



AM-TR-OAT-000067

Ameritech Inmate Calling Service Interface Specifications

To: All Interested Parties

Priority: N/A

Effective Date: February 1991

Issue Date: Issue 2, February 1991

Expires On: N/A

Training Time: N/A

Related Documents: N/A

Canceled Documents: N/A

Issuing Department: N/A

Distribution: NA

Business Unit: N/A

Points of Contact:

N/A

Author(s):

N/A

Copyright © SBC Corporation, 2000

This document is protected by the U.S. Copyright laws.
Any alteration to its text, contents, or presentation format is
an infringement of SBC's Copyright rights

Table of Contents

1. General	3
1.1. Inmate Calling Service	3
1.1.1. Deployment	3
1.2. Change and Reissue	4
2. Inmate Calling Service Description	4
2.1. Equipment Description	4
2.1.1.	4
3. Inmate Service Interface Requirements - Arrangement One	5
3.1. Features Description	5
3.1.1. Call Timing	5
3.1.2. Restricted calling by PIN	5
3.1.3. Generic restricted calling	5
3.1.4. Close down all calling	6
3.1.5. Dialing suppression	6
3.1.6. Inmate Call Detail Recording	6
3.2. Physical Transmission	6
3.2.1.	6
3.3. Protocol	7
3.3.1. Initiating Personal Computer Operation	7
3.3.2. Database Operations	8
3.3.3. Inmate Call Detail Recording	12
4. Inmate Service Interface Requirements - Arrangement Two	14
4.1. Equipment Description	14
4.1.1.	14
4.1.2.	14
4.2. Features Description	14
4.2.1. Outgoing Call Restriction	14
4.2.2. Incoming Call Restriction	14

Copyright © SBC Service, Inc. 2000

This document is protected by the U.S. Copyright laws.
Any alteration to its text, contents, or presentation format is
an infringement of SBC's Copyright rights

4.2.3. Special Scan Row Keypad	14
4.2.4. Inmate Call Detail Records	15
4.2.5. Preset Volume Level	15
4.2.6. Free Speed Dial Numbers	15
4.2.7. Operator Announcement	15
4.2.8. Preset Operating Time	15
4.2.9. Call Timing	15
4.2.10. Autodialer Detection and Security	15
4.3. Physical Transmission	15
4.4. Protocol	16
4.4.1. Person Computer Operation	16
4.4.2. Inmate Call Detail Recording	20

Copyright © SBC Service, Inc. 2000

This document is protected by the U.S. Copyright laws.
Any alteration to its text, contents, or presentation format is
an infringement of SBC's Copyright rights

TECHNICAL REFERENCE NOTICE

This Technical Reference is published by Ameritech to provide a technical description of the Ameritech Inmate Calling Service.

Ameritech reserves the right to revise this document for any reason, including but not limited to, conformity with standards promulgated by various 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.

AMERITECH MAKES NO REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED, WITH RESPECT TO THE SUFFICIENCY, ACCURACY, OR UTILITY OF ANY INFORMATION OR OPINION CONTAINED HEREIN. AMERITECH EXPRESSLY ADVISES THAT ANY USE OF OR RELIANCE UPON THIS TECHNICAL REFERENCE IS AT THE RISK OF THE USER AND THAT AMERITECH SHALL NOT BE LIABLE FOR ANY DAMAGE OR INJURY INCURRED BY ANY PERSON ARISING OUT OF THE SUFFICIENCY, ACCURACY, OR UTILITY OF ANY INFORMATION OR OPINION CONTAINED HEREIN.

This document is not to be construed as a suggestion to any manufacturer to modify or change any of its products, nor does this document represent any commitment by Ameritech or any Ameritech operating company (AOC) to purchase any product, whether or not it provides the described characteristics.

Ameritech does not recommend products, and nothing contained herein is intended as a recommendation of any product to anyone.

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.

Ameritech reserves the right not to offer any or all of these services and to withdraw any or all of them at any future time.

Document may be ordered from Ameritech by contacting the Document Order Center at (847) 248-4324.

Ameritech Inmate Calling Service

A second issue of the Ameritech Inmate Calling Service Technical Reference has been released to define an additional interface that Ameritech may elect to use. Ameritech Inmate Calling Service is offered to correctional facilities as a means to restrict telephone fraud and annoyance calls from prison inmates.

