◎ **BELL**SOUTH ®

Public Telephone Access to
Voice Messaging
Network Interface Specifications

Technical
Reference

NOTICE

This Technical Reference is published by BellSouth Telecommunications, Inc. and describes the Network Interface specifications for Public Telephone Access to Voice Messaging. The offering of this service, in whole or in part, is subject to approval by the appropriate regulatory bodies.

BellSouth Telecommunications, Inc. reserves the right to revise this document for any reason, including but not limited to, conformity with standards promulgated by various governmental or regulatory agencies, utilization of advances in the state of the technical arts, or the reflection of changes in the design of any equipment, techniques, or procedures described or referred to herein. Liability to anyone arising out of use or reliance upon any information set forth herein is expressly disclaimed, and no representations of warranties, expressed or implied, are made with respect to the accuracy or utility of any information set forth herein.

This document is not to be construed as a suggestion to any manufacturer to modify or change any of it products, nor does this document represent any commitment by BellSouth Telecommunications, Inc. to purchase any product whether or not it provides the described characteristics.

Nothing contained herein shall be construed as conferring by implication, estoppel or otherwise, any license or right under any patent, whether or not the use of any information herein necessarily employs an invention of any existing or later issued patent.

If further information is required, please contact:

> Director - Transport Systems Engineering
> BellSouth Telecommunications, Inc.
> 1884 Data Drive
> Birmingham, Alabama 35244

PUBLIC TELEPHONE ACCESS
TO VOICE MESSAGING
NETWORK INTERFACE SPECIFICATIONS

CONTENTS

PUBLIC TELEPHONE ACCESS
TO VOICE MESSAGING
NETWORK INTERFACE SPECIFICATIONS

1.   GENERAL INTRODUCTION

1.1   Public Telephone Access to Voice Messaging Service is a new feature offering which may be placed on existing Public Telephone lines. When in place, it will be automatically offered to a Public Telephone user who encounters a "busy" or a "ring−no answer" condition.

1.2   The feature is implemented by an intercept device at the serving central office. This device is denoted the Coin Line Intercept Device (CLID). The CLID is part of the regulated network, and performs functions useful to the network, including access to voice messaging providers. The line card unit and its interactions with the network and the customer comprise the Public Telephone Access to Voice Messaging Service (VMS).

1.3   As the name indicates, the service accesses a voice messaging system host, denoted the Host, which is placed in the unregulated environment. Figure 1 shows the generic architecture of public telephone access to a voice messaging system, and the demarcation between the network and the Host.

Revisions

1.4   This document has been revised to reflect a new protocol. This change was necessary to add security, via the use of a password.

Method of Operation

1.5   The CLID detects a "busy" or "ring−no answer" condition. After a programmable interval, the CLID bridges an announcement to the end user, offering the option to leave a voice message for delayed delivery on a prescribed program of delivery attempts. The end user accepts access to voice messaging service by depositing additional coins or by pressing a given sequence on the keypad pushbuttons.

1.6   If the called party answers while the offering of Public Telephone Access to Voice Messaging is being recited, the network immediately connects the parties and drops the recorded recitation.

1.7   Immediately upon recognition of end user acceptance of voice messaging, the CLID:

1.   Holds the Public Telephone line toward the end user,

2.   abandons the initial call attempt toward the called party, and

3.   attempts to place a call to the Host.

If the network is unable to establish the connection to voice messaging, the end user will hear a message that the service is not available. Deposited coins, if any, will be refunded. If the network is able to establish connection to the Host the sequence described in sections 4, 5, 6 and 7 is initiated.

2. DEFINITIONS, ABBREVIATIONS, ACRONYMS, & SYMBOLS

COIN LINE INTERCEPT DEVICE (CLID)	The device deployed in the network used to provide this service.
HOST	The term used to denote a VMS platform.

3. DTMF SIGNALING

The interface protocol utilizes Dual Tone Multi−Frequency (DTMF) signaling.

3.1 DTMF Transmitter Requirements

See ANSI/EIA−470−A−1987; sections

> 4.3.2.3,
> 4.3.2.4.2,
> 4.3.2.4.3,
> 4.3.2.4.8,
> 4.3.2.4.9,
> 4.3.2.4.10 and
> 4.3.2.4.11.

3.2 DTMF Receiver Requirements

See ANSI T1.405−1989; sections

> 5.4.2.1.3 and
> 5.4.2.1.5

3.3 Timing

Each DTMF symbol shall be present for a minimum of 50 ms and a maximum of 80 ms. The inter−symbol silent interval shall be a minimum of 50 ms and a maximum of 1 second.

4. MESSAGE TYPES

There are two types of messages:

> 1 − Data messages from the CLID, and

> 2 − Disconnect commands from the Host.

4.1 Data Message

A data message is comprised of:

> 1 − A Host Initiation transmitted toward the CLID

> 2 − A frame of data transmitted from the CLID toward the Host, denoted CLID Data Frame. The format of this frame depends on the type of call initiated by the end−user:
>
>> (i) Sent−Paid, or
>> (ii) Calling Card.

