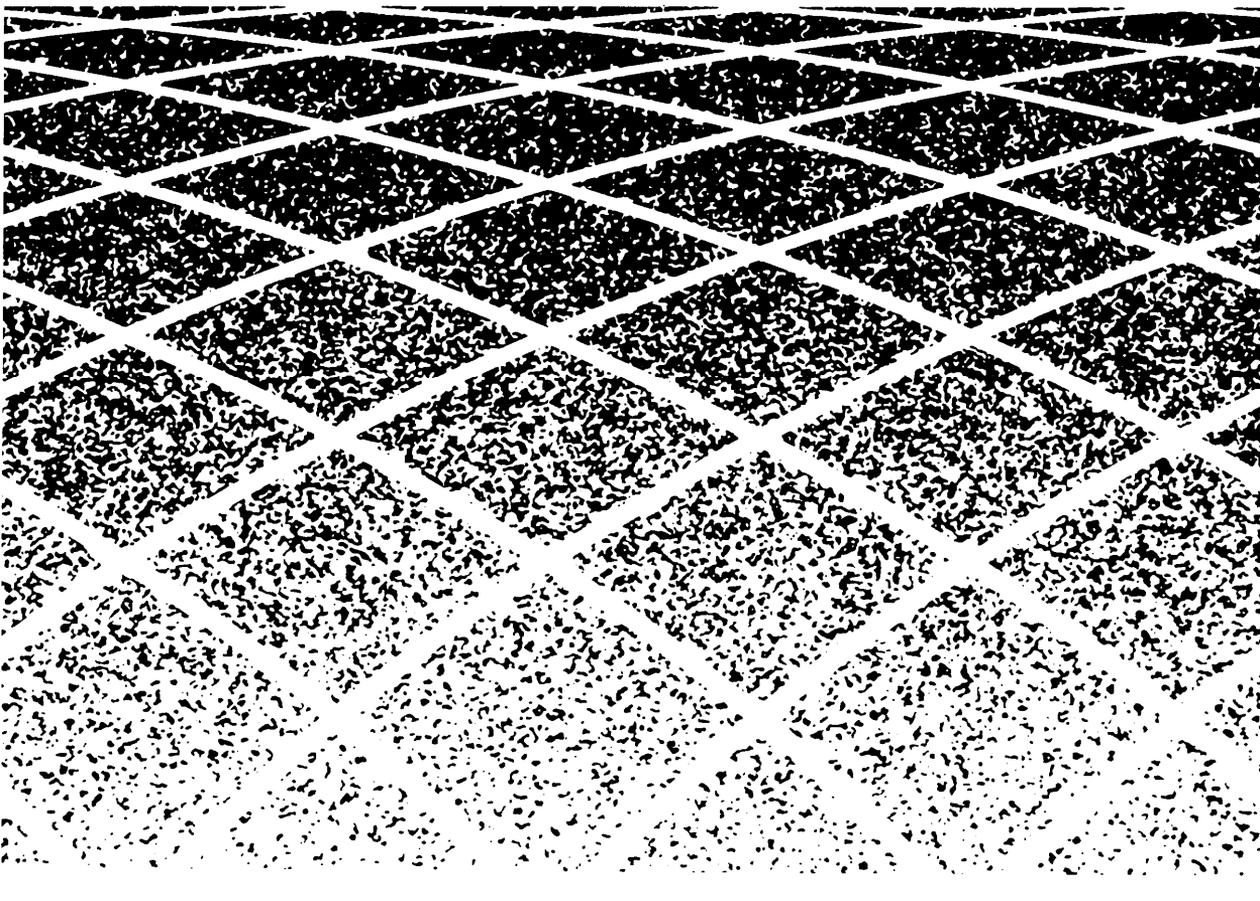




AT&T

AUDIX Voice Power Lodging

Property Management
System Interface
Specifications



Copyright © 1990
All Rights Reserved
Printed in U.S.A.

The material contained herein is confidential and proprietary to AT&T and may not be copied, used, published, or otherwise disclosed in whole or in part without prior written permission.

The information in this document is subject to change without notice. AT&T assumes no responsibility for any errors that may appear in this document.

TABLE OF CONTENTS

1. INTRODUCTION
2. LINK LEVEL PARAMETERS
3. MESSAGE FORMAT
4. MESSAGES AND PROCESS CODES
5. DATABASE SYNCHRONIZATION
6. ERROR REPORTING
7. APPENDIX A - FEATURE MESSAGE SUMMARY
8. APPENDIX B - MESSAGE ORDERING
9. INDEX

INTRODUCTION 1

OVERVIEW OF AVPL/PMS INTEGRATION

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

This interface eliminates the need for the hotel attendants to go from the PMS terminal to the AVPL console to do the same administrative tasks. Having this link gives the hotel an integrated solution to maintain mailboxes for its guests on AVPL using the PMS screens and reduces the administrative tasks performed by the attendants during checkin/checkout.

DOCUMENT PURPOSE

The purpose of this document is to specify the application level messages which are transmitted back and forth on the AVPL/PMS interface link.

Assumptions

There are two details about the AVPL PMS integration that this document claims as assumptions.

This document assumes:

- Its reader is familiar with the transparent mode link level protocol of the 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* (ED# 555-200-925).

The PMS developer for the AVPL PMS interface should thoroughly follow this link level protocol for the data link level including the procedures for link error recovery and restoration.

- The PMS vendor is knowledgeable with the AUDIX Voice Power Lodging Release 1.0 product. This is a stand-alone lodging voice mail system without the PMS interface where all the guest mailbox administration is done through a user-friendly menu/form-oriented screens interface with function keys.

The AVPL R1.0 product documentation explains in detail the functionality of AVPL in maintaining the guest mailboxes when the attendant does checkin/checkout/transfer, etc.

AT&T - PROPRIETARY
Use Pursuant to Company Instructions

ABOUT THIS DOCUMENT

This document is divided into the following sections.

- **Section 1- Introduction**

A brief overview of document.

- **Section 2- Link Level Parameters**

Explains the basis upon which the PMS and AVPL interface works.

- **Section 3- Message Format**

Provides information about the format and contents of PMS/AVPL messages.

- **Section 4- Messages and Process Codes**

Provides the messages and the associated process codes communicated between the PMS and AVPL systems.

- **Section 5- Database Synchronization**

Details the synchronization process between the PMS and the AVPL databases.

- **Section 6- Error Reporting**

Provides information concerning errors encountered with the synchronization of the PMS and AVPL databases.

- **Appendix A - Feature Message Set Summary**

Provides a table which shows a summary of the feature message set.

- **Appendix B - Data Ordering**

Provides examples of ordering message data.