Copyright © SBC Service, Inc. 2000

This document is protected by the U.S. Copyright laws.
Any alteration to its text, contents, or presentation format is
an infringement of SBC's Copyright rights

This technical release describes both the new and the previously disclosed physical interfaces and associated protocols required to access the service.

Present plans anticipate that Ameritech Inmate Calling Service will be available in the Ameritech Region during the fourth quarter of 1991.

1. General

This document describes the Network Interface (NI) specifications for the Ameritech Inmate Calling Service. Specifications are provided for points of connection with the service. See diagram A.

1.1. *Inmate Calling Service*

Inmate Service is offered to correctional facilities as a means to restrict telephone fraud and annoyance calls from prison inmates. Inmate Service provides features such as: call timing, generic dialing restrictions (800, 976, etc.), inmate PIN numbers to allow only specific number dialing and others. These features are provided from equipment in the local serving central office (C.O.) or at the customer's premise (correctional facility). For administration purposes, the correctional facilities can be equipped with a terminal or personal computer (PC) for communication to the inmate service equipment. This document provides technical details of that interface.

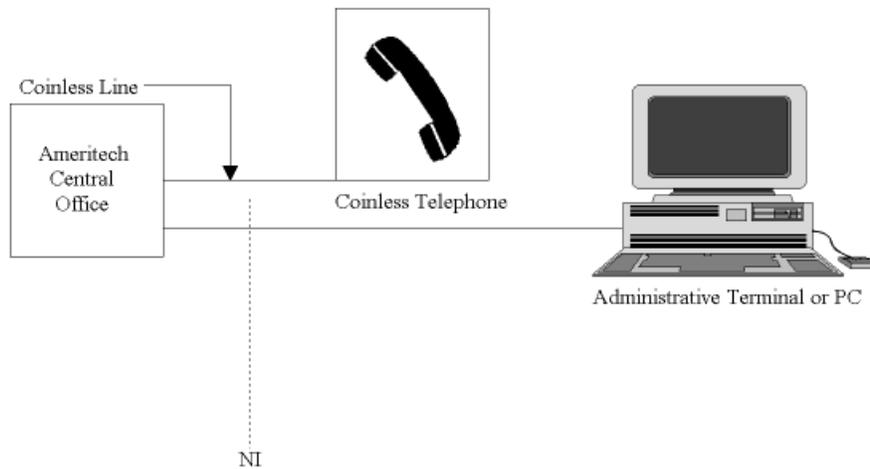
1.1.1. *Deployment*

Methods and procedures for supporting and maintaining Ameritech Inmate Calling Service are being established through a trial at the Joliet Correctional Center at Joliet, Illinois. Ameritech Inmate Calling Service deployment is planned for selected sites in the Ameritech region in 1991. C.O.s will be equipped with Inmate Service capability based upon correctional facility request, where deployment is economically and technologically practical.

In any post trial deployment plan, agents are required to lease tariffed Data Circuits or dial-up business lines.

1.2. *Change and Reissue*

Changed contents or reissued documents will be noted in this section. This document is being reissued as issue 2, to define an additional interface that Ameritech may elect to use in provisioning.



2. **Inmate Calling Service Description**

Inmate Calling Service provides a means where prison officials can restrict inmate calling privileges by invoking features such as call timing and calling number restrictions.

2.1. **Equipment Description**

2.1.1.

The C.O. equipment or station based customer premise equipment used to provide inmate service performs intercept, timing and control functions on inmate stations. The C.O. equipment or station based equipment monitors each call made on the coinless inmate station to which it is dedicated. It monitors for timing, correct dialed digits, PINs etc. The inmate station line is a standard 2 wire, loop start, coinless line with a class of service that will only allow outgoing collect calls.

The Ameritech region may employ different interface arrangements in the provision of inmate service.

Copyright © SBC Service, Inc. 2000

This document is protected by the U.S. Copyright laws.
Any alteration to its text, contents, or presentation format is
an infringement of SBC's Copyright rights

Inmate Service is offered in two basic modes; 1) a terminal mode and 2) a personal computer mode. The terminal mode is characterized by the customer's administrative PC or terminal operating in a "dumb" terminal mode, whereas the PC mode utilizes an intelligent interface to exchange messages defined in this document.

