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BellSouth Enhanced 911 File Transfer System (FTS) Database Activity Update Service for PBX User/ALI Customers Network Interface Specifications

Technical Reference

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BELLSOUTH ENHANCED 911
FILE TRANSFER SYSTEM (FTS) DATABASE
ACTIVITY UPDATE SERVICE FOR PBX USER/ALI CUSTOMERS
NETWORK INTERFACE SPECIFICATIONS

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1. GENERAL DESCRIPTION OF E911 SERVICE FOR PBX/ALI USERS

1.1 The E911 Private Branch Exchange/Automatic Location Identification (PBX/ALI) Service provides a PBX customer, located in an E911 serving area, with the ability to offer full E911 service to it's station users. Ordinarily, the location identification information displayed on a Public Service Answering Point (PSAP) attendant screen for a caller from a PBX not equipped with this service will be a billing or service number and address of the PBX (the station may be extended to a different premises, normally referred to as off−premise extensions). This information may not indicate the actual physical location from which the call is placed. With the PBX/ALI service the "off premise" location identification information is available to the PSAP when a caller, using a connecting station of the PBX, dials 911.

1.2 PBX/ALI service provides the PBX customer with private E911 trunks from their PBX (i.e., private switch) to the E911 Tandem. To utilize this service, the PBX must be capable of sending the calling station's telephone number to the BellSouth E911 network in a specified Multifrequency (MF) Address Signaling "protocol". This "addressing protocol" information is known as Automatic Number Identification (ANI), and when received, is routed by the BellSouth E911 Tandem to the appropriate PSAP. At the PSAP the data specific to the calling station is accessed from Automatic Location Identification (ALI) databases maintained by BellSouth.

1.3 This critical data associated with the calling location, including the telephone number, name, address, and the nearest responding emergency agencies, greatly enhances the speed and efficiency of the PSAP dispatch operation.

1.4 Updates to this station data are supplied to BellSouth by the customer as required by moves and changes in a dial−up access basis. The manner and frequency in which these updates are accomplished is negotiated between the customer and BellSouth.

1.5 This document describes the network interface specifications for the ALI database update service for the BellSouth E911 FTS computer system. It describes the dial up access procedures.

1.6 This document is intended as a guide for PBX customers requiring an understanding of the technical aspects of the PBX/ALI service and the need for having an accurate and up−to−date ALI database for E911.

