMS or from the PMS to AUDIX Voice Power Lodging. The MWL notification is the only status message initiated from AUDIX Voice Power Lodging 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.

AUDIX Voice Power Lodging uses the guest extension as its primary database key. If you plan to convert guest room numbers to guest extensions when communicating with AUDIX Voice Power Lodging, 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 AUDIX Voice Power Lodging and data coming from AUDIX Voice Power Lodging.

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 AUDIX Voice Power Lodging 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	
PASSWD2	PASSWD1
PASSWD4	PASSWD3
LANGUAGE CODE	
7 RESERVED BYTES	
ETX	
BCC	

Figure 4-1. Format for the Checkin Message

TABLE 4-1. Process Codes for the Checkin Message

Process Code	Message Direction	Indications
1	PMS-->AUDIX Voice Power Lodging	Checkin guest
2	AUDIX Voice Power Lodging-->PMS	Command successful
3	AUDIX Voice Power Lodging-->PMS	System failed to execute command successfully
4	AUDIX Voice Power Lodging-->PMS	Voice system is not running
5	AUDIX Voice Power Lodging-->PMS	Guest extension/room already checked in
6	AUDIX Voice Power Lodging-->PMS	This action cannot be done on the administrator's extension
7	AUDIX Voice Power Lodging-->PMS	This action cannot be done on a suite member extension
8	AUDIX Voice Power Lodging-->PMS	This action cannot be done on the attendant's extension
9	AUDIX Voice Power Lodging-->PMS	AUDIX Voice Power Lodging agrees with PMS during database synchronization regarding check-in status and guest password; mailbox has no voice mail messages
A	AUDIX Voice Power Lodging-->PMS	AUDIX Voice Power Lodging agrees with PMS during database synchronization regarding check-in status and guest password; mailbox has voice mail messages

(Continued on next page)

TABLE 4-1. Process Codes for the Check-in Message (Continued)

Process Code	Message Direction	Indications
B	AUDIX Voice Power Lodging-->PMS	AUDIX Voice Power Lodging disagrees with PMS during database synchronization regarding check-in status-that is, PMS claims mailbox is checked in while AUDIX Voice Power Lodging claims otherwise; AUDIX Voice Power Lodging checks in the mailbox successfully
C	AUDIX Voice Power Lodging-->PMS	AUDIX Voice Power Lodging disagrees with PMS during database synchronization regarding guest password; AUDIX Voice Power Lodging checks out its old guest and checks in the new guest; old guest has no voice mail messages
D	AUDIX Voice Power Lodging-->PMS	AUDIX Voice Power Lodging disagrees with PMS during database synchronization regarding guest password; AUDIX Voice Power Lodging checks out its old guest and checks in the new guest; old guest has voice mail messages
E	AUDIX Voice Power Lodging-->PMS	Nationality package is not installed; American English is used as default

Note the additional byte field for guest language. This field ranges from 0-20-0xff, which maps from 0-223 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. Seven extra bytes are reserved 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.

The nibbles of these 7 bytes are set to NULL (0xF) as they are not used at the present time. The (50,E) return message indicates to the PMS that the language package selected is not installed and American English is to be used as the default language. When interfacing with PMS systems running with older versions, the absence of the language field causes AUDIX Voice Power Lodging/PMS IS to use the default American English as the preferred language.

The guest mailbox password must be exactly four digits. If the fields PASSWD1 through PASSWD are NULL, AUDIX Voice Power Lodging 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.

- 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.

- NAME CHAR 1-15 Represents 15 bytes of guest name ASCII information.

- PASSWD1-PASSWD4 Represents that the guest mailbox password should be exactly four digits, If the fields PASSWD1-4 are NULL, AUDIX Voice Power Lodging will not prompt for the guest password.

- LANGUAGE CODE Ranges from 32–255, which maps to 0-223 language codes. The lower limit for this field is 32 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. 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

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

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

An example of the format message of a checkin 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 American English as the preferred guest language.