3. Inmate Service Interface Requirements - Arrangement One

Inmate calling services provides a means where prison officials can restrict inmate calling privileges by invoking features such as call timing and called number restrictions.

3.1. Features Description

Prison officials are able to change parameters on one or more of the features that are offered by this service. With this equipment arrangement, the prison officials are able to assign inmate PINs and allowed telephone numbers, obtain call detail records and also add or delete telephone numbers from the generic call restriction table.

3.1.1. Call Timing

This feature will time each inmate coinless call and automatically end the call when a predetermined call time length (from 1 to 60 minutes) is reached. The predetermined call time length is set by prison officials. With this feature, an announcement is generated at the start of the call to the called and calling party relevant to the fact that this is a timed call from a correctional facility. This feature provides two more later announcements for the purpose of announcing how many minutes until the end of the call. The second and third announcement will be played at 2 minutes and 1 minute (programmable) before the end of the call.

3.1.2. Restricted calling by PIN

This feature will allow inmates to call, on coinless lines, only to a set amount of presubscribed (up to 20) numbers. The prison administrators will input the allowed telephone numbers for each inmate. Each inmate would be assigned a corresponding PIN (IPIN for Inmate PIN). When the inmate places a call, he/she will dial the desired called number and their IPIN. The system will read the IPIN and the called number, to verify that the IPIN is allowed to dial the called number.

3.1.3. Generic restricted calling

All inmates have a common list of "not allowed to call" telephone numbers. This list would cover such 7 and 10 digit numbers as the wardens, other officials, 800, 900, service codes (411, 555, 911, etc.) others as required. This list will be administered by the prison administration. This list can contain up to 2000 numbers, however with the use of "wild cards" the effective size can be much larger.

Copyright © SBC Service, Inc. 2000

This document is protected by the U.S. Copyright laws.
Any alteration to its text, contents, or presentation format is
an infringement of SBC's Copyright rights

3.1.4. Close down all calling

This feature will not allow any inmate originated coinless line calls between certain hours as administered by prison officials. This feature is changeable for different hours and days of the week as administered by prison officials.

3.1.5. Dialing suppression

This feature will restrict as inmate, when on an established coinless station call, from further dialing. If the inmate is on an established call, any attempt to dial more digits would result in action to prevent fraudulent dialing.

3.1.6. Inmate Call Detail Recording

This feature will provide the correctional facility with call detail information on each call.

3.2. Physical Transmission

If the prison officials elect to use one or more of the features that require administration, a terminal or personal computer interface is required to accomplish this function. In this instance, the prison officials are able to deploy network services to meet their needs through the use of PINs and allowed telephone numbers, call detail records and the ability to add or delete telephone numbers from the generic call restriction table. Ameritech Inmate Service may be provided in the central office by different equipment arrangements in different central offices.

3.2.1.

The inmate service central office equipment is interfaced to the prison administrative terminal/PC via two modems and dedicated or dial up 2-wire voice grade telephone lines. The inmate service central office equipment serial port is compatible with 103, 202, and 212A type modems with auto-answer capability. The inmate service equipment supports full- or half-duplex operation at 1200 baud. The serial port interface is an industry standard S-232C format port accessed through a standard twenty-five pin male DB25 connector. The data format is as follows:

1200 - baud

8 - data bits

1 - stop bit

non parity

The modems must have the following features to be compatible with the inmate service equipment:

- A. Auto Answer - The modem must answer (go off-hook) when ringing occurs and the Data Terminal (DTR) (pin 20) signal is asserted. The modem should not answer when either ringing or DTR occurs alone.
- B. Timed Disconnect - For half duplex operation, the modem must terminate (go on-hook) a call when no carrier or no Request To Send (RTS) (pin 4) has been detected for 10-20 seconds.
- C. Full Duplex Operation - The modem must terminate after a loss of carrier regardless of the state of RTS.
- D. Data Set Ready Operation - The inmate service equipment requires that the DSR signal (pin 6) be in its inactive state when the port is inactive. If the modem used does not make DSR inactive at the end of each polling session, another signal, such as carrier detect, can be wired in its place.
- E. Private Line Operation - The modem must be capable of private line operation.