1.7 Figure 1 below illustrates the PBX/ALI database update configuration.

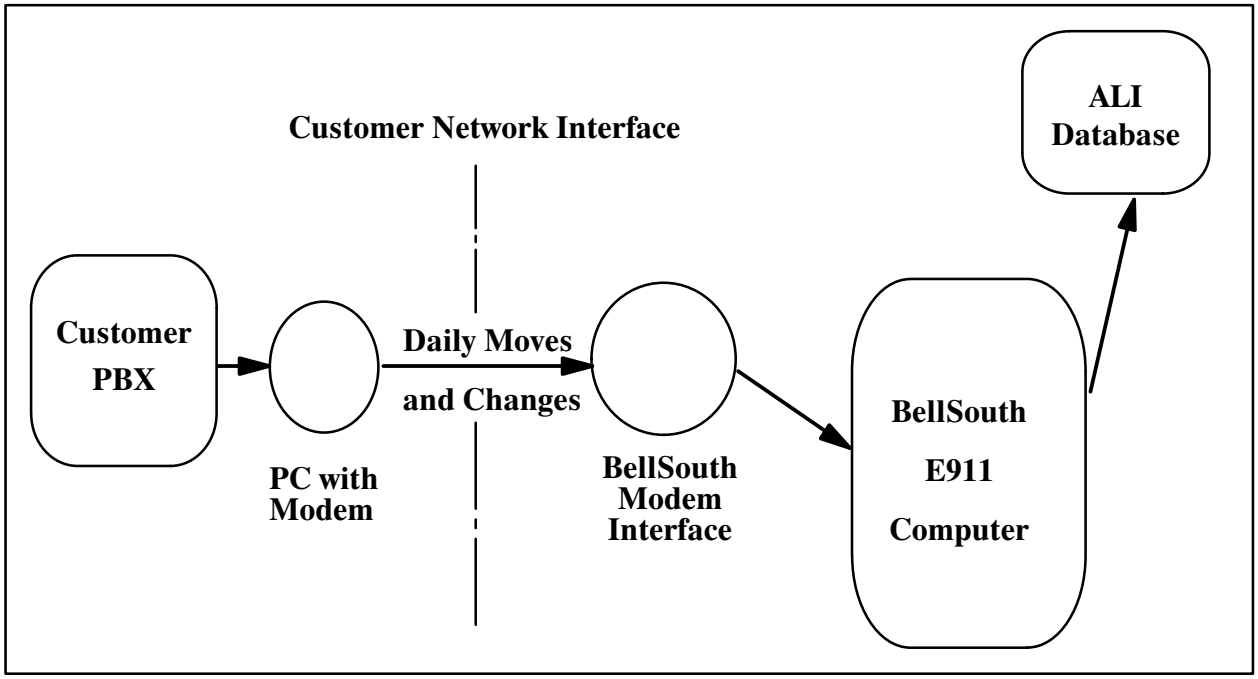

FIGURE 1 – PBX/ALI DATABASE UPDATE CONFIGURATION

2. DEFINITIONS, ABBREVIATIONS, ACRONYMS AND SYMBOLS

AUTOMATIC LOCATION IDENTIFICATION (ALI)	The term denotes the automatic location identification of the calling station (i.e., directory number) that dialed 911. This party is presumed to be an end user of a PBX with ALI capabilities.
CENTRALIZED AUTOMATIC MESSAGE ACCOUNTING (CAMA)	The term is an arrangement that provides for the recording of detailed billing information at a centralized location other than an end office, usually a tandem office. CAMA equipment also may be associated with operator system, etc.
CUSTOMER	The term is the party which has contracted with BellSouth to purchase Enhanced 911 capabilities for use with a PBX.
MF PULSING	The term refers to the information communicated over telephone trunks by various combinations of two of five frequencies in the voiceband. Signals for control functions are provided by combinations using a sixth frequency.

PRIVATE BRANCH EXCHANGE (PBX)	The term refers to an assemblage of equipment that allows an individual within a community of users to originate and answer calls to and from the public network (via CO trunks, Wide Area Telephone Service (WATS) trunks, and Foreign Exchange (FX) trunks), a private network, another PBX (tie trunks), special service trunks, and other users (PBX lines) within the community. In the case of PBX/ALI service the PBX would use special "CAMA" trunks to the E911 Tandem.
PUBLIC SAFETY ANSWERING POINT (PSAP)	The term refers to an agency or facility that is designated and authorized to receive and respond to emergency 911 calls requiring one or more public services such as police, fire, and/or ambulance services. Any agency, or a group of agencies, may be designated a PSAP.
TRUNK	This term in a telecommunications network, refers to a communication path connecting two switching systems used in the establishment of an end−to−end connection.

3. TECHNICAL SPECIFICATIONS FOR ALI DATABASE UPDATE

3.1 GENERAL DESCRIPTION OF E911 DATABASE UPDATE SERVICE

3.2 Traditionally once a PBX user (either on−premise or off−premise) dials "911", the information (i.e., telephone number and address) reported to their designated Public Safety Answering Point (PSAP) has been the one of the main PBX. However, with the Automatic Location Identification (ALI) service PBX station emergency information, particularly the off−premise's telephone number and location, can be automatically identified.

3.3 There are many ways by which a PBX administrator/customer can administer the profile of PBX users. If properly done, the PSAP attendant's screen should have enough information displayed to identify the physical location of the station dialing "911".

3.4 With PBX/ALI service, the PBX theoretically is equipped with a feature that identifies the location of "all" stations behind the PBX. This location identification of off−premise stations is either "exact" (if that PBX station has Direct In Dial (DID) service) or "approximate" (if the calling PBX station is near another PBX station that has DID service).

3.5 BellSouth is willing to offer assistance to these PBX customers. However, it is the ultimate responsibility of the PBX administrator/customer to determine the need for DID service, their location (either on−premise or off−premise) identification and associated administration of their PBX database.