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

Figure 4-2. Message Format of a Sample Guest Checkin

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 AUDIX Voice Power Lodging 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-->AUDIX Voice Power Lodging	Modify
2	AUDIX Voice Power Lodging-->PMS	Command successful
3	AUDIX Voice Power Lodging-->PMS	System failed to execute command successfully
4	AUDIX Voice Power Lodging-->PMS	Voice system is not running
5	AUDIX Voice Power Lodging-->PMS	Guest extension/room not checked in
6	AUDIX Voice Power Lodging-->PMS	This action cannot be done on the administrator's extension
7	AUDIX Voice Power Lodging-->PMS	This action cannot be done on a suite member extension
8	AUDIX Voice Power Lodging-->PMS	This action cannot be done on the attendant's extension
E	AUDIX Voice Power Lodging-->PMS	Language package not installed; American English is used as the default

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 voice 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-->AUDIX Voice Power Lodging	Checkout guest
2	AUDIX Voice Power Lodging-->PMS	Mailbox has no voice mail messages; AUDIX Voice Power Lodging checks out mailbox successfully
3	AUDIX Voice Power Lodging-->PMS	System failure to execute command successfully
4	AUDIX Voice Power Lodging-->PMS	Voice system is not running
5	AUDIX Voice Power Lodging-->PMS	Guest extension/room not checked in
6	AUDIX Voice Power Lodging-->PMS	This action cannot be done on the administrator's extension
7	AUDIX Voice Power Lodging-->PMS	This action cannot be done on a suite member extension
8	AUDIX Voice Power Lodging-->PMS	This action cannot be done on the attendant's extension
9	AUDIX Voice Power Lodging-->PMS	Mailbox has voice mail messages; AUDIX Voice Power Lodging checks out mailbox successfully
A	AUDIX Voice Power Lodging-->PMS	AUDIX Voice Power Lodging agrees with PMS during database synchronization regarding checkout status
B	AUDIX Voice Power Lodging-->PMS	AUDIX Voice Power Lodging disagrees with PMS during database synchronization regarding check-out status-that is, PMS claims mailbox is checked out while AUDIX Voice Power Lodging claims otherwise; mailbox has no voice mail messages; AUDIX Voice Power Lodging checks out the mailbox successfully

(Continued on next page)

TABLE 4-3. Process Codes for the Check-Out Message (*Continued*)

Process Code	Message Direction	Indications
C	AUDIX Voice Power Lodging-->PMS	AUDIX Voice Power Lodging disagrees with PMS during database synchronization regarding checkout status-that is, PMS claims mailbox is checked out while AUDIX Voice Power Lodging claims otherwise; mailbox has voice mail messages; AUDIX Voice Power Lodging checks out the mailbox successfully
E	AUDIX Voice Power 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, *Overview of Database Synchronization*.

A response like (52,9) or (52,C) indicates to the PMS that the MWL should be turned off. The PMS can send the MWL-off message to the switch at this time or wait for the Voice Message Notification command (5E,1) from AUDIX Voice Power Lodging 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 AUDIX Voice Power Lodging 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.

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-->AUDIX Voice Power Lodging	Delete extension from database
2	AUDIX Voice Power Lodging-->PMS	Command successful
3	AUDIX Voice Power Lodging-->PMS	System failure to execute command successfully
	AUDIX Voice Power Lodging-->PMS	Voice system is not running
5	AUDIX Voice Power Lodging-->PMS	Guest extension/room checked in
6	AUDIX Voice Power Lodging-->PMS	This action cannot be done on the administrator's extension
7	AUDIX Voice Power Lodging-->PMS	This action cannot be done on a suite member extension
8	AUDIX Voice Power Lodging-->PMS	This action cannot be done on the attendant's extension
9	AUDIX Voice Power 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-->AUDIX Voice Power Lodging	Display mailbox
2	AUDIX Voice Power Lodging-->PMS	Command successful
3	AUDIX Voice Power Lodging-->PMS	System failure to execute command successfully
4	AUDIX Voice Power Lodging-->PMS	Voice system is not running
5	AUDIX Voice Power Lodging-->PMS	Guest extension/room not checked in
6	AUDIX Voice Power Lodging-->PMS	This action cannot be done on the administrator's extension

If the display command is successful, AUDIX Voice Power Lodging 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 CHART 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 32–255, which will map to 0-223 language codes. The lower limit for this field is 32 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 section titled <i>The Check-In Message</i> earlier in this chapter 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 voice messages in the guest mailbox.

TEXT and FAX	<p>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.</p> <ul style="list-style-type: none">— A value of 0x02 in the nibble indicates that there are no messages of that type.— A value of 0x03 in the nibble indicates that there exists messages of that type for this guest.
MBXUSG	<p>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 AUDIX Voice Power Lodging allows a complete maximum message length recording when a mailbox is almost full.</p>
SUITE	<p>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).</p>

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 AUDIX Voice Power Lodging 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-->AUDIX Voice Power Lodging	Purge old mailbox
2	AUDIX Voice Power Lodging-->PMS	Command successful
3	AUDIX Voice Power Lodging-->PMS	System failed to execute command successfully
4	AUDIX Voice Power Lodging-->PMS	Voice system is not running
5	AUDIX Voice Power 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 AUDIX Voice Power Lodging has reached its maximum voice 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 voice mail and their calls are transferred by AUDIX Voice Power Lodging to the front desk for text messages.