3.3. Protocol

Inmate service requires compatible customer premises equipment for this equipment arrangement. This arrangement allows the prison officials a user friendly format for call detail records and PIN numbers, and has more administrative options than other arrangements. This arrangement requires a PC with software capable of responding to the messages identified below.

3.3.1. Initiating Personal Computer Operation

3.3.1.1. Unit Access

Upon connecting to the C.O. equipment, the user must access the C.O. equipment database by entering the proper multiplexer command sequence. The format is as follows:

user types !!	invoke multiplexer mode
response :	multiplexer ready
user types 8	module access number

Copyright © SBC Service, Inc. 2000

This document is protected by the U.S. Copyright laws.
Any alteration to its text, contents, or presentation format is
an infringement of SBC's Copyright rights

3.3.1.2. User Log On/Off

After accessing the C. O. equipment database, the system will request USER ID and PASSWORD. The USER ID is a 6 digit alpha numeric code. The PASSWORD is an 8 digit numeric code. The C.O. equipment will not echo characters entered for the PASSWORD. Instead, it will echo periods "." for each entered character. The format of entry is:

uuuuuu <cr> u = USER ID character

pppppppp <cr> p = PASSWORD character

The system will respond with a sign-on banner such as:

Science Dynamics <CCTD Database> 09/09/90 13:41

The "8>" prompt indicates that the system is ready to accept input.

NOTE: the system manager can assign USER ID's and PASSWORDS as required.

When completing a database work session, the user should log off of the system by exiting back to the multiplexer mode. This is done as follows:

user types !!	invoke multiplexer mode
response :	multiplexer ready
user types 0	log off code

3.3.2. Database Operations

The following section describes the commands and data formats used for administration of the C.O. Equipment from an external automatic system such as a desktop PC or other computer system.

NOTE: Many of the commands listed can be entered using abbreviated command formats.

3.3.2.1. Database Initialize

The PIN database should be initialized after initial power up and installation. This command will clear all records and reset the database. The C.O. Equipment will request confirmation of the entry.

enter - DATABASE INITIALIZE <cr>

Copyright © SBC Service, Inc. 2000

This document is protected by the U.S. Copyright laws.
Any alteration to its text, contents, or presentation format is
an infringement of SBC's Copyright rights

response - (Confirm: Yes/No)

enter - YES <cr>

3.3.2.2. Database Upload

The DATABASE UPLOAD command invokes an automatic transfer of all records from the C.O. equipment to the requesting system.

enter - DATABASE UPLOAD <cr>

The records are sent using the X-MODEM 128 byte checksum protocol. X-MODEM is a public domain protocol available through many software sources. The record format is:

Field #	Field Contents	Number of bytes
1	Personal Identification Number	6
2	Number of successful PIN lookups	4
3	Number of failed PIN lookups	2
4	Number of calls terminated by extra dialing	2
5	Permitted phone number 1	10
6	Number of times dialed number 1	2
7	Permitted phone number 2	10
8	Number of times dialed number 2	2
9	Permitted phone number 3	10
10	Number of times dialed number 3	2
11	Permitted phone number 4	10
12	Number of times dialed number 4	2
13	Permitted phone number 5	10
14	Number of times dialed number 5	2
15	Permitted phone number 6	10
16	Number of times dialed number 6	2
17	Permitted phone number 7	10
18	Number of times dialed number 7	2
19	Permitted phone number 8	10
20	Number of times dialed number 8	2
21	Permitted phone number 9	10
22	Number of times dialed number 9	2
23	Permitted phone number 10	10
24	Number of times dialed number 10	2
25	Permitted phone number 11	10
26	Number of times dialed number 11	2
27	Permitted phone number 12	10
28	Number of times dialed number 12	2
29	Permitted phone number 13	10
30	Number of times dialed number 13	2
31	Permitted phone number 14	10
32	Number of times dialed number 14	2
33	Permitted phone number 15	10
34	Number of times dialed number 15	2
35	Permitted phone number 16	10
36	Number of times dialed number 16	2
37	Permitted phone number 17	10
38	Number of times dialed number 17	2
39	Permitted phone number 18	10
40	Number of times dialed number 18	2
41	Permitted phone number 19	10
42	Number of times dialed number 19	2
43	Permitted phone number 20	10
44	Number of times dialed number 20	2
Total		254

The records are sent in ASCII format. Fields 1 through 4 will be present for each record. Fields 5 through 44 will only be transmitted for each programmed telephone number. All bytes in a field will be present, with short fields filled with leading zeros. A record can cross an X-MODEM packet boundary. Records will be separated by a carriage return and a line feed. The last record will be determined by the X-MODEM e.o.t. command.