3.6 TECHNICAL REQUIREMENTS FOR DIAL−UP ACCESS AND UPDATE

3.7 The procedure to access the FTS system (i.e., telephone number, etc.) will be provided by BellSouth during the testing period. The following technical requirements are required in order to update the ALI database on a dial−up basis:

A 4800 bits per second synchronous modem. This modem must be compatible with the Bell 208A/B modem.

A communications software package capable of supporting the 3780 communication protocol.

A personal computer (or main frame) able to run the hardware and software described above.

3.8 The following options of IBM 3780 protocol (described in the IBM publications GA27−3063, *Component Information for IBM Data Communications Terminals)* are supported in the mechanized transfer of E911 activity:

Transmission Code	EBCDIC
Transmission Blocksize	512 Maximum
Multiple Records per Block	Yes (optional)
Blank Compression	No
Transparency	Required
Extended ID	No
Line Type	Switched
First Speaker/Bidder	Caller
Line Speed	4.8 KBPS

3.9 TECHNICAL REQUIREMENTS FOR TAPE UPDATE

3.10 The initial load of the customer's PBX/ALI database records are to be done on a tape update basis. Following are the technical requirements:

TAPE SPECIFICATIONS

ENCODING:	ASCII
RECORD LENGTH:	232 Characters
BLOCK SIZE:	16 Records per block (3712 characters)
TAPE:	1600 BPI/9 Track
LABELS:	Standard IBM (SL Option on JCL)
SORTING:	The file should be sorted in telephone number (TN) order (i.e., increasing numerical order).

NOTE: ALL ALPHA CHARACTERS/DATA MUST BE PROVIDED IN UPPER CASE LETTERS ONLY.

4. FILE TRANSFER SYSTEM (FTS) RECORD FORMAT

4.1 Figure 2, shown below, represents the format of the entire File Transfer System (FTS) record/file layout to be transmitted to BellSouth for PBX/ALI database updates.