The AUDIX Voice Power Lodging system administrator should generate usage reports on AUDIX Voice Power Lodging 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 AUDIX Voice PowerLodging 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-->AUDIX Voice Power Lodging	Activate Old Mailbox
2	AUDIX Voice Power Lodging-->PMS	Command successful
3	AUDIX Voice Power Lodging-->PMS	System failure to execute command successfully
4	AUDIX Voice Power Lodging-->PMS	Voice system is not running
	AUDIX Voice Power Lodging-->PMS	Room has no old mailbox
6	AUDIX Voice Power Lodging-->PMS	Room activating to is the administrator's extension
7	AUDIX Voice Power Lodging-->PMS	Room activating to is a suite member extension
8	AUDIX Voice Power Lodging-->PMS	Room activating to is an attendant's extension
9	AUDIX Voice Power 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 AUDIX Voice Power Lodging 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-->AUDIX Voice Power Lodging	Display mailbox
2	AUDIX Voice Power Lodging-->PMS	Command successful
3	AUDIX Voice Power Lodging-->PMS	System failure to execute command successfully
4	AUDIX Voice Power Lodging-->PMS	Voice system is not running
5	AUDIX Voice Power Lodging-->PMS	Guest extension/room has no old mailbox

If the display command is successful, AUDIX Voice Power Lodging 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 1through	
ROOM CHAR6	
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 32–255, which maps to 0-223 language codes. The lower limit for this field is 32 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.
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 01-3 1)
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 voice messages in the old mailbox.
MBXUSG1-MBXUSG3	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 AUDIX Voice Power Lodging 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 AUDIX Voice Power Lodging 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-->AUDIX Voice Power Lodging	Transfer/merge mailbox
2	AUDIX Voice Power Lodging-->PMS	Command successful
3	AUDIX Voice Power Lodging-->PMS	System failure to execute command successfully
4	AUDIX Voice Power Lodging-->PMS	Voice system is not running
5	AUDIX Voice Power Lodging-->PMS	Room moving into is checked in
6	AUDIX Voice Power Lodging-->PMS	Room moving into is the administrator's extension
7	AUDIX Voice Power Lodging-->PMS	Room moving into is a suite member extension
8	AUDIX Voice Power Lodging-->PMS	Room moving into is an attendant's extension
9	AUDIX Voice Power Lodging-->PMS	Room moving out of is the administrator's extension
A	AUDIX Voice Power Lodging-->PMS	Room moving out of is a suite member extension
B	AUDIX Voice Power Lodging-->PMS	Room moving out of is an attendant's extension
C	PMS-->AUDIX Voice Power Lodging	Merge voice mail with room moving into if it is already checked in; otherwise perform the regular transfer
D	AUDIX Voice Power Lodging-->PMS	Room moving out of is not checked in
E	AUDIX Voice Power Lodging-->PMS	Guest is retrieving messages from moving into room
F	AUDIX Voice Power 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

AUDIX Voice Power Lodging 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.

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 AUDIX Voice Power Lodging 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-->AUDIX Voice Power Lodging	Swap mailbox
2	AUDIX Voice Power Lodging-->PMS	Command successful
3	AUDIX Voice Power Lodging-->PMS	System failure to execute command successfully
4	AUDIX Voice Power Lodging-->PMS	Voice system is not running
5	AUDIX Voice Power Lodging-->PMS	Second extension/room is not checked in
6	AUDIX Voice Power Lodging-->PMS	Second extension/room is the administrator's extension
7	AUDIX Voice Power Lodging-->PMS	Second extension/room is a suite member extension
8	AUDIX Voice Power Lodging-->PMS	Second extension/room is an attendant's extension
9	AUDIX Voice Power Lodging-->PMS	First extension/room is the administrator's extension
A	AUDIX Voice Power Lodging-->PMS	First extension/room is a suite member extension
B	AUDIX Voice Power Lodging-->PMS	First extension/room is an attendant's extension
C	AUDIX Voice Power Lodging-->PMS	First extension/room is not checked in
E	AUDIX Voice Power Lodging-->PMS	Guest is retrieving messages from first extension room
F	AUDIX Voice Power Lodging-->PMS	Guest is retrieving messages from second extension room

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 AUDIX Voice Power Lodging when the attendant wants to add or remove text or fax messages for the guest.