- **Index**

LINK LEVEL PARAMETERS 2

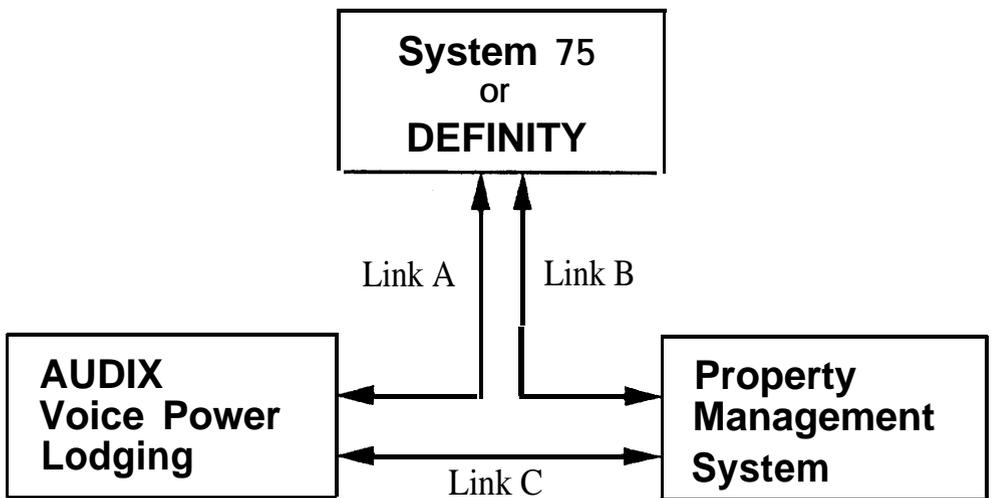
INTRODUCTION TO INTERNAL CONFIGURATION

The following section serves as an introduction to the transparent mode link level protocol and its hardware link.

AVPL PMS Integration Set Up

The AT&T System 75/DEFINITY® Telecommunications System Generic 1 Public Branch Exchange (PBX), the PMS, and AVPL are all nodes and each node is interconnected, as shown in Figure 2-1.

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



Link A: Switch Communication Link (RS232C)
Link B: PBX <--> PMS Link (RS232C)
Link C: AVPL <--> PMS Link (RS232C)

Figure 2-1. AVPL PMS Integration Setup

AT&T - PROPRIETARY
Use Pursuant to Company Instructions

Transparent versus Normal Mode

The transparent mode protocol is an upgrade from the normal mode protocol used between the PBX and the PMS. Using the transparent mode allows the implementation of several switch features like names registration, 5 digit extensions, call coverage path selection, guest information input/change, etc.

At the link level, this improvement involves allowing 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 AVPL system and the PMS is an electrical Electronic Industries Association (EIA) RS 232-C 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.

LINK LEVEL PARAMETERS

There is a PMS parameters UNIX* flat file on AVPL which one can modify using a “vi” or “ed” editor. This file (/usr/lgdb/.pmsparam) allows the administration of all the PMS link level parameters listed below. The suggested range follows the parameter.

- **tty Device Name** - Several possible entries. Default is tty01.
- **Maximum Protocol Errors** - 0 to 50. Default is 50.
- **Link Acknowledgement Timeout (LAT)** -5 to 20 seconds. Default is 20.
- **Link Idle Timeout (LIT)** -5 to 20 seconds. Default is 20.
- **Link Maximum Retransmission (MR)** -1 to 5. Default is 5.
- **Link Maximum Retransmission Requests (MRR)** -1 to 5. Default is 5.
- **Baud Rate** -1200 to 9600. Default is 9600.

AVPL support personnel will work with the PMS vendor if these default values have to be changed. When these values are changed, use the “AVPL/PMS Link Restart” from the **Lodging Menu Command** window. The AVPL link level processes use the new values.

* Registered trademark of UNIX Systems Laboratories, Inc.

The alternative to modifying this file is to use a free **tty Device** name, or port, when prompted during PMS installation for the PMS connection. Do not automatically choose the default value which is **tty01**. Instead, refer to page 2-6 to choose an appropriate value for the device name.

If you have an IPC card, use a free IPC serial port. If not, use **tty01** for the PMS connection.

If you use the second serial port for the PMS, you cannot use the DCP card for co-residency with the AUDIX Voice Power Release 2.0 package.

Device Name

The **tty00** serial port on the mother board must be used for the modem. Therefore, the default value for the device name in the **/usr/lgdb/.pmsparam** file is **tty01**. During the PMS software installation, you will be prompted for the device name that you will use for the PMS connection or you may access the **/usr/lgdb/.pmsparam** file to change the device name (**/dev/**) entry or the other parameters.

As explained previously, if you are using the 6386 WGS or the 6386E WGS you have only one serial port on the mother board (device name **tty00**). If you are using the 6386/SX, 6386/25, or 6386/33, you have two serial ports on the mother board (**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

AT&T - PROPRIETARY
Use Pursuant to Company Instructions

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 as the “h” type is specific to the hardware serial port and we wish you to be specific to the software.

Be sure that the device name you specify in the /usr/lgdb/.pmsparam file corresponds to the IPC serial port number that you insert the cable into.

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

Before changing the values in this file, be sure to consult with PMS support personnel, as both the PMS and AVPL must use identical values in this file.

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

1. Log in as root.
2. At the UNIX system prompt, type **vi/usr/lgdb/.pmsparam**. If you use an “ed” editor, type **ed /usr/lgdb/.pmsparam**.

The following file appears on the screen.

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

3. If the left-most field on any line is not the value you wish to use, change the value, making sure that it falls into the range specified in the above section titled “Link Level Parameters. ”
4. Type **:wq** to exit the file.

AT&T - PROPRIETARY
Use Pursuant to Company Instructions

AVPL SYSTEM PARAMETERS SCREEN

There are two additional application level parameters in the AVPL 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 AVPL or PMS. The default for this entry is PMS.

Choosing PMS

Normally, the PMS is connected to the PBX and hence the recommendation that PMS should control the MWL for the voice messages. If PMS is controlling the MWL, it is actually controlling the PMS component of the MWL.

Choosing AVPL

When AVPL controls 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, AVPL can control the MWL for the voice messages. These components are independent such that neither PMS can control the AUDIX component nor AVPL can control the PMS component of the MWL.

Exception: Although the AVPL does not control the MWL for text/fax messages, it can be administered to give a voice message prompt, either through the AVPL or PMS screens, for text/fax message notification when a guest calls/logs into his/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 and then either use the PMS screen or the AVPL administration screen to inform AVPL about turning on the the text/fax message notification.

When PMS Is Down, Calls for Guests Handled by

The other parameter addition allows AVPL to automatically transfer the guest caller to the attendant when the PMS link is down. The default for this entry is Attendant.

Choosing Attendant

If AVPL transfer the guest caller to the attendant, the attendant takes down text messages and turn on the MWL manually if this option is chosen. The guest is still allowed to retrieve his/her messages.