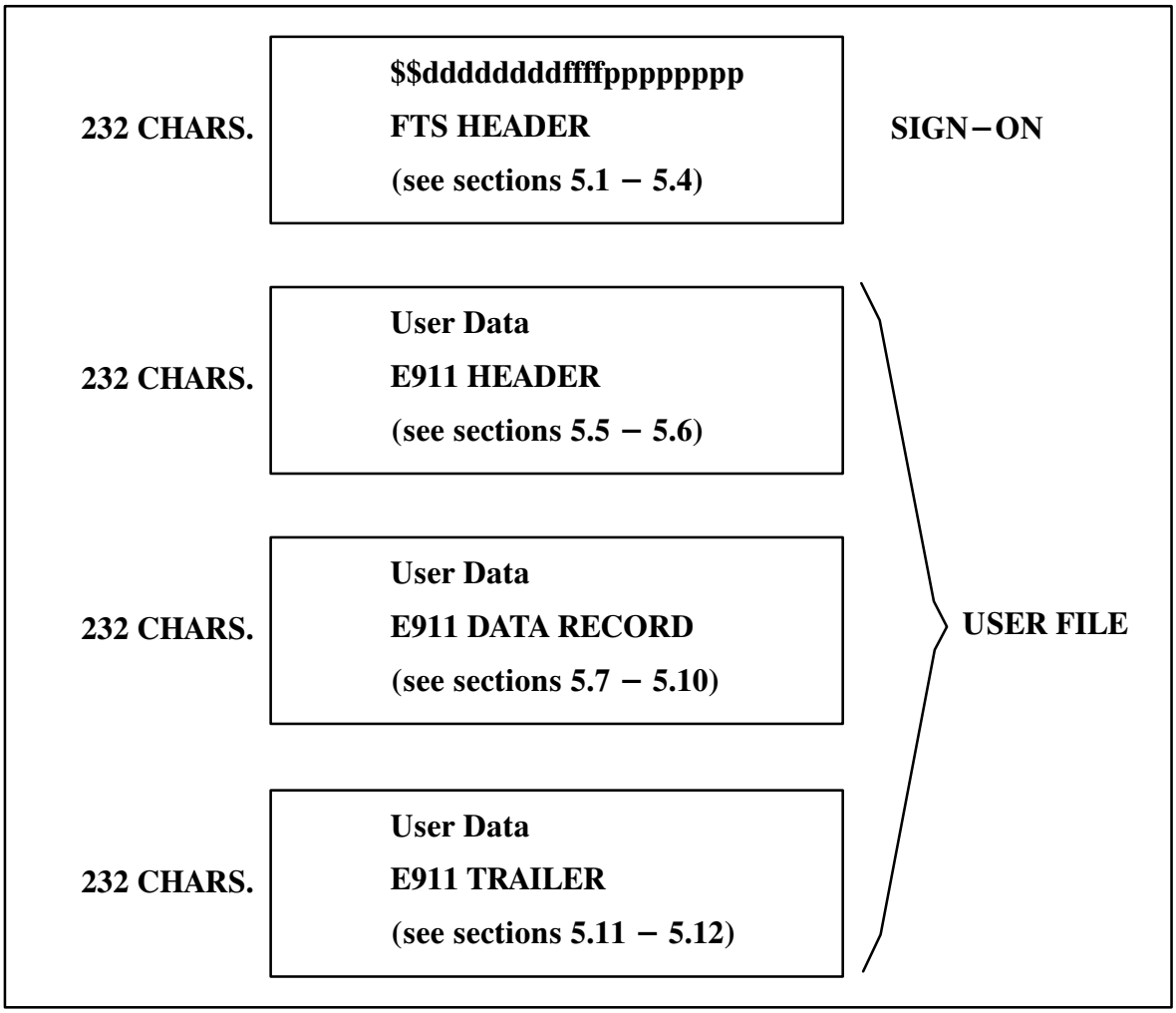

FIGURE 2 − FTS RECORD FORMAT

5. FILE TRANSFER SYSTEM (FTS) RECORDS DESCRIPTION

The FTS Record layout has been designed in a series of four records. The first record is the FTS Header, the second record is the E911 Header, the third record is the E911 Data and the fourth and last is the E911 Trailer. These four FTS records must be transmitted in order (i.e., first record, second, etc.) to establish a successful session to the E911 data transfer update.

5.1 FTS HEADER RECORD

5.2 The first record is the File Transfer System (FTS) header record and it must be in the following format:

232 characters long, space−filled, FTS header information as follows:

$$ddddddddffffpppppppp "followed by 210 spaces"

where:

**'$$'** is the FTS Header Entry code of two "$$" symbols,

'dddddddd' is the eight (8) alphanumeric Destination ID code,

'ffff' is the four (4) alphanumeric Input File Type code which for PBX/ALI is "INPT",

'pppppppp' is the eight (8) alphanumeric Password code, followed by two hundred ten (210) spaces.

5.3 The Destination ID and the Password codes will be provided to the customer by BellSouth personnel during the testing period.

5.4 This first record, as well as the other three following records, are depicted as the FTS record layout shown in section 4 entitled "FTS RECORD FORMAT".

5.5 E911 HEADER RECORD

5.6 The second FTS record is the E911 Header record and it basically provides the E911 database system with the identification of the PBX customer that is updating their ALI information. Following is the layout of this record:

CHARACTER	LENGTH	FIELD NAME	DESCRIPTION
000	1	Space	For internal use
001−011	11	Zeros	For internal use
012−014	3	Cycle Number	To be coordinated with BellSouth
015−020	6	Date	Calendar Date (MMDDYY)
021	1	Reserved for other use	Insert a space.
022	1	Other use	Insert a space. This field is for other uses.
023	30	Customer Name	Customer Name (up to 30 alphanumeric characters.
053−057	5	PBX/ALI ID	This field contains the PBX/ALI user ID. The first character of this field is numeric and represents the State Code. These are: "1" − NC "2" − SC "3" − FL "4" − GA "5" − AL "6" − MS "7" − TN "8" − KY "9" − LA

NOTE: The remaining four characters in this field are unique to each customer. These four characters will be provided by BellSouth during the testing phase.