> 3 − A Host Response transmitted to the CLID. This response shall be one of the following:
>
>> (i) Acknowledgement, or
>> (ii) Request for Re−transmission.

The data sequence is followed by interaction between the Host and the end−user.

4.2 **Disconnect Commands**

At any time following the data sequence, the Host may send disconnect commands to the CLID. The defined commands are:

1 − Disconnect − Trouble detected by the Host, and

2 − Disconnect − Other.

5. **DATA MESSAGE FORMAT**

5.1 **Host Initiation Symbol**

A '#' symbol shall be transmitted by the host processor to the CLID to indicate that the host is ready to receive information.

5.2 **CLID Data Frame**

5.2.1 **Field Delimiter**

Fields are separated by a '#' symbol. For that reason, it shall not be used within any field. It is used, however, to denote the End−of−Data.

5.2.2 **CLID Data Frame Associated With a Sent−Paid Call**

The CLID Data Frame associated with a Sent−Paid call shall be comprised of the following fields:

1 − Sign−on
2 − Password
3 − Equipment Location
4 − Calling Number
5 − Interexchange Carrier Number
6 − Called Number
7 − Initial Rate Deposited
8 − VMS Fee
9 − Language Field

5.2.3 **CLID Data Frame Associated With a Calling Card Call**

The CLID Data Frame associated with a Calling Card call shall be comprised of the following fields:

1 − Sign−on
2 − Password
3 − Equipment Location
4 − Calling Number
5 − Interexchange Carrier Number
6 − Called Number
7 − Calling Card Account Number
8 − VMS Fee
9 − Language Field

5.2.4 **End−of−Data**

A '#' symbol shall be transmitted by the CLID to indicate the end of the CLID Data Frame.

5.3   CLID Data Frame Field Definitions

The following definitions use the terms 'symbol" and 'digit'. Use of the word 'symbol' indicates that any DTMF symbol may be used, except '#' as noted above. Use of the word 'digit' indicates that only symbols '0' − '9' may be used; i.e., symbols '#', '*', 'A', 'B', 'C', and 'D' shall not be used.

5.3.1 Sign−on

This is a 1 symbol field. The symbol transmitted is as follows:

Response from Called Number	Type of Call	
	Sent Paid	Calling Card
Ring−No−Answer	'A'	'C'
Busy tone	'B'	'D'

5.3.2 Password

This is a 6 symbol field.

5.3.3 Equipment Location

This 12 symbol field identifies the physical location of the CLID as follows:

Frame	6 symbols,
Shelf	2 symbols,
Card	2 symbols, and
Circuit	2 symbols.

5.3.4 Calling Number

This 10 digit field transmits the 10 digit directory number of the calling line.

5.3.5 Carrier Number

This 5 digit field transmits the Interexchange Carrier Identification Code (CIC) associated with the carrier assigned to the line or call; e.g., 222, 288, 333, etc. This field must be five digits in length, with leading zeros inserted as needed. This field will be all zeros if no CIC is assigned.

5.3.6 Called Number

This is a 12 digit field carrying the directory number of the called station, leading zeros will be added as required.

5.3.7 Initial Rate Deposited

This is a 3 digit field transmitting the amount of the initial rate deposited by the caller for the original call. The amount is encoded in increments of 5¢, i.e., the maximum of 999 denotes $49.95.

5.3.8 Calling Card Account Number

This is a 23 digit field containing the calling card number. Since the number of digits in the number may vary, leading zeros will be used if necessary.

5.3.9 VMS Fee

This is a 3 digit field transmitting the additional cost of the call delivery service being charged by the service provider. The amount is encoded in increments of 5¢, i.e., maximum value of 999 denotes $49.95.

5.3.10   Language Field

This is a 3 symbol field denoting the language to be used by the Host. At present, the only two values that may be used are:

> 000 English
> 001 Spanish

5.4   Host Response

A 1 symbol response shall be sent by the Host to the CLID. It shall be sent no less than 1 second, and no more than 5 seconds, after the receipt of the End−of−Data symbol from the CLID.

At present there are only two defined responses; an acknowledgement and a request for re− transmission.

5.4.1   Acknowledge

The host shall send a '7' to the CLID to acknowledge receipt of an understandable CLID Data Frame.

5.4.2   Request for Re−transmission

The host should send a '#' to indicate to CLID that the information should be retransmitted if the CLID Data Frame is not understood.

Only one Retransmit request should be sent per transaction. The Host shall send a Disconnect com− mand (type = 'Trouble detected by Host') if a second CLID Data Frame is not understood.

6.   DISCONNECT COMMANDS

When these commands are received by the CLID, it shall, if applicable, send the coin return signal to the set.

6.1   Trouble Detected by Host

The host shall send 'DD' to the CLID at any time to indicate a problem condition. The CLID shall then inform the end−user that the service is not presently available.