This option facilitates better database synchronization when the PMS link is down and reduces discrepancies between the AVPL and the PMS databases.

This option is discussed further in Section 5 “Database Synchronization.”

Choosing AVPL

If AVPL is chosen, the AVPL system will continue to handle calls when the PMS link is down.

This option can cause discrepancies between the AVPL and the PMS databases.

MESSAGE FORMAT 3

OVERVIEW OF 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 Data Link Escape (DLE - 0x10) character must precede any control character (0x00 - 0x1F, non-printable characters) in the message text, i.e., 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 bytes to 42 bytes (not including the DLE characters).

MESSAGE FORMAT STRUCTURE

Table 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 (ED# 555-200-925) as follows:

TABLE 3-1. Message Format

STX	
FEATURE CODE	
MSGCT	PROC
MESSAGE DATA	
ETX	
BCC	

AT&T - PROPRIETARY
 Use Pursuant to Company Instructions

The following information explains the components of the Message Format in Table 3-1.

- **Ž 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.
- **PROC (Process Code)** - 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 will be used in this document to represent a specific action or processing for that feature message.
- **MSGCT (Message Count)** - a 4-bit message counter ranging from 0x02 to 0x0B, 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.

- **MESSAGE DATA** - consists of two 4-bit encoded digits per 8 bit character or it may contain ASCII characters. If all four bits in the nibble are “1” ’s, then the field is null. The symbol NULL will be used for these fields.

These are used to pad out frames with only one 4-bit information digit, i.e. the null pads are the most significant 4-bit field. The padding character for ASCII data will be the space (0x20).

Example: Name characters or room name characters will be left justified in their respective **MESSAGE DATA** fields and padded with space characters if there are extra characters which 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 data, all these fields will be spaces.

- **ETX (End of Text)** - indicates the end of the message packet.
- **BCC (Byte Check Code)** - an 8-bit octet that always immediately 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).

AT&T - PROPRIETARY
Use Pursuant to Company Instructions

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*), the maximum number of extension digits will be limited to 5. Each of these digits will occupy a nibble in the message text.

Extensions digits/nibbles will be transmitted from the least significant to the most significant digit. An extension like 35789 will map to EXTN5, EXTN4, EXTN3, EXTN2, EXTN1 be transmitted as nibbles containing 9, 8, 7, 5 and 3 in that order (“backwards ordering”).

Any message data other than the extension, like the room name characters, name characters or password are ordered in the way they are spelled (“forwards ordering”). If a password 1234 is used, this maps to PASSWD1, PASSWD2, PASSWD3, PASSWD4.

See Appendix B of this document for further information about “Message Ordering Data.”

MESSAGES AND PROCESS CODES 4

OVERVIEW OF MESSAGES AND PROCESS CODES

This section explains the messages and the process codes that are communicated between PMS and AVPL during this interface. The message is that which is sent to AVPL from the PMS or from the PMS to AVPL. (The Message Waiting Lamp notification is the only status message initiated from AVPL to the PMS.) The process codes are the responses received that indicate if the command sent was successful or whether some problem was encountered.

The receiver of the message text will send the entire message packet back after processing with the appropriate process code responses (PROC) and message count (MSGCT).

CHECKIN

The checkin message is used to check in new guests. This message packet is sent from the PMS to AVPL whenever the attendant completes the PMS checkin form, entering the new guest information.

Tables 4-1, 4-2 and 4-3 display the message format for a checkin and its appropriated process codes.

TABLE 4-1. Message Format for Checkin

S T X	
5	0
MSGCT	PROC
EXTN2	EXTN1
E X T N 4	EXTN3
N U L L	EXTN5
ROOM CHAR one thru	
NAME CHAR six	
NAME CHAR one thru	
NAME CHAR fifteen	
PASSWD2	PASSWD1
PASSWD4	PASSWD3
E T X	
B C C	

AT&T - PROPRIETARY
Use Pursuant to Company Instructions

TABLE 4-2. Checkin Process Codes (1 of 2)

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

AT&T - PROPRIETARY
 Use Pursuant to Company Instructions

TABLE 4-3. Checkin Process Codes (2 of 2)

Process Code	Message Direction	Indications
A	AVPL-->PMS	AVPL agrees with PMS during database synchronization regarding checkin status and guest password; mailbox has voice mail messages
B	AVPL-->PMS	AVPL disagrees with PMS during database synchronization regarding checkin status - i.e., PMS claims mailbox is checked in while AVPL claims otherwise; AVPL checks in the mailbox successfully
C	AVPL-->PMS	AVPL disagrees with PMS during database synchronization regarding guest password; AVPL checks out its old guest and checks in the new guest; old guest has no voice mail messages
D	AVPL-->PMS	AVPL disagrees with PMS during database synchronization regarding guest password; AVPL checks out its old guest and checks in the new guest; old guest has voice mail messages

AT&T - PROPRIETARY
 Use Pursuant to Company Instructions

Please note that the guest mailbox password should be exactly 4 digits.

If the fields **PASSWD1 thru PASSWD4** are NULL, then AVPL will allow any four touch-tone digits as the guest password.

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

- **ROOM CHAR one thru ROOM CHAR six** - represents six 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 one thru NAME CHAR fifteen** - represents fifteen bytes of guest name **ASCII** information. If the extension does not exist in the AVPL database, then the AVPL creates a mailbox.

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

An example of the format message of a checkin of guest Gary Johnson in room 12345 with extension 12345 and password 1234 is given below in Table 4-4.

AT&T - PROPRIETARY
Use Pursuant to Company Instructions

TABLE 4-4. Message Format of a Checkin

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
ETX	
BCC	

AT&T - PROPRIETARY
Use Pursuant to Company Instructions

MODIFY

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

Tables 4-5 and 4-6 display the message format for a modify and its associated process codes. Please note that the guest mailbox password should be exactly 4 digits.

TABLE 4-5. Message Format of Modify

STX	
5	1
MSGCT	P R O C
EXTN2	EXTN1
EXTN4	EXTN3
NULL	EXTN5
ROOM CHAR one thru	
ROOM CHAR six	
NAME CHAR one thru	
NAME CHAR fifteen	
PASSWD2	PASSWD1
PASSWD4	PASSWD3
ETX	
BCC	

AT&T - PROPRIETARY
Use Pursuant to Company Instructions

TABLE 4-6. Modify Process Codes

Process Code	Message Direction	Indications
1	PMS-->AVPL	Modify
2	AVPL-->PMS	Command successfull
3	AVPL-->PMS	System failure to execute command successfully
4	AVPL-->PMS	Voice system is not running
5	AVPL-->PMS	Guest extension/room not checked in
6	AVPL-->PMS	This action cannot be done on the administrator's extension
7	AVL-->PMS	This action cannot be done on a suite member extension

AT&T - PROPRIETARY
 Use Pursuant to Company Instructions

CHECKOUT

The checkout message checks out the guest whose extension is entered. The guest mailbox is deactivated and any left over voice mail messages are moved into the old mailbox.