CHARACTER	LENGTH	FIELD NAME	DESCRIPTION
058−175	118	Spaces	For future use.
176	1	Zero	For internal use.
177	1	Zero	For internal use.
178−231	54	Spaces	For future use.

5.7 E911 DATA RECORD

5.8 The third FTS record is the E911 data record and it provides the PBX/ALI information, namely the 232−character user data record(s).

5.9 Following are the "CUSTOMER RECORD LAYOUT AND FIELD DESCRIPTIONS" fields for this customer record layout:

CHARACTER	LENGTH	FIELD NAME
0	1	Function Name
1−10	10	Telephone Number
11−13	3	Customer Code
14−21	8	House Number
22−25	4	House Number Suffix
26−27	2	Directional
28−75	48	Street Name
76−107	32	Community Name
108−109	2	State
110−129	20	Location
130−161	32	Customer Name
162	1	Class of Service
163	1	Type of Service
164−167	4	Exchange Name
168−174	7	Reserved
175	1	ESN Priority
176−177	2	System ID Code
178−181	4	Main Account Line Number
182−191	10	Error Indicators
192−198	7	Order Number
199−222	24	Reserved
223−228	6	Extract Date
229−231	3	Account NNX

NOTE: All of the above fields are required unless otherwise noted.

5.10 Following are the definitions of each of the FIELD NAMEs:

COLUMN	FIELD NAME	DESCRIPTION
000	FUNCTION NAME	A one (1) alphabetic character code which specifies the type of activity to be performed by the record. For initial loads is "I". For updates is: "T" for insert,

"C" for change or "D" for delete.

COLUMN	FIELD NAME	DESCRIPTION
001−010	TELEPHONE NUMBER	The ten (10) character numeric telephone number consisting of a three (3) digit NPA, a three (3) digit NNX and a four (4) digit line number (i.e., NPA−NNX−XXXX).
011−013	CUSTOMER CODE	A three (3) character numeric code will be provided by BellSouth during the training phase.
014−021	HOUSE NUMBER	An eight (8) character field that contains the numeric house number and which is right justified with leading spaces. If the customer has no **house** number, this field should be spaces.
022−025	HOUSE NUMBER SUFFIX	A four (4) character house number suffix field which is appended to the house number. This field is left justified beginning with the hyphen. (Examples: apartment number, building number, or fraction portion of a house number). If there is no house number suffix − this field should be spaces.
026−027	DIRECTIONAL	A two (2) character left justified directional prefix which precedes the street name. Valid entries are: "E", "N", "S", "W", "NE", "NW, "SE", and "SW". If there is no directional prefix, this field should be spaces.
028−075	STREET NAME	A forty−eight (48) alphanumeric character field left justified field containing the address of the equipment associated with the line number in the record. The service address should be used. If it is **not available** **the listed address** should be used. For subsidiary lines a secondary or subsidiary key system address or a different premises address should be used. If there are no secondary addresses, the main address should be used.
076−107	COMMUNITY NAME	A thirty−two (32) alphanumeric character field left justified containing the community name, spelled in full, associated with the street address.
108−109	STATE	A two (2) alphabetic character field state code indicating the state where this line resides. The BellSouth's state codes are: "AL", "FL", "GA", "KY", "LA", "MS", "NC", "SC", and "TN".

COLUMN	FIELD NAME	DESCRIPTION
110−129	LOCATION	A twenty (20) alphanumeric character field left justified field which contains additional information describing the precise location of the equipment associated with the telephone number. (Example, building number, suite number or apartment number).
130−161	CUSTOMER NAME	A thirty−two character left justified field containing the listed name (LN) of the customer account.
162	CLASS OF SERVICE	A one (1) numeric character code identifying the account basic class of service. Valid codes for PBX/ALI are: 1 = Residence 2 = BUSINESS 4 = BUSINESS PBX
163	TYPE OF SERVICE	A one (1) numeric character code which describes the type of service and type of account name of this customer. The valid code is: 6 = PBX/ALI
164−167	EXCHANGE NAME	Up to **four characters** which identify the name of the exchange. This code will be provided by BellSouth personnel during the training phase.
168−174	RESERVED	For future use. Fill with spaces.
175	ESN PRIORITY	Enter the **digit** "7" in this field.
176−177	SYSTEM ID CODE	A two (2) character field which identifies the E911 system. This code will be provided to the PBX customer/administrator by BellSouth during training.
178−181	MAIN ACCOUNT LINE NUMBER	The four (4) digit line number of the main account.
182−191	ERROR INDICATORS	A ten (10) alphanumeric character field used by the E911 Source Data Management system to identify specific update error conditions. This field should be left blank by the PBX customer.
192−198	PBX/ALI	Enter "PBX−ALI" in this field.
199−222	RESERVED	Reserved for future use. To be filled with spaces.
223−228	EXTRACT	The six (6) character numeric date of the day on which the file was created (MMDDYY).
229−231	ACCOUNT NXX	The first three (3) numbers of the account telephone number.