6.2   Other

The host shall send 'AA' to the CLID to indicate a disconnect for any other reason.

7.   TIME−OUT AFTER INTERRUPTION

At the expiry of 3 seconds after the interruption of the sequence described above:

- The Host shall drop the call and return to normal, and

- The CLID shall drop the call toward the Host, and if applicable, send Coin Return toward the end−user.

8.   REFERENCES

8.1   Related Documents
The following are documents referenced in this technical reference:

(1)   ANSI T1.405−1988 "Interface between Carriers and Customer Installations − Analog Voicegrade Switched Access Lines Using Loop Reverse−Battery Signalling".

(2)   ANSI/EIA 470−4−1987 "Telephone Instruments with Loop Signaling."

These document can be ordered through the:
    American National Standards Institute, Inc. (ANSI)
    1430 Broadway
    New York, NY 10018
    Tel. No. (212) 642−4900

9.   **OTHER DOCUMENTATION**
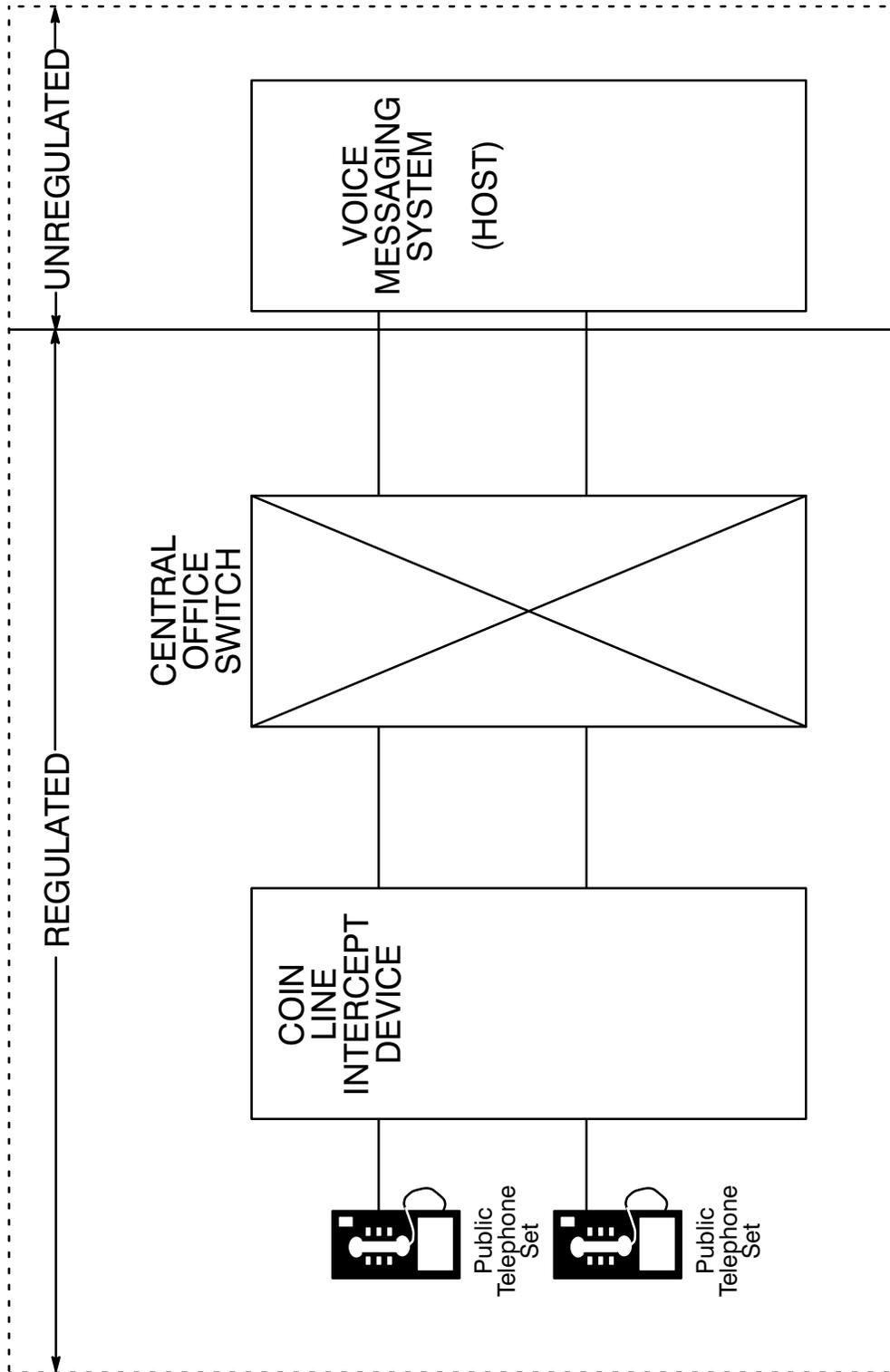
**FIGURE 1 − PUBLIC TELEPHONE ACCESS TO VOICE MESSAGING
GENERIC ARCHITECTURE**