Tables 4-7,4-8, 4-9 and 4-10 display the message format for a checkout and its associated process codes.

TABLE 4-7. Message Format for Checkout

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

AT&T - PROPRIETARY
Use Pursuant to Company Instructions

TABLE 4-8. Checkout Process Codes (1 of 3)

Process Code	Message Direction	Indications
1	PMS-->AVPL	Checkout guest
2	AVPL-->PMS	Mailbox has no voice mail messages; AVPL checks out mailbox successfully
3	AVPL-->PMS	System failure to execute command successfully
4	AVPL-->PMS	Voice system is not running
5	AVPL-->PMS	Guest extension/room not checked in
6	AVPL-->PMS	This action cannot be done on the administrator's extension
7	AVPL--> PMS	This action cannot bc done on a suite member extension
8	AVPL-->PMS	This action cannot be done on the attendant's extension
9	AVPL--> PMS	Mailbox has voice mail messages; AVPL checks out mailbox successfully

TABLE 4-9. Checkout Process Codes (2 of 3)

Process Code	Message Direction	Indications
A	AVPL-->PMS	AVPL agrees with PMS during database synchronization regarding checkout status
B	AVPL-->PMS	AVPL disagrees with PMS during database synchronization regarding checkout status - i.e., PMS claims mailbox is checked out while AVPL claims otherwise; mailbox has no voice mail messages; AVPL checks out the mailbox successfully.

AT&T - PROPRIETARY
 Use Pursuant to Company Instructions

TABLE 4-10. Checkout Process Codes (3 of 3)

Process Code	Message Direction	Indications
C	AVPL-->PMS	AVPL disagrees with PMS during database synchronization regarding checkout status - i.e., PMS claims mailbox is checked out while AVPL claims otherwise; mailbox has voice mail messages; AVPL checks out the mailbox successfully.
E	AVPL-->PMS	Guest is retrieving messages. Try again later

Three of the process codes (A, B, C) are explained more in Section 3 “Database Synchronization.”

Although a response like (52,9) or (52,C) will indicate 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 AVPL and do this action at that time. The (5E, 1) will immediately follow the response (52,9) or (52,C).

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

AT&T - PROPRIETARY
Use Pursuant to Company Instructions

DELETE EXTENSION FROM DATABASE

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 the room.

Tables 4-11 and 4-12 display the message format for delete extension and its associated process codes.

TABLE 4-11. Message Format for Delete Extension

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

TABLE 4-12. Delete Extension Process Codes

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

AT&T - PROPRIETARY
 Use Pursuant to Company Instructions

DISPLAY MAILBOX

This is used to display all guest status information for the entered extension number. Tables 4-13 and 4-14 show the message format for a display mailbox and its associated process codes.

TABLE 4-13. Message Format for Display Mailbox

S T X	
5	4
MSGCT	PROC
EXTN2	EXTN1
EXTN4	EXTN3
NULL	EXTN5
ETX	
BCC	

TABLE 4-14. Display Mailbox Process Codes

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

AT&T - PROPRIETARY
 Use Pursuant to Company Instructions

If the display command is successful, the AVPL returns the following message to the PMS (process code 2) as shown in Table 4-15.

TABLE.E 4-15. Message Format for Display Mailbox

STX	
5	4
MSGCT	2
EXTN2	EXTN1
EXTN4	EXTN3
N U L L	EXTN5
ROOM CHAR one thru	
ROOM CHAR six	
NAME CHAR one thru	
NAME CHAR fifteen	
PASSWD2	PASSWD1
PASSWD4	PASSWD3
VOICE	
FAX	TEXT
MBXUSG2	MBXUSG1
NULL	MBXUSG3
SUITE2	SUITE1
SUITE4	SUITE3
NULL	SUITE5
E X T	
B C C	

AT&T - PROPRIETARY
 Usc Pursuant to Company Instructions

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

- VOICE - ranges from 0x00 to 0xFF (decimal 255) indicating the number of voice messages in the guest mailbox.
- TEXT and FAX - indicates if there are any messages of that type for this guest. The following values are chosen to avoid any possibility of an extra DLE character transmission.
 - A value of 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.
- MBXUSG1, MBXUSG2, MBXUSG3 - represents the mailbox capacity usage percentage. A value of 83% usage will be 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 because it is possible to have capacity usage greater than 100% as AVPL allows a complete maximum message length recording when a mailbox is almost full.
- SUITE1 through SUITE5 - represents the suite extension if this extension is part of suite. If the extension is not part of suite, all these SUITE fields/nibbles will be NULL (0x0F).

AT&T - PROPRIETARY
Use Pursuant to Company Instructions

PURGE OLD MAILBOX

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 AVPL whenever the attendant wishes to delete an old mailbox before the message purge time has expired.

Tables 4-16 and 4-17 display the message format for a purge old mailbox and its associated process codes.

TABLE 4-16. Message Format for Purge Old Mailbox

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

TABLE 4-17. Purge Old Mailbox Process Codes

Process Code	Message Direction	Indications
1	PMS-->AVPL	Purge Old Mailbox
2	AVPL-->PMS	Command successful
3	AVPL-->PMS	System failure to execute command successfully
4	AVPL--> PMS	Voice system is not running
5	AVPL-->PMS	Old mailbox has no messages

AT&T - PROPRIETARY
 Use Pursuant to Company Instructions

If the guest extension fields (**EXTN1 thru EXTN5**) are all **NULL**, then this means purge all old mailboxes. This operation should be done only when AVPL reaches its maximum voice mail storage capacity due to several full mailboxes and several old mailboxes with a lot of unretrieved messages.

The first indication of this problem is that many callers are unable to leave voice mail and all their calls are transferred by AVPL to front desk for text messages.

There is no automatic message sent from the AVPL to PMS when the AVPL voice mail system capacity is 85% full. The AVPL system administrator is expected to do Message Space Usage Report on AVPL periodically to prevent this problem.

It should be noted that just because a few guest mailboxes are full, it does not mean that the system capacity is full.

ACTIVATE OLD MAILBOX

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

Tables 4-18 and 4-19 display the message format for activate old mailbox and its associated process codes.

TABLE 4-18. Message Format for Activate Old Mailbox

STX	
5	6
MSGCT	PROC
TO-EXTN2	TO_EXTN1
TO_EXTN4	TO_EXTN3
NULL	TO-EXTN5
ROOM CHAR one thru	
ROOM CHAR six	
FROM_EXTN2	FROM_EXTN1
FROM_EXTN4	FROM-EXTN3
NULL	FROM_EXTN5
ETX	
BCC	

AT&T - PROPRIETARY
Use Pursuant to Company Instructions

TABLE 4-19. Activate Old Mailbox Process Codes

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

Below are explanations for fields not already encountered.