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-->AUDIX Voice Power Lodging	Add/remove text/fax message notification
2	AUDIX Voice Power Lodging-->PMS	Command successful
3	AUDIX Voice Power Lodging-->PMS	System failure to execute command successfully
4	AUDIX Voice Power Lodging-->PMS	Voice system is not running
5	AUDIX Voice Power 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 0x02 means add and a value of 0x03 means remove.
TXT/FAX	Represents the text or fax notification. A value of 0x02 means text, a value of 0x03 means fax, and a value of 0x04 means both.

NOTE

The value 0x04 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 AUDIX Voice Power Lodging 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-->AUDIX Voice Power Lodging	Display suite
2	AUDIX Voice Power Lodging-->PMS	Command successful
3	AUDIX Voice Power Lodging-->PMS	System failure to execute command successfully
4	AUDIX Voice Power Lodging-->PMS	Voice system is not running
5	AUDIX Voice Power Lodging-->PMS	There is no suite for this extension

If the display command is successful, the AUDIX Voice Power Lodging 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 AUDIX Voice Power Lodging 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-->AUDIX Voice Power Lodging	Create/modify suite
2	AUDIX Voice Power Lodging-->PMS	Command successful
3	AUDIX Voice Power Lodging-->PMS	System failed to execute command successfully
4	AUDIX Voice Power Lodging-->PMS	Voice system is not running
5	AUDIX Voice Power Lodging-->PMS	Extension pointed by BAD_EXTN_INDEX is checked in -
6	AUDIX Voice Power Lodging-->PMS	Extension pointed by BAD_EXTN_INDEX is administrator's extension
7	AUDIX Voice Power Lodging-->PMS	Extension pointed by BAD_EXTN_INDEX is part of another suite
8	AUDIX Voice Power 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 AUDIX Voice Power Lodging 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 AUDIX Voice Power Lodging 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 Delte Suite Message

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

Process Code	Message Direction	Indications
1	PMS-->AUDIX Voice Power Lodging	Delete suite
2	AUDIX Voice Power Lodging-->PMS	Command successful
3	AUDIX Voice Power Lodging-->PMS	System failure to execute command successfully
4	AUDIX Voice Power Lodging-->PMS	Voice system is not running
5	AUDIX Voice Power Lodging-->PMS	There is no suite for this extension
6	AUDIX Voice Power 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 MWL on is sent on the link to the PMS.

Turning off the MWL 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 MWL 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 MWL 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 0x02 for no voice mail messages in the mailbox and 0x03 for change from zero voice 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	AUDIX Voice Power Lodging-->PMS	Voice message notification
2	PMS-->AUDIX Voice Power Lodging	Command successful; MWL turned on or off depending on VOICE flag (see below)
3	PMS-->AUDIX Voice Power Lodging	System failure to execute command successfully
4	PMS-->AUDIX Voice Power Lodging	Extension is not checked in cannot turn MWL on
5	PMS-->AUDIX Voice Power Lodging	Extension is a suite member

Depending on the AUDIX Voice Power Lodging command, the PMS should turn on or off the MWL for the guest extension/mailbox by sending a command to the switch. If the PMS is not controlling the MWL, these messages serve as status messages.

The PMS will return process code (5E,2) if the MWL has been turned on when the VOICE flag is 0x03 for checked-in rooms or if the MWL has been turned off when the VOICE flag is 0x02 (no messages) for any room checked in or checked out.

NOTE

The PMS should take necessary actions to update its database regarding the MWL status for the guest mailbox and control the MWL 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 AUDIX Voice Power Lodging. For additional information, see Chapter 2, *Internal Configuration, Software Link Control*.

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

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 AUDIX Voice Power Lodging. Currently, for AUDIX Voice Power Lodging/PMS IS R1.0, this nibble is set to NULL (0xF) for the (60,F) heartbeat message. The PROTOCOL field is 0x0 for AUDIX Voice Power Lodging/PMS IS. Based on this value, AUDIX Voice Power Lodging supports both the old PMS interface and the new one. 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 AUDIX Voice Power Lodging requests a restart of the link between the switch and AUDIX Voice Power Lodging.