Copyright © SBC Service, Inc. 2000

This document is protected by the U.S. Copyright laws.
Any alteration to its text, contents, or presentation format is
an infringement of SBC's Copyright rights

EXAMPLE:

```
12345600100200609424006800609424736100<cr>
```

```
<if>
```

3.3.2.3. Add PIN Telephone Numbers

This command is used to add PIN numbers to the C.O. equipment database, or to add permitted telephone numbers to an existing PIN. If a PIN number is transmitted to the C.O. equipment that is not currently in the database, it will be added automatically. If the transmitted PIN is already in the database, then the new telephone number will be appended to that PIN's record. This command also uses the X-MODEM protocol to send the new record data. To initiate this command send:

```
XRECADD <cr>
```

The format to add a telephone number is:

Field #	Field Contents	Number of bytes
1	Personal Identification Number – PIN -	6
2	Comma	1
3	Permitted phone number – to be added	10
Total		17

EXAMPLE: 123456, 6094240068

All adds are separated by a carriage return. To end the add session, terminate the last transmitted record with two carriage returns

```
<cr> <cr>.
```

3.3.2.4. Delete PIN Telephone Numbers

This command is used to delete PIN telephone numbers from the C.O. equipment database. This command also uses the X-MODEM protocol to send the deleted record data. To initiate this command send:

```
XRECDEL <cr>
```

Copyright © SBC Service, Inc. 2000

This document is protected by the U.S. Copyright laws.
Any alteration to its text, contents, or presentation format is
an infringement of SBC's Copyright rights

The format to delete a telephone number is:

Field #	Field Contents	Number of bytes
1	Personal Identification Number – PIN -	6
2	Comma	1
3	Permitted phone number – to be deleted	10
Total		17

EXAMPLE: 123456, 6094240068

All deletes are separated by a carriage return. To end the delete session, terminate the last transmitted record with two carriage returns <cr> <cr>.

3.3.2.5. Delete PIN number

This command is used to delete PIN numbers from the C.O. equipment database. When a PIN is deleted, all telephone numbers assigned to that PIN will also be removed. This command also uses the X-MODEM protocol to send the deleted PIN data. Records are separated by a carriage return. To initiate this command send:

XPINDEL <cr>

The format to delete a PIN is:

Field #	Field Contents	Number of bytes
1	Personal Identification Number – PIN -	6
Total		6

EXAMPLE: 123456 <cr>

To end the delete PIN session, terminate the last transmitted record with two carriage returns <cr> <cr>.

3.3.3. Inmate Call Detail Recording

The C.O. equipment will accumulate call data for each line it serves and create the call detail records at the completion of each call. The C.O. equipment will retain the call record for a period of time after the call, as space permits.

This design note is intended to describe the contents of the call detail record and identify how each of the elements of the record is accumulated.

3.3.3.1. Call Detail Record Format

The call detail records contain the following information:

- A. source id - which line generated the call
- B. start date - date when call started
- C. start time - time when call started
- D. end time - time when call ended
- E. pin - personal ID number
- F. called # - dialed telephone No. (0+ assumed)
- G. status - termination disposition code

This information is presented in a printable format when call detail records are collected by the PC. The expanded call detail record will appear as follows:

123456789012345678901234567890123456789012

s - id mm/dd hhmm hhmm pppppp NPANNXXXXX d

<cr> <if>

where:

s	- is subrack # (1..8)
id	- is line # (1..32)
mm	- is month (1..12)
dd	- is date (1..31)
h	- is hour (0..23) start/end
mm	- is minute (0..59) start/end
pppppp	- is pin
NPANNXXXXX	- is called telephone number
d	- is disposition code (0..9)

The transfer of call detail records from the C.O. equipment to the PC, is invoked automatically by the command as shown:

Copyright © SBC Service, Inc. 2000

This document is protected by the U.S. Copyright laws.
Any alteration to its text, contents, or presentation format is
an infringement of SBC's Copyright rights

TRANSFER CALL <cr>

All records are sent using X-MODEM protocol. Records are separated by a carriage return and line feed.