- **TO_EXTN1** through **TO_EXTN5** - the extension number the guest is activating to.
- **FROM_EXTN1** through **FROM_EXTN5** - the extension number the guest is activating from.

AT&T - PROPRIETARY
 Use Pursuant to Company Instructions

DISPLAY OLD MAILBOX

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 AVPL when the attendant wishes to view all guest status information for an entered extension.

Tables 4-20 and 4-21 show the message format for displaying an old mailbox and its associated process codes.

TABLE 4-20. Message Format for Display Old Mailbox

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

AT&T - PROPRIETARY
Use Pursuant to Company Instructions

TABLE 4-21. Display Old Mailbox Process Codes

Process Code	Message Direction	Indications
1	PMS-->AVPL	Display Mailbox
2	AVPL-->PMS	Command successful
3	AVPL-->PMS	System failure to execute command successfully
4	AVPL--> PMS	Voice system is not running
5	AVPL--> PMS	Guest extension/room has no old mailbox

AT&T - PROPRIETARY
 Use Pursuant to Company Instructions

If the display command is successful, the AVPL returns the following message to the PMS (process code 2), as shown in Table 4-22.

TABLE 4-22. Message Format for Display Old Mailbox

STX	
5	7
MSGCT	2
EXTN2	EXTN1
EXTN4	EXTN3
NULL	EXTN5
ROOM CHAR one thru	
ROOM CHAR six	
NAME CHAR one thru	
NAME CHAR fifteen	
PASSWD2	PASSWD1
PASSWD4	PASSWD3
MONTH1	MONTH2
DAY1	DAY2
YEAR1	YEAR2
HOUR1	HOUR2
MIN1	MIN2
VOICE	
MBXUSG2	MBXUSG1
NULL	MBXUSG3
SUITE2	SUITE1
SUITE4	SUITE3
NULL	SUITE5
ETX	
BCC	

AT&T - PROPRIETARY
Use Pursuant to Company Instructions

From the message format shown above, the following are explanations of fields in the message.

- **VOICE** - ranges from 0x00 to 0xFF (decimal 255) indicating the number of voice messages in the old mailbox.
- **Ž MONTH1 MONTH2**- represents the nibbles for the month (range 01- 12)
- **DAY1 DAY2** - represents the nibbles for the day (range 01- 31)
- **YEAR1 YEAR2** - represents the nibbles for the year (range 00 -99)
- **HOUR1 HOUR2** - represents the nibbles for the hour (military time with the range 00- 23)
- **MIN1 MIN2** - represents the nibbles for the minutes of the checkout time (range 00- 59)
- **MBXUSG1, MBXUSG2, MBXUSG3** - represents the old mailbox capacity usage percentage. A value of 83% usage will be represented as 0x00 in the MBXUSG 1 field, 0x08 in the MBXUSG2 field and 0x03 in the MBXUSG3 field.

Three nibbles are needed for mailbox capacity usage because it is possible to have capacity usage greater than 100% as AVPL allows a complete maximum message length recording when a mailbox is almost full.
- **SUITE1 through SUITE5** - represents the suite extension if this extension is part of suite. If the extension is not part of suite, all these SUITE fields/nibbles will be NULL (0x0F).

TRANSFER MAILBOX

The transfer mailbox message is used if a guest transfers from one room to another. This message packet is sent from the PMS to AVPL when the attendant wishes to transfer the guest's mailbox.

Tables 4-23 and 4-24 display the message format for transfer mailbox and its associated process codes.

TABLE 4-23. Message Format for Transfer Mailbox

STX	
5	8
MSGCT	PROC
TO_EXTN2	TO_EXTN1
TO_EXTN4	TO_EXTN3
NULL	TO_EXTN5
ROOM CHAR one thru	
ROOM CHAR six	
FROM_EXTN2	FROM_EXTN1
FROM_EXTN4	FROM_EXTN3
NULL	FROM_EXTN5
ETX	
BCC	

AT&T - PROPRIETARY
Use Pursuant to Company Instructions

TABLE 4-24. Transfer Mailbox Process Codes

Process Code	Message Direction	Indications
1	PMS-->AVPL	Transfer Mailbox
2	AVPL-->PMS	Command successful
3	AVPL-->PMS	System failure to execute command successfully
4	AVPL-->PMS	Voice system is not running
5	AVPL-->PMS	Room moving into is checked in
6	AVPL-->PMS	Room moving into is the administrator's extension
7	AVPL-->PMS	Room moving into is a suite member extension
8	AVPL-->PMS	Room moving into is an attendant's extension
9	AVPL-->P.MS	Room moving out of is the administrator's extension
A	AVPL--> PMS	Room moving out of is a suite member extension
B	AVPL-->PMS	Room moving out of is an attendant's extension
E	AVPL-->PMS	Guest is retrieving messages. Try again later

Below are explanations for the fields in the Transfer Mailbox message.

- **TO_EXTN1 thru TO_EXTN5:** Extension number the guest is moving to.
- **FROM_EXTN1 thru FROM_EXTN5:** Extension number the guest is moving from.

AT&T - PROPRIETARY
 Use Pursuant to Company Instructions

SWAP MAILBOX

The swap mailbox message is used if guests exchange or swap rooms. This message packet is sent from the PMS to AVPL when the attendant wishes to change the mailboxes.

Tables 4-25 and 4-26 display the message format for a swap mailbox and its associated process codes.

TABLE 4-25. Message Format for Swap Mailbox

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	

AT&T - PROPRIETARY
Use Pursuant to Company Instructions

TABLE 4-26. Swap Mailbox Process Codes

Process	Message Direction	Indications
1	PMS-->AVPL	Swap Mailbox
2	AVPL-->PMS	Command successful
3	AVPL-->PMS	System failure to execute command successfully
4	AVPL-->PMS	Voice system is not running
5	AVPL-->PMS	Second extension/room is not checked in
6	AVPL-->PMS	Second extension/room is the administrator's extension
7	AVPL-->PMS	Second extension/room is a suite member extension
8	AVPL-->P.MS	Second extension/room is an attendant's extension
9	AVPL-->PMS	First extension/room is the administrator's extension
A	AVPL-->PMS	First extension/room is a suite member extension
B	AVPL-->PMS	First extension/room is an attendant's extension
C	AVPL-->PMS	First extension/room is not checked in
E	AVPL-->PMS	Guest is retrieving messages from first extension room
F	AVPL-->PMS	Guest is retrieving messages from second extension room

AT&T - PROPRIETARY
 Use Pursuant to Company Instructions

ADD/REMOVE TEXT/FAX NOTIFICATION

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 AVPL when the attendant wishes to add/remove text/tax messages for the guest.