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-->AUDIX Voice Power Lodging	PBX link restart
2	AUDIX Voice Power Lodging-->PMS	Command successful
3	AUDIX Voice Power 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-->AUDIX Voice Power Lodging	Display group list
2	AUDIX Voice Power Lodging-->PMS	Command successful
3	AUDIX Voice Power Lodging-->PMS	System failure to execute command successfully
4	AUDIX Voice Power Lodging-->PMS	Voice system is not ruining
5	AUDIX Voice Power 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 Appendix B, *Message Ordering Data*, 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, AUDIX Voice Power Lodging 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 display group list. This byte is set to NULL (0xff). The NO. OF ENTRIES field tells 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-->AUDIX Voice Power Lodging	Create/modify group list
2	AUDIX Voice Power LodAinR-->PMS	Command successful
3	AUDIX Voice Power Lodging-->PMS	System failure to execute command successfully
4	AUDIX Voice Power Lodging-->PMS	Voice system is not running
5	AUDIX Voice Power 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 Appendix B, *Message Data 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 00x0 to 0xF9 to refer to one of the 250 group list member extensions. The NO. OF ENTRIES field tells AUDIX Voice Power Lodging 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	LISTID1
LISTID2	LISTID3
LISTID4	LISTID5
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-->AUDIX Voice Power Lodging	Delete group list
2	AUDIX Voice Power Lodging-->PMS	Command successful
3	AUDIX Voice Power Lodging-->PMS	System failure to execute command successfully
4	AUDIX Voice Power Lodging-->PMS	Voice system is not running
5	AUDIX Voice Power 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.

5. Database Synchronization

The AUDIX Voice Power Lodging and PMS databases include check-in, check-out, and MWL information. The main objective of the database synchronization procedure is to synchronize the PMS and AUDIX Voice Power Lodging databases quickly with little human intervention.

INTERFACE BASIC FEATURES

The following features are provided by AUDIX Voice Power Lodging for database synchronization:

- Using the database synchronization procedure, the PMS has the capability to create or populate the complete guest database on AUDIX Voice Power Lodging when it comes up the very first time. This saves the attendants a significant amount of data entry work on AUDIX Voice Power Lodging.
- If for some reason the databases do not synchronize using the database synchronization procedure, AUDIX Voice Power Lodging still allows the AUDIX Voice Power Lodging system administrator to do the guest mailbox administration and use the AUDIX Voice Power Lodging screens to resolve discrepancies manually.

NOTE

When administering guest mailboxes, it is the responsibility of the AUDIX Voice Power Lodging administrator and the attendants to exercise caution so as not to create database discrepancies.

- The attendants are allowed to turn the text or fax message notification on or off for a particular guest during PMS down times.
- A database synchronization command is provided in the command-menu on the AUDIX Voice Power Lodging system 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 PMS 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 AUDIX Voice Power Lodging screens at all.

- Because the database synchronization takes care of synchronizing the MWL status information on both systems, the AUDIX Voice Power Lodging system throws away “stale” MWL status messages that accumulate during PMS downtime.
- AUDIX Voice Power Lodging 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 take down text messages and turn the MWL 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 AUDIX Voice Power Lodging 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 AUDIX Voice Power Lodging completely when the PMS system goes down
- Have PMS send a display/lookup command to each AUDIX Voice Power Lodging extension
- Have PMS send each record to AUDIX Voice Power Lodging 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.

Simply put 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 AUDIX Voice Power Lodging. 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 AUDIX Voice Power Lodging during PMS downtime or change the call coverage path for the guests to go to the live attendants instead of AUDIX Voice Power Lodging. In either case, the caller cannot leave voice mail messages for the guest. If AUDIX Voice Power Lodging is shutdown, the guest cannot retrieve voice mail messages during link 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 as it does not have any synchronization procedure.

Also, the PMS cannot create the guest mailbox database on AUDIX Voice Power Lodging the first time it comes up, due to the lack of synchronization messages. This data entry work has to be done manually by the attendants the first time using the PMS screens or by the AUDIX Voice Power Lodging administrator using the AUDIX Voice Power Lodging screens.

Complete Database Update

Another method of synchronizing the databases is to have the PMS send a display/look-up command to AUDIX Voice Power Lodging on every extension. This is very time consuming.

Depending on the AUDIX Voice Power Lodging 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 went down or the AUDIX Voice Power Lodging went down. All these commands should be sent within the (60,3) and (60,4) envelope.

If AUDIX Voice Power Lodging 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 AUDIX Voice Power Lodging 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 AUDIX Voice Power Lodging administrator can use the AUDIX Voice Power Lodging screens to administer guest mailboxes. In this case, the PMS will get a (60,2) from the AUDIX Voice Power Lodging system after it comes up telling the PMS to start the database synchronization and that the AUDIX Voice Power Lodging 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<-->AT&T PBX database synchronization procedure, the PMS always uses the most current database. Using this approach for database synchronization, the PMS dictates to AUDIX Voice Power Lodging what the current database should be doing. The PMS will not update its database using the AUDIX Voice Power Lodging database by doing look-ups even if it is current.