4. Inmate Service Interface Requirements - Arrangement Two

Inmate calling services provides a means where prison officials can restrict inmate calling privileges by invoking features such as call timing and called number restrictions.

4.1. Equipment Description

4.1.1.

This equipment arrangement, at the customer premise (correctional facility), consists of a "smart" public station able to perform the call restrictions capabilities. The smart public station monitors for timing, correct dialed digits, provides announcements etc. The ability to allow incoming calls is needed for communication by prison officials to change call restriction parameters in the telephone and these incoming calls will not ring the telephone.

4.1.2.

The smart set contains a built-in modem to allow the station to communicate remotely with a remote administrative PC.

4.2. Features Description

4.2.1. Outgoing Call Restriction

This feature allows up to 500 telephone numbers and/or area codes to be restricted from calling by inmates.

4.2.2. Incoming Call Restriction

This feature will restrict all incoming calls to inmates. Also, a ringer can be installed to allow incoming calls if desired.

4.2.3. Special Scan Row Keypad

This feature requires the inmate to dial a "0" followed by 7 or 10 digits. The smart telephone will hold the digits dialed until restriction tables are reviewed.

4.2.4. Inmate Call Detail Records

This feature has the ability to record and store; dialed digits, date, time and the duration of the call.

4.2.5. Preset Volume Level

the noisy areas, a higher than normal volume level may be remotely programmed for each telephone.

4.2.6. Free Speed Dial Numbers

With this feature, 10 special numbers can be programmed as overrides to restricted outgoing numbers and allowed to be completed as free calls.

4.2.7. Operator Announcement

An announcement of the type; "This call is from an inmate phone", can be invoked when the call is connected to the operator.

4.2.8. Preset Operating Time

This feature allows a table to be programmed to allow calls during specific hours of specific days of the week.

4.2.9. Call Timing

Each inmate telephone can be preset with a time duration of up to 255 minutes or the duration can be untimed. One minute before the call times out, an announcement of the type; "One minute remaining", will be invoked.

4.2.10. Autodialer Detection and Security

This feature will disable or enable the autodialer detection function. This feature will make it possible to provide reliable telephone operation for inmates that possess unusual voice patterns that are capable of generating DTMF frequencies in normal articulation. The sensitivity of the detection circuitry is selected by setting (from 2 -6) the number of DTMF digits to be detected, before the anti-fraud function is triggered.

4.3. Physical Transmission

If the prison officials elect to use one or more of the features that require administration, a terminal or PC interface is required to accomplish this function. In this instance, the prison offi-

ials are able to change call timing, obtain call detail records and add or delete telephone numbers from the call restriction table.

The inmate service is interfaced to the prison administrative PC by a modem and dial up 2-wire voice grade telephone lines. The inmate service equipment supports auto answer and full duplex operation at 300 and 1200 baud. The data format is as follow:

300 baud (FSK)

1200 baud (DPSK)

Bell 212A Asynchronous

8 - data bits

1 - stop bit

no parity

4.4. Protocol

Inmate service requires compatible customer premises equipment for the Personal Computer (PC) Mode. The PC mode allows the prison officials a user friendly format for administrative functions. This arrangement requires a PC with software capable of responding to the messages identified below.

4.4.1. Person Computer Operation

4.4.1.1. Unit Access

On the PC dial up connection to the central office, as soon as carrier detect is detected, the M (model) and P (password) packets (messages) will be received. Response to the M packet only is allowed until the password packet is received.

4.4.1.2. Message Format

All commands, acknowledges, and data transfer will have the following format (hereafter referred to as a packet). The data will be presented in hexadecimal format, except where noted otherwise.

1A CMD ADDRESS DATA BCC 1A

1A - is the starting and terminating character. The other fields will never contain a 1A.

Copyright © SBC Service, Inc. 2000

This document is protected by the U.S. Copyright laws.
Any alteration to its text, contents, or presentation format is
an infringement of SBC's Copyright rights

CMD - Is the one character command field. It will never be a 1A or FE character. Each command is discussed in detail below. The command field will always appear in the packet.