Tables 4-27 and 4-28 display the message format for add/remove text/fax notification and its associated process codes.

TABLE 4-27. Message Format for Add/Remove Text/Fax Notification

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

AT&T - PROPRIETARY
 Use Pursuant to Company Instructions

TABLE 4-28. Add/Remove Text/Fax Notification Process Codes

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

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

- **ADD/REM** - represents ADD/REMOVE of the text/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.

DISPLAY SUITE

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

Tables 4-29 and 4-30 display the message format for display suite and its associated process codes.

TABLE 4-29. Message Format for Display Suite

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

AT&T - PROPRIETARY
 Use Pursuant to Company Instructions

TABLE 4-30. Display Suite Process Codes

Process Code	Message Direction	Indications
1	PMS-->AVPL	Display Suite
2	AVPL-->PMS	Command successful
3	AVPL-->PMS	System failure to execute command successfully
4	AVPL-->PMS	Voice system is not running
5	AVPL-->PMS	There is no suite for this extension

AT&T - PROPRIETARY
 Use Pursuant to Company Instructions

If the display command is successful, the AVPL returns the following message to the PMS (process code 2), as shown in Table 4-31.

TABLE 4-31. Message Format for Display Suite

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

The **TEN SUITE MEMBER EXTNS** are the 10 six nibble groups of **SUITE1 thru SUITE5** for the ten suite member extensions. If there are fewer member extensions than 10, then the other extensions nibbles will be padded as NULLS.

CREATE/MODIFY SUITE

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 AVPL when the attendant wishes to create or modify a suite mailbox.

Tables 4-32 and 4-33 display the message format for create/modify suite and its associated process codes.

TABLE 4-32. Message Format for Create/Modify Suite

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

TABLE 4-33. Create/Modify Suite Process Codes

Process Code	Message Direction	Indications
1	PMS-->AVPL	Create/Modify Suite
2	AVPL-->PMS	Command successful
3	AVPL-->PMS	System failure to execute command successfully
4	AVPL-->PMS	Voice system is not running
5	AVPL-->PMS	Extension pointed by BAD_EXTN_INDEX is checked in
6	AVPL-->PMS	Extension pointed by BAD_EXTN_INDEX is administrator's extension
7	AVPL-->PMS	Extension pointed by BAD_EXTN_INDEX is part of another suite
8	AVPL-->PMS	Extension pointed by BAD_EXTN_INDEX is an attendant

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 one of the 10 suite member extensions. If even one of the ten suite member extensions is invalid, then this command fails.

AT&T - PROPRIETARY
 Use Pursuant to Company Instructions

DELETE SUITE

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

Tables 4-34 and 4-35 display the message format for a delete suite and its associated process codes.

TABLE 4-34. Message Format for Delete Suite

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

TABLE 4-35. Delete Suite Process Codes

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

AT&T - PROPRIETARY
 Use Pursuant to Company Instructions

VOICE MESSAGE NOTIFICATION (MWL UPDATE)

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

Turning the MWL off depends on the “Lamp on for New Messages Only” option specified in the **System Parameters Administration** window. If the option “Yes” is chosen and the guest listens to all of the new messages, a message to turn the MWL off is sent to the PMS. If the option “No” is chosen in this window and the guest deletes all of the messages in the mailbox, a message to turn the MWL off is sent to the PMS.

Tables 4-36 and 4-37 display the message format for a voice message notification and its associated process codes.

TABLE 4-36. Message Format for Voice Message Notification

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

TABLE 4-37. Voice Message Notification Process Codes

Process Code	Message Direction	Indications
1	AVPL-->PMS	Voice message notification
2	PMS-->AVPL	Command successful
3	PMS-->AVPL	System failure to execute command successfully
4	PMS-->AVPL	Extension is not checked in
5	PMS-->AVPL	Extension is a suite member

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.

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.

Therefore, depending on the AVPL command, the PMS should turn on or off 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.

AT&T - PROPRIETARY
 Use Pursuant to Company Instructions

STATUS INQUIRY AND LINK FAILURE MANAGEMENT

The status inquiry message is used to check database synchronization between the PMS and AVPL.

Tables 4-38 and 4-39 display the message format for a link status inquiry and its associated process codes.

TABLE 4-38. Message Format for Link Status Inquiry

STX	
6	0
MSGCT	PROC
NULL	RR
ETX	
BCC	

TABLE 4-39. Link Status Inquiry Process Codes

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

AT&T - PROPRIETARY
 Use Pursuant to Company Instructions

Release Reason Codes

The RR Code stands for Release Reason and it is used for (60,5) messages, (i.e., process code 5 of feature message 60) Table 4-40 describes the possible release reason codes.

TABLE 4-40. Release Reason Codes

Reason Codes	Indication
1	excessive flushed messages
2	excessive protocol violations
3	excessive violation messages
4	database synchronization thrashing
5	craft demanded maintenance
6	system demanded maintenance
F	not provided/supported

Currently, there are no plans for AVPL to send the PMS a (60,5) with RRs 1, 5 and 6. When a link release is requested, incoming calls will not be transferred to the attendant. AVPL will continue to answer the calls for guest mailboxes but cannot send any messages to PMS.

SCI LINK RESTART

The SCI Link Restart message packet sent from PMS to AVPL requests a restart of the link between the switch and AVPL.

Tables 4-41 and 4-42 display the message format for a SCI Link Restart and its associated process codes.

TABLE 4-41. Message Format for SCI Link Restart

STX	
6	1
MSGCT	PROC
NULL	NULL
ETX	
BCC	

TABLE 4-42. SCI Link Restart Process Codes

Process Code	Message Direction	Indications
1	PMS-->AVPL	SCI Link Restart .
2	AVPL-->PMS	Command successful
3	AVPL-->PMS	System Failure

AT&T - PROPRIETARY
 Use Pursuant to Company Instructions

DATABASE SYNCHRONIZATION 5

OVERVIEW OF DATABASE SYNCHRONIZATION PROCEDURE

The main objective of the database synchronization procedure is to synchronize the PMS and AVPL databases quickly with little human intervention. AVPL should also minimize the chances for a guest to lose his/her messages and to receive messages intended for another guest.

Interface Basic Features

The following are the salient features provided by AVPL for database synchronization:

- Using the database synchronization procedure, the PMS has the capability to populate/create the complete guest database on AVPL when it comes up the very first time. This saves the attendants a vast amount of accurate data entry work on AVPL.
- If, for some unforeseen reasons, the databases do not synchronize using the database synchronization procedure, AVPL still allows the AVPL system administrator to do all the guest mailbox administration. Using the AVPL screens, the system administrator resolves discrepancies manually even though PMS tried unsuccessfully.