When the PMS goes down and comes up, all changes like checkin, checkout and transfer should be entered by the attendants on the PMS after it comes up. The PMS will start using the AUDIX Voice Power Lodging 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 AUDIX Voice Power Lodging for AUDIX Voice Power Lodging 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). AUDIX Voice Power Lodging 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 is 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 AUDIX Voice Power Lodging. However, these rules need not be exercised by AUDIX Voice Power Lodging 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, a complete database update has to be done on the AUDIX Voice Power Lodging by the PMS 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. AUDIX Voice Power Lodging 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 AUDIX Voice Power Lodging system console in addition to error logging. The attendant or the administrator has the responsibility to look at the database discrepancy errors using the AUDIX Voice Power Lodging reports screen.

When the guest has chosen 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 during link failure, a forced checkout on the mailbox and a checkin on the name mismatch is performed.

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 AUDIX Voice Power Lodging will not do this).

The (50,1) within a (60,3) and (60,4) envelope will be 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 AUDIX Voice Power Lodging indicates that AUDIX Voice Power Lodging agrees with the PMS during database synchronization regarding check-in status and guest password. The mailbox has no voice mail messages.
- Response (50,A) from AUDIX Voice Power Lodging indicates that AUDIX Voice Power Lodging agrees with the PMS during database synchronization regarding check-in status and guest password. The mailbox has voice mail messages.

- Response (50,B) from AUDIX Voice Power Lodging indicates that AUDIX Voice Power Lodging disagrees with the PMS during database synchronization regarding check-in status-that is, the PMS claims the mailbox is checked in while AUDIX Voice Power Lodging claims otherwise. AUDIX Voice Power Lodging checks in the mailbox successfully.
- Response (50,C) from AUDIX Voice Power Lodging indicates that AUDIX Voice Power Lodging disagrees with the PMS during database synchronization regarding the guest password. AUDIX Voice Power Lodging checks out its old guest and checks in the new guest. The old guest has no voice mail messages.
- Response (50,D) from AUDIX Voice Power Lodging indicates that AUDIX Voice Power Lodging disagrees with the PMS during database synchronization regarding the guest password. AUDIX Voice Power Lodging checks out its old guest and checks in the new guest. The old guest has voice mail messages.

NOTE

If the PMS is in control of the MWL, it should send a command to the switch to update its database regarding the MWL status for the guest mailbox and controlling the MWL 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 AUDIX Voice Power Lodging indicates that AUDIX Voice Power Lodging agrees with the PMS during database synchronization regarding checkout status.
- Response (52,B) from AUDIX Voice Power Lodging indicates that AUDIX Voice Power Lodging disagrees with the PMS during database synchronization regarding checkout status-that is, *the* PMS claims the mailbox is checked out while AUDIX Voice Power Lodging claims otherwise. The mailbox has no voice mail messages. AUDIX Voice Power Lodging checks out the mailbox successfully.
- Response (52,C) from AUDIX Voice Power Lodging indicates that AUDIX Voice Power Lodging disagrees with the PMS during database synchronization regarding checkout status-that is, PMS claims the mailbox is checked out while AUDIX Voice Power Lodging claims otherwise. The mailbox has voice mail messages. AUDIX Voice Power Lodging checks out the mailbox successfully.

NOTE

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

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

MWL SYNCHRONIZATION

AUDIX Voice Power Lodging automatically initiates a MWL synchronization procedure following guest information synchronization (60,3 to 60,4). Because MWL messages are not saved or sent to the PMS during guest information synchronization, AUDIX Voice Power Lodging sends a room-by-room (extension) status of the MWL to the PMS.

AUDIX Voice Power Lodging sends a (SE, 1) to the PMS for each room in its guest database. AUDIX Voice Power Lodging waits for a response from the PMS after each (5E,1) sent, then goes to the next room.

For MWL off-status messages, AUDIX Voice Power Lodging sends a (5E,1) with the VOICE field equal to 0x02. 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 MWL off if it is controlling the MWL. At this point, AUDIX Voice Power Lodging 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 DEL_EXTN (53,1) to AUDIX Voice Power Lodging.
5. If the extension is an administrator or an attendant extension, AUDIX Voice Power Lodging responds with a (53,6) or (53,8). PMS should accept this message without error and turn the MWL off if it is controlling the MWL.
6. If AUDIX Voice Power Lodging returns a (53,2), AUDIX Voice Power Lodging and the PMS are synchronized for this room.