ADDRESS - is a three character field containing address information for upload and download commands. The address field may or may not appear in the packet depending on the type command. Character 1 = the page number for smart sets with paged RAM (always 0 for sets without paged RAM). Character 2 and 3 = 16 bit address in the set.

DATA - Is the data to be uploaded or downloaded or the number of bytes to be dumped. The DATA field may be 1 or 1024 characters. If the data is the number of bytes to be dumped, then it will be two bytes long and be a binary number from 1 to 1024. The DATA field may or may not appear in the packet depending on the type of command.

BCC - is the block check field that is 1 character long and is always present in the packet. The BCC field will be a number that will make the entire character string between the 1 As sum to 00, using 8 bit addition. Therefore, if the 8 bit sum is cleared on receipt of the first 1A character (start character), then add each character after it has been received, and upon receipt of the terminating 1A character, the 8 bit sum will be zero. After a packet is received and if block check is OK, the set will execute the command and then send back an acknowledge (Ack) packet to the PC.

A packet will never be executed, data transferred to memory, or an acknowledge given until the entire packet has been received by the set and the block check is found to be good. All packets with a bad block check will be ignored as if it has never been received.

Except for the start and end 1A characters, all 1A characters in the body of the packet will be converted and transmitted as FE 00 and all FE characters will be transmitted as FE 01.

A packet will never be more than 1032 characters long (counting FE 0X as one character), and the set and the PC must have a memory buffer of 1032 characters reserved.

If no characters are received or transmitted within the last five seconds, then the call will terminate.

4.4.1.3. Command Details

Command	Description
A – Ack	The Ack (acknowledge) is sent only by the smart set in response to a command requiring an Ack. It contains no ADDRESS or Data fields. This command format will always be 1A 41 BF 1A.
D – Download	The download command enables the PC to load the memory of the phones. The ADDRESS will be three characters long. The first character will be the page of the RAM to load (00 for non-paged RAM sets). The next two characters will be the starting address to load the data. The DATA field will contain the data (1 to 1024 characters) to store in memory. The data will not be stored in memory until the entire packet is received and the data is found to be good. The data will then be stored in memory and the Ack command sent to the PC.
U – Unload	The upload command allows to PC to be able to gather accounting data, options, etc. The ADDRESS will be 3 characters long and work as a download command, but instead of storing the data, the set will transmit the data to the customer PC. The DATA field will contain the number of bytes to transfer and will be two bytes long and contain a number between 0001 and 1000 hex.
J – JSR	This command will allow the customer PC to run any small program in the set. OR a program may be loaded by the download command and then run by the JSR command. This command will have an ADDRESS field of which page and address to send the JSR. After the program has been run, the Ack will be sent to the customer PC. There is no DATA field for this command.
G – Go Vector	This allows the PC to run a subroutine that exists in the set. This command has one byte of data which is the binary number of the subroutine to be run. After running the subroutine, the set will send a Ack. These subroutines are numbered as follows: 0 – set clock 1 – read clock 4 – SMDR RAM clear 7 – hand set missing test 9 – communication will set completed, all OK, normal termination

Copyright © SBC Service, Inc. 2000

This document is protected by the U.S. Copyright laws.
Any alteration to its text, contents, or presentation format is
an infringement of SBC's Copyright rights

H – Hangup	This allows quick disconnect from the set instead of waiting for the “no characters for five seconds” disconnect sequence. There will be no ADDRESS or DATA fields and the command will always be; 1A 48 B8 1A. No Ack is sent.
P – Password	This packet should always be processed before any other packets are received. If it has not been received by the set, then all other packets should be ignored except the M command. There will be no ADDRESS field and the DATA field will be the password for the set. An Ack should only be sent if the BCC is good and the password is correct.
M – Model	This command should be answered always if the BCC is OK, even if the password has not been sent. This packet will have no ADDRESS or DATA fields. The set will send back a packet with 5 characters for the set model number, 14 characters for the set’s directory number, and 14 characters for the set’s telephone number at the backup memory location. The format of the M command is as follows: 1A M BCC 1A

4.4.1.4.