Ž The attendants are allowed to turn on/off the text/fax message notification for a particular guest during PMS down times.

Note: This and the above special privilege given to the AVPL administrator or the attendants to do all or some part of guest mailbox administration should be carefully exercised and not misused to create database discrepancies.

AT&T - PROPRIETARY
Use Pursuant to Company Instructions

A database synchronization command is provided in the command-menu on the AVPL system to facilitate manual initiation of a complete database update by the system administrator or the attendants. This command (“dbsync”), used in cases where the databases go out of synchronization even though both systems are up running, forces the PMS to initiate a database synchronization procedure by sending a (60,7) to the PMS.

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

- The AVPL system throws away stale MWL status messages which accumulate during PMS downtime, for the database synchronization takes care of synchronizing the MWL status information on both systems.
- AVPL can automatically transfer the guest caller to the attendant when the PMS link is down. The guest will still be allowed to retrieve his/her messages. The attendant can take down text messages and turn on/off the MWL manually. This feature reduces database synchronization errors.

For Example: If this feature is not used, it is possible that messages for a new guest checked in during link failure, may be moved into the old mailbox during database synchronization because the guest information between AVPL and PMS do not match.

AT&T - PROPRIETARY
Use Pursuant to Company Instructions

METHODS OF DATABASE SYNCHRONIZATION

A PMS vendor can choose any one of the following three specific procedures to do database synchronization depending on the development constraints and the features needed:

- Shutdown AVPL completely when the PMS system goes down
- Have PMS send a display/lookup command to each AVPL extension
- Have PMS send each record to AVPL for update.

It is recommended that the PMS vendor either follows the second or third method.

Simply put, these procedures involves a series of guest information exchange packets, like display/checkin/checkout etc. between the (60,3) and (60,4) envelope sent by the PMS. The PMS does the database synchronization when it receives a (60,1) or a (60,2) from AVPL. Upon receiving these messages the PMS can choose to send (60,3) immediately followed by a (60,4) with no messages in between, if it knows that the databases did not change during the downtimes.

Simple Approach

To simplify database synchronization and reduce PMS development, a hotel may choose to shutdown AVPL during PMS downtime or change the call coverage path for the guests to go to the live attendants instead of AVPL. In either case, the caller can not leave voice mail messages for the guest. If AVPL shutdown, the guest can not retrieve voice mail messages during link downtimes.

The objective here is to eliminate the need for database 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 AVPL 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 AVPL administrator using the AVPL screens.

AT&T - PROPRIETARY
Use Pursuant to Company Instructions

Complete Database Update

Another method to synchronize the databases is to have the PMS send a display/look-up command to AVPL on each and every extension. This is much simpler procedurally, but is very time consuming.

Depending on the AVPL 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 AVPL went down. All these commands should be sent within the (60,3) and (60,4) envelope.

If AVPL went down, the attendants can continue to do their checkin/checkout activities on the PMS but the PMS will not be able to administer guest mailboxes because of link failure. In this case the PMS will initiate the database synchronization when AVPL comes up, i.e. when it receives a (60,1). The PMS knows that its own database is current.

If the PMS went down, the AVPL administrator can use the AVPL screens to administer guest mailboxes. In this case the PMS will get a (60,2) from the AVPL system after it comes up telling the PMS to start the database synchronization and that the AVPL's database is current.

The PMS must decide how to synchronize the guest information. This procedure may take time to do the update for large 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

In the existing PMS<-->PBX database synchronization procedure, the PMS always uses the most current database. Using the third approach for database synchronization, the PMS dictates to AVPL what should be the current database. The PMS will not update its database using AVPL's database by doing look-ups even if it is current.

When the PMS goes down and comes up, all the changes like checkin/checkout/transfer should be entered by the attendants on the PMS after it comes up. The PMS will start using the AVPL interface only after collecting these database changes and coming with up two bundles of database records:

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

The PMS queues all these records and sends them one at a time to the AVPL for AVPL 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).

AT&T - PROPRIETARY
Use Pursuant to Company Instructions

Forced Checkin Messages

Some checkin messages become forced checkin messages if there is a mismatch on the password and the AVPL performs a checkout followed by a checkin. These actions can be referred as built-in rules.

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

The guest password is used for database matching instead of the name 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, it is possible that messages for the person continuing to stay to be put into the old mailbox. (An alternative rule could be to use the name for matching and upon a mismatch a modify command can be done, but this is not going to be done by AVPL).

The (50,1) within a (60,3) and (60,4) envelope will be treated as a forced checkin. The following are the responses taken from Table 4-2 and 4-3.

- Response (50,9) from AVPL indicates that AVPL agrees with PMS during database synchronization regarding checkin status and guest password; mailbox has no voice mail messages.
- Response (50,A) from AVPL indicates that AVPL agrees with PMS during database synchronization regarding checkin status and guest password; mailbox has voice mail messages.
- Response (50,B) from AVPL indicates that AVPL disagrees with PMS during database synchronization regarding checkin status - i.e., PMS claims mailbox is checked in while AVPL claims otherwise; AVPL checks in the mailbox successfully.
- Response (50,C) from AVPL indicates that AVPL disagrees with PMS during database synchronization regarding guest password; AVPL checks out its old guest and checks in the new guest; old guest has no voice mail messages.
- Response (50,D) from AVPL indicates that AVPL disagrees with PMS during database synchronization regarding guest password; AVPL checks out its old guest and checks in the new guest; old guest has voice mail messages.

Note: The PMS 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 Checkout Messages

The (52,1) within a (60,3) and (60,4) envelope will be treated as a forced checkout. The following are the responses taken from Table 4-9 and 4-10.

- Response (52,A) from AVPL indicates that AVPL agrees with PMS during database synchronization regarding checkout status.
- Response (52,B) from AVPL indicates that AVPL disagrees with PMS during database synchronization regarding checkout status - i.e., PMS claims mailbox is checked out while AVPL claims otherwise; mailbox has no voice mail messages; AVPL checks out the mailbox successfully.
- Response (52,C) from AVPL indicates that AVPL disagrees with PMS during database synchronization regarding checkout status - i.e., PMS claims mailbox is checked out while AVPL claims otherwise, mailbox has voice mail messages; AVPL checks out the mailbox successfully.

Note: The PMS 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 AVPL and do this action at that time. The (5E,1) will immediately follow the response (52,C).

The AVPL accepts all the valid feature code messages during the database synchronization. If any of these forced checkin/checkout messages results in a failure, the same return process codes used for the normal checkin/checkout will be sent back to the PMS. For example, a forced checkin on a suite member extension will result in a failure (50, 7).

Compared to the forced checkin messages, here the synchronization decisions are left to the AVPL entirely through the use of the built-in rules. However, these rules need not be exercised by the AVPL because the PMS takes control, i.e. do a checkout or a modify, depending on the information it gets using the display command.