For MWL-on status messages, AUDIX Voice Power Lodging sends a (5E,1) with the VOICE field equal to 0x03. 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 MWL on if it is controlling the MWL. At this point, AUDIX Voice Power Lodging 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 AUDIX Voice Power Lodging.

5. If the extension is an administrator or an attendant extension, AUDIX Voice Power Lodging responds with a (52,6) or (52,8). PMS should accept this message without error and turn the MWL on if it is controlling the MWL.
6. If AUDIX Voice Power Lodging returns a (52,2), AUDIX Voice Power Lodging and the PMS are synchronized for this room.

NOTE

A check-out message automatically generates a MWL-off message from AUDIX Voice Power Lodging to PMS. This message is processed as described in the procedure for MWL-off status messages, where the extension is deleted.

6. Error Reporting

The AUDIX Voice Power Lodging/PMS integration features the following types of error reporting:

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

PROTOCOL ERRORS

Each system 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
- Several similar protocol-related errors as detailed in the *DEFINITY Communications System Generic 1 and System 75 Property Management System Interface Specifications, 555-200-925*

A negative acknowledgement (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 as 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 exist in the message.

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

Invalid Operation Errors

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.

A. Feature Message Set Summary

The following tables summarize the list of feature messages used for the PMS->. AUDIX Voice Power Lodging interface.

TABLE A-1. Feature Message Set Summary

Operational Feature	Feature Code	Purpose
Checkin	50	PMS tells AUDIX Voice Power Lodging to checkin a guest
Modify	51	PMS tells AUDIX Voice Power Lodging to modify guest information
Checkout	52	PMS tells AUDIX Voice Power Lodging about guest mailbox checkout
Delete extension	53	PMS tells AUDIX Voice Power Lodging to delete an extension
Display mailbox	54	PMS tells AUDIX Voice Power Lodging to send mailbox information
Purge	55	PMS tells AUDIX Voice Power Lodging to purge an old mailbox or all old mailboxes
Activate	56	PMS tells AUDIX Voice Power Lodging to activate an old mailbox
Display old mailbox	57	PMS tells AUDIX Voice Power Lodging to send old mailbox information
Transfer/merge	58	PMS tells AUDIX Voice Power Lodging to transfer/merge a guest
Swap	59	PMS tells AUDIX Voice Power Lodging to swap guests
Text/fax	5A	PMS tells AUDIX Voice Power Lodging to notify guest about text/fax
Display suite	5B	PMS tells AUDIX Voice Power Lodging to send suite information
Create/modify suite	5C	PMS tells AUDIX Voice Power Lodging to modify/create a suite
Delete suite	5D	PMS tells AUDIX Voice Power Lodging to delete suite

(Continued on next page)

Table A-1. Feature Message Set Summary (*Continued*)

Operational Feature	Feature Code	Purpose
MWL on/off	5E	AUDIX Voice Power Lodging tells PMS on room MWL status
Status inquiry	60	Data link maintenance/database synchronization
PBX link restart	61	PMS tells AUDIX Voice Power Lodging to restart the link between the PBX and AUDIX Voice Power Lodging
Display group list	62	PMS tells AUDIX Voice Power Lodging to send group list information
Create/modify group list	63	PMS tells AUDIX Voice Power Lodging to create or modify a group list
Delete group list	64	PMS tells AUDIX Voice Power Lodging to delete group list information

B. Message Data Ordering

There are two methods of transmitting data:

- Backward ordering
- Forward ordering

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.

4	5
2	3
f	1

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

3	4
1	2
f	f

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

2	3
f	1
f	f

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

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.

2	1
4	3

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

f	f
f	f

The diagram above shows how no password (or NULL) is entered in the message packet. “No password” means any four touch-tone digits can be entered. (Remember that any password under four digits is illegal for AUDIX Voice Power Lodging.)

3
N
2
1
<sp>
<sp>

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

C
I
N
D
Y
<sp>
S
M
I
T
H
<sp>
<sp>
<sp>
<sp>

The diagram above shows how a name is entered in the message packet.