Software version information can be obtained via a Upload command (1A U ADD DAT BCC 1A) and the response should match the following format:

1A Y.X.X.-Y.X.X.-XX/XX/XX BCC 1A

Y - is the board designation and is always D

X.X - is the board issue number

Y - is the firmware designation

X.X - is the firmware issue number

XX/XX/XX/ - is the date

4.4.1.5.

To change calling parameters in the set, the Download command is required. The format will be the same, with the contents of the DATA field explained below. The format is as follows:

1A D ADD DATA BCC 1A

Copyright © SBC Service, Inc. 2000

This document is protected by the U.S. Copyright laws.
Any alteration to its text, contents, or presentation format is
an infringement of SBC’s Copyright rights

ADD - is the address of the location to receive the DATA. The address will be different in different set models and issues.

DATA - contains the calling parameter data to be loaded as detailed below:

Outgoing Call Restriction Table - This table allows up to 500 telephone numbers, area codes etc. to be restricted from inmate calling. The DATA field will contain 10 digits in 5 bytes with 2 digits per byte in packed BCD format (not ASCII). Right hand digits can be filled with all ones. A, B, or C can be substituted for ranges of digits, (A = 0 to 9, B = 0 to 1, and C = 2 to 9).

Special Speed Dial Numbers - The table allow for 10 telephone numbers to be programmed to override the restriction table and allow the call to complete as a free call. The DATA field is set up exactly like the Restriction Table data field.

Operating Time - This feature allows for a table to be programmed to allow calls during specific hours of specific days of the week. The DATA field will contain 2 bytes. The first byte will contain the number of 15 minute increments before calling is allowed and the second byte will contain the number of 15 minute increments at which time all calling will stop. Each 2 byte data field is loaded in one of 7 address that correspond to day of the week.

Call Timing - Call timing can be set from 1 to 255 minutes. The DATA field will contain one byte with the call timing in minutes in hexadecimal.

Volume Level - The volume level can be set from 0 to 4, with 0 being normal. The DATA field will contain one byte with a number of 0 to 4.

Dialing Sensitivity - This feature allows from 2 to 6 DTMF digits (after call completion) to be detected before the anti-fraud function is triggered. The DATA field is one byte and contains a number from 2 to 6.

4.4.2. *Inmate Call Detail Recording*

The station equipment will accumulate call data for each line it serves and create the call detail records at the completion of each call. The station equipment will retain the call record for a period of time after the call, as space permits

This design note is intended to describe the contents of the call detail record and identify how each of the elements of the record is accumulated.

The call detail information is obtained by the Upload command in the following format;

```
1A U ADD BCC 1A
```

U - Upload

ADD - is the address of the call detail data. This address will be different in different models and issues of the smart sets.

BCC - Block check

4.4.2.1. Call Detail Record Format

The call detail records contain the following information:

- A. access digits - access dialed digits
- B. start date - date when call started
- C. start time - time when call started
- D. elapsed time - time of call
- E. call type - outgoing or incoming
- F. called number - dialed telephone No. (0+ assumed)
- G. status - termination disposition code

This information is presented in the following format when call detail record are collected by the PC. The bytes designated "binary" will be transmitted in the binary format and bytes designated "ASCII" will be sent in the ASCII format. The call detail record will appear as follows:

1A DATA BCC 1A

DATA format

First Byte – (Binary) Length of dialed number
Next Byte – (Binary) Length of access digits
Next Byte – N/A
Next Byte – (ASCII) Type of call; I = incoming O = outgoing
Next Byte – (ASCII) Call progress results; S = sit tone B = busy A = answer N = no call progress
M = manual answer (free call)
Next Byte – (ASCII) Reason for disconnect; H = normal W = wink
D = dropout A = reversal T = no digits dialed L = time limit reached
B = incoming call was blocked
Next 2 Bytes – N/A
Next 2 Bytes – N/A
Next 2 Bytes – N/A
Next 5 Bytes – (Binary) Month, Day, Hour, Minute,
Second of start of call
Next 2 Bytes – (Binary) Off hook time in seconds
Next 2 Bytes – (Binary) Connect time in seconds
Next 2 Bytes – (Binary) Elapsed time of call in seconds
Next x Bytes – (ASCII) Number dialed
Next x Bytes – (ASCII) Access digits
Next Bytes – N/A
Next 2 Bytes – (ASCII) 16 bit sum of the variable call detail field