This procedure may also take time to do the update for large properties (over 1000 rooms). Also, a complete database update has to be done on the AVPL by the PMS even if there are only a few database changes (taken down by the attendants) during link failure.

AT&T - PROPRIETARY
Use Pursuant to Company Instructions

ERROR REPORTING 6

OVERVIEW OF ERROR REPORTING

There are three types of error reporting for the AUDIX Voice Power Lodging and the Property Management System integration.

Ž 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 protocol errors reaches 50. The counter is incremented by 1 for any of the following events:

- A control character was received without a **DLE** in front of it.
- A non-control character was received outside of the **STX/ETX** frame.
- An **ETX** was received when a message was not being received.
- Incorrect **MSGCT** value.
- 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) will be transmitted back to the sender if a message with an invalid **BCC** is received. The sender should resend the packet.

When a good message is received, the protocol errors counter is decreased by 1.

AT&T - PROPRIETARY
Use Pursuant to Company Instructions

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 will send 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, like invalid operations. For example, one cannot checkin an extension that is already checked in. Invalid operations are transmitted back to the sender using different process codes.

FEATURE MESSAGE SET SUMMARY **A**

FEATURE MESSAGE SET SUMMARY

The following tables summarize the list of feature messages used for the PMS<-->AVPL interface.

TABLE A-1. Feature Message Set Summary (1 of 2)

Operational Feature	Feature Code	Purpose
CHECKIN	50	PMS tells AVPL to checkin a guest
MODIFY	51	PMS tells AVPL to modify guest information
CHECKOUT	52	PMS tells AVPL about guest mailbox checkout
DELETE EXTENSION	53	PMS tells AVPL to delete an extension
DISPLAY MAILBOX	54	PMS tells AVPL to send mailbox information
PURGE	55	PMS tells AVPL to purge an old mailbox or all old mailboxes
ACTIVATE	56	PMS tells AVPL to activate an old mailbox
DISPLAY OLD MAILBOX	57	PMS tells AVPL to send old mailbox information

AT&T - PROPRIETARY
Use Pursuant to Company Instructions

TABLE A-2. Feature Message Set Summary (2 of 2)

Operational Feature	Feature Code	Purpose
TRANSFER	58	PMS tells AVPL to transfer a guest
SWAP	59	PMS tells AVPL to swap guests
TEXT/FAX	5A	PMS tells AVPL to notify guest about text/fax
DISPLAY SUITE	5B	PMS tells AVPL to send suite information
CREATE/MODIFY SUITE	5C	PMS tells AVPL to modify/create a suite
DELETE SUITE	5D	PMS tells AVPL to delete suite
MWL ON/OFF	5E	AVPL tells PMS on room MWL status
STATUS INQUIRY	60	Data link maintenance/database synchronization
SCI LINK RESTART	61	PMS tells AVPL to restart the link between the PBX and AVPL

AT&T - PROPRIETARY
 Use Pursuant to Company Instructions

MESSAGE DATA ORDERING

There are two methods of transmitting data:

- Backwards ordering
- Forwards ordering

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

Backwards Ordering

Extension digits (nibbles) are transmitted from the least significant to the most significant digit or “backwards ordering”.

Note: Only extension numbers use backwards ordering.

The following tables show examples of backwards ordering.

Table B-1 shows how extension 12345 is entered in the message packet. (The “f” represents NULL or four 1 bits data.)

TABLE B-1. Extension 12345

4	5
2	3
f	1

Table B-2 shows how extension 1234 is entered in the message packet.

TABLE B-2. Extension 1234

3	4
1	2
f	f

Table B-3 shows how extension 123 is entered in the message packet.

TABLE B-3. Extension 123

2	3
f	1
f	f

Forwards Ordering

Any message data other than the extension, like the room characters, name characters or password, is ordered like they are spelled. This is called “forwards ordering.”

Following are examples of forwards ordering.

Table B-4 shows how password 1234 is entered in the message packet.

TABLE B-4. Password 1234

2	1
3	4

Table B-5 shows how to enter no password (or **NULL**) in the message packet. No password means any four touch-tone digits can be entered.

TABLE B-5. No Password

f	f
f	f

Note: Any password under 4 digits is illegal for AVPL.

Table B-6 show how a room number is entered in the message packet.

Note: The <sp> is the 0x20 space character.

TABLE B-6. Room 3N21

3
N
2
1
<Sp>
<Sp>

AT&T - PROPRIETARY
Use Pursuant to Company Instructions

TABLE B-7 shows how a name is entered in the message packet.

TABLE B-7. Guest Name - Cindy Smith

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

AT&T - PROPRIETARY
Use Pursuant to Company Instructions

SUBJECT INDEX **1**

A

About This Document	1-3
Activate Old Mailbox	4-24
Add/Remove Text/Fax Notification	4-34
Assumptions	1-2
AVPL PMS Integration Set Up	2-1
AVPL System Parameters Screen	2-9

B

Backwards Ordering	B-1
--------------------	-----

C

Checkin	4-2
Checkout	4-10
Complete Database Update Similar To PBX<-->PMS Procedure	5-6
Complete Database Update	5-5
Create/Modify Suite	4-39

D

Delete Extension From Database	4-15
Delete Suite	4-41
Device Name	2-6
Display Mailbox	4-17
Display Old Mailbox	4-26
Display Suite	4-36
Document Purpose	1-2

F

Feature Message Set Summary	A-1
Forced Checkin Messages	5-7
Forced Checkout Messages	5-9
Forwards Ordering	B-3

H

Hardware Link	2-3
---------------	-----

I

Interface Basic Features	5 - 1
Introduction to Internal Configuration	2 - 1
Invalid Operations Errors	6 - 3

L

Link Level Parameters	2-4
-----------------------	-----

M

Message Data Ordering	3-5
Message Data Ordering	B-1
Message Format Structure	3-2
Message Lamp Controlled by	2-10
Message Text Content/Syntax Errors	6-3
Methods of Database Synchronization	5-3
Modify	4-8
Modifying the PMS Parameters File	2-8

O

Overview of AVPL/PMS Integration	1-1
Overview of Database Synchronization Procedure	5-1
Overview of Error Reporting	6-1
Overview of Message Format	3-1
Overview of Messages and Process Codes	4-1

P

Protocol Errors	6-2
Purge Old Mailbox	4-21

R

Release Reason Codes	4-47
----------------------	------

S

SCI Link Restart	4-48
Simple Approach	5-4
Status Inquiry and Link Failure Management	4-45
Swap Mailbox	4-32

T

Transfer Mailbox	4-30
Transparent versus Normal Mode	2-3

V

Voice Message Notification (MWL Update)	4-43
---	------

W

When PMS Is Down, Calls for Guests Handled by	2-11
---	------