Abbreviations

BCC	Byte-Check Code
COS	Class of Service
DCE	Data Communications Equipment
DCP	Digital Communications Protocol
DLE	Data Link Escape
ETX	End of Text
EIS	Electronic Industries Association
IPC	Intelligent Ports Card
LWC	Leave Word Calling
MWL	Message Waiting Lamp
MSGCT	Message Count
PBX	Public Branch Exchange
PMS	Property Management System
STX	Start of text
WGS	Work Group Systems

Glossary

Administration	The process of setting up software, such as AUDIX Voice Power Lodging, on a system so that the software functions as needed.
Attendant Console	A special purpose phone with numerous lines and features located at the front desk. The front desk attendant uses the phone to answer and transfer calls.
Audio Information Exchange (AUDIX)	A complete voice-mail messaging system accessed and operated by touch-tone telephones and integrated with a switch.
Automated Attendant	A feature that allows customers to set up a main number with a menu of options that route callers to an appropriate department at the touch of a button.
Backup	A duplicate copy of a file system saved on a removable cartridge or a separate disk than the original. You can restore the backup file system if the original active version becomes corrupted (damaged) or lost.
Charnel	A telecommunications transmission path for voice and/or data.
Class of Service (COS)	The standard set of features given to guests when they are first administered.
Configuration	The set of hardware and software components selected for a system, including internal components, external or peripheral components, and any software.
Coverage Path	An ordered sequence of coverage points to which coverage calls are redirected. For AUDIX Voice Power Lodging, you set the first coverage point to the AUDIX Voice Power Lodging hunt group.
Data Base	A collection of file systems and files in disk memory that store the voice and nonvoice or program information necessary for AUDIX Voice Power Lodging and switch operation.
Data Link	The connection from the 6386 AUDIX Voice Power Lodging computer to the Processor Interface or Switch Communications Interface boards that enables nonvoice data messages to pass between AUDIX Voice Power Lodging and the switch. Depending on your configuration, the link setup varies.
Default	A value automatically supplied by the system if you do not specify any other value.
Digital	Pertaining to the utilization of discrete integral numbers in a given base to represent all the quantities that occur in a problem. Discrete data or signals such as 0 or 1, as opposed to analog continuous signals.
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.

Extension Number	A one to five digit number that routes calls through a switch or private network. Extension numbers are primarily associated with telephones and data terminals but can also be used for functions associated with specific features.
Field	An area on a screen, menu, or report where you type information or see information displayed.
File system	A collection of related files, programs or data, stored on disk.
Generic 1	AT&T DEFINITY Communications System software releases. Generic 1 corresponds to the newest release of System 75-based software.
Host Switch	The switch directly connected to AUDIX Voice Power Lodging over the data link.
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.
Local Installation	A system, adjunct, or piece of peripheral equipment installed physically near the host switch or system.
Maintenance	The process of identifying system errors and correcting them, or taking steps to prevent problems from occurring.
Message Waiting Lamp	A small light on a guest's telephone that flashes when the guest has messages.
Peripherals	External hardware components connected to the AUDIX Voice Power Lodging computer necessary for operation such as the voice terminals, printers, and display terminals.
Port	A connection or link between two devices that allows information to travel through the connection to a desired location. For example, a switch port connects to an AUDIX Voice Power Lodging voice port to allow a guest on a voice terminal to leave a message on disk.
Processor Interface	A System 75 and DEFINITY Generic 1 data link. Also known as a Processor Interface Board (PIC).
Private Branch Exchange (PBX)	An analog, digital, or electronic system where data and voice transmissions are not confined to fixed communications paths, but are routed among available ports or channels. Also known as a <i>switch</i> .
Room Extension	<i>The</i> term refers to the telephone number of a room. The telephone number may differ from the actual room number.
Service Path	When you purchase AUDIX Voice Power Lodging, your AT&T account team establishes a service path for your site. A service path defines who to contact when you cannot remedy AUDIX Voice Power Lodging problems and who receives billing for the services. If you do not know your site's service path, contact your AT&T account team.
Support Path	See <i>Service Path</i> .
Switch	An analog, digital, or electronic system where data and voice transmissions are not confined to fixed communications paths, but are routed among available ports or channels. Also known as a <i>Public Branch Exchange (PBX)</i> .

Switch Communications Interface (SCI)	The System 75 and DEFINITY Generic 1 data link.
System Administrator	The person at the customer site responsible for AUDIX Voice Power Lodging system administration.
Voice Link	The call distribution group, or hunt group, of analog ports on the switch.
Voice Mail	An AUDIX Voice Power Lodging feature similar to a <i>verbal letter</i> that you can send to one or more AUDIX Voice Power Lodging system subscribers. AUDIX Voice Power Lodging acts as an electronic post office that delivers spoken messages.

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