5.11 E911 TRAILER RECORD

5.12 The fourth and final FTS record is the Trailer record. This record provides the number of records transmitted in each file. Following is the format:

COLUMN	FIELD NAME	LENGTH	DESCRIPTION
000−001	System ID	2	Identification code unique to the PBX/ ALI customer.
002−006	Record Total	5	Record total for system. Do not include header and trailer records.
007−174	Spaces	168	If multiple system ID's are used, contact the Local BellSouth Representative. If not, this field should be space filled.
175	Space	1	Insert a space.
176	Equal	1	Insert an equal sign. That is "=".
177	Equal	1	Insert an equal sign. That is, "=".

6. REFERENCES

6.1 References which support BellSouth E911 File Transfer System (FTS) Database services are shown below, as well as referenced within the text of this document.

BellSouth published document:

(1) BellSouth Technical Reference (TR) 73576 − "BellSouth Enhanced 911 for PBX/ALI Service Network Interface Specifications" Issue A, June 1993.

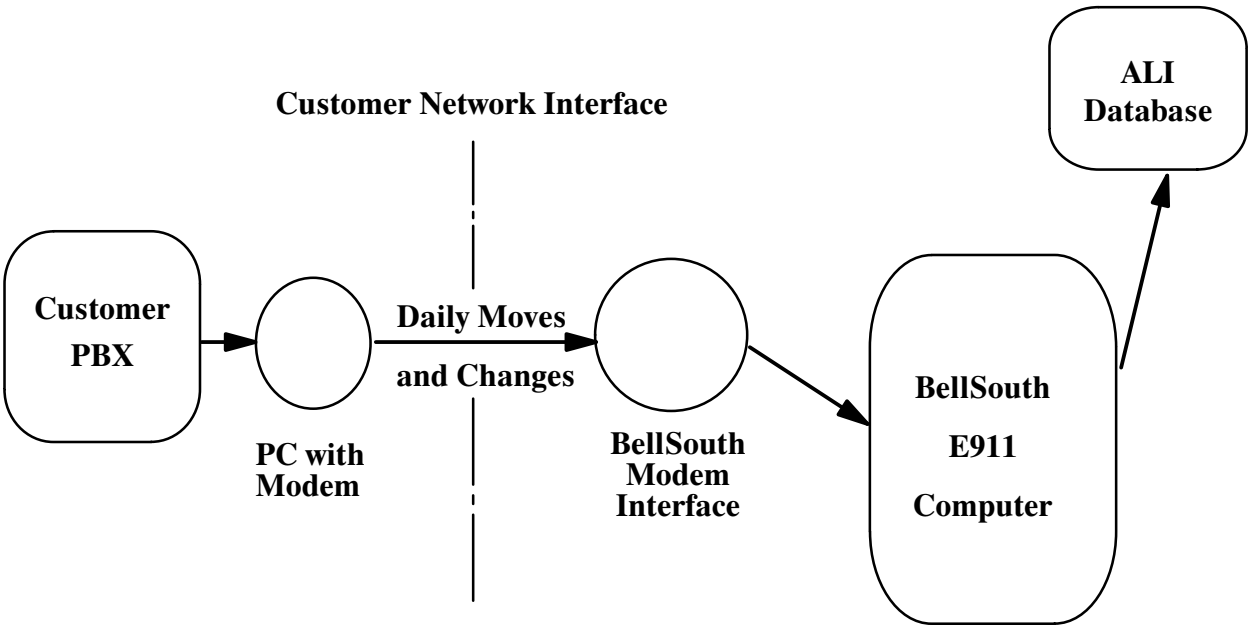

FIGURE 1

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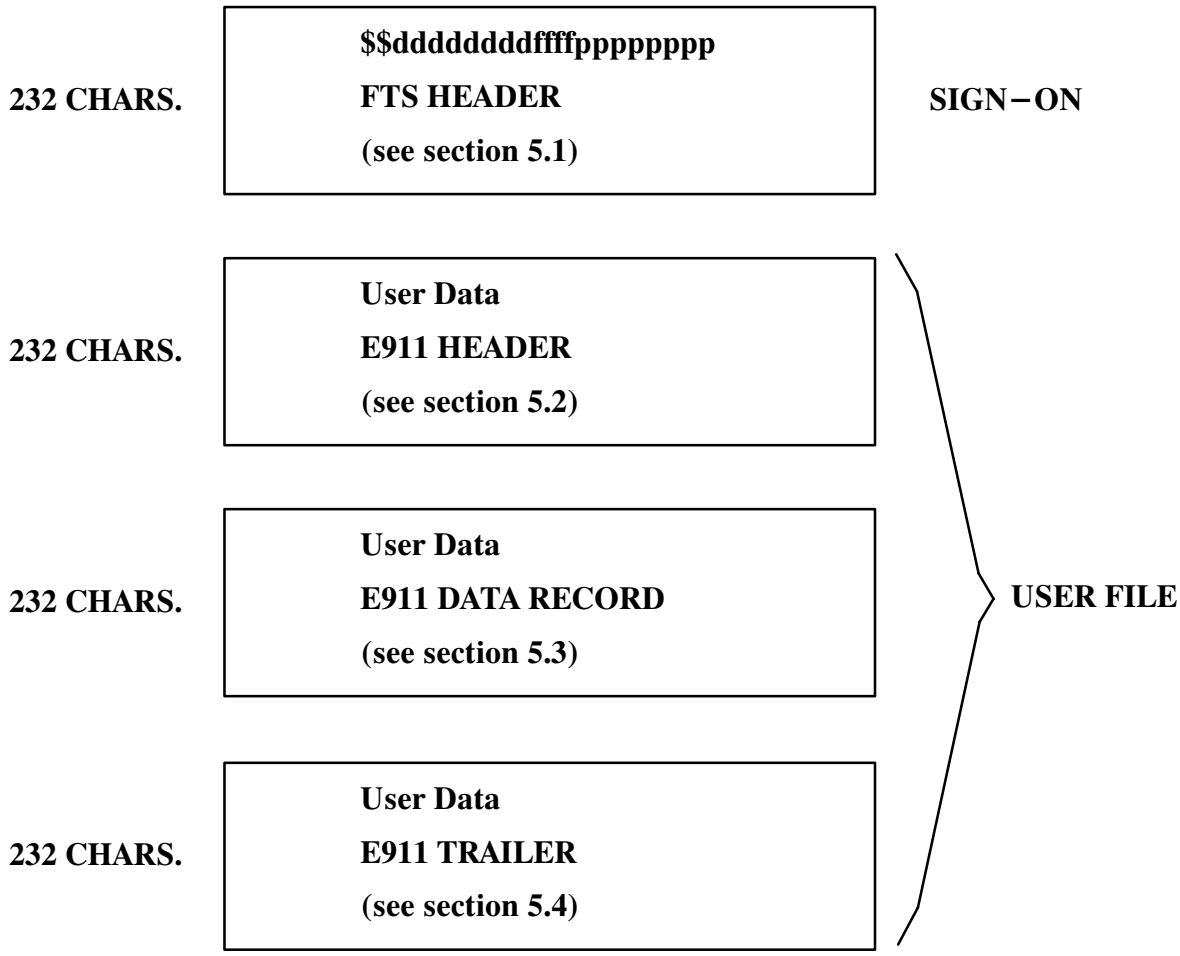

FIGURE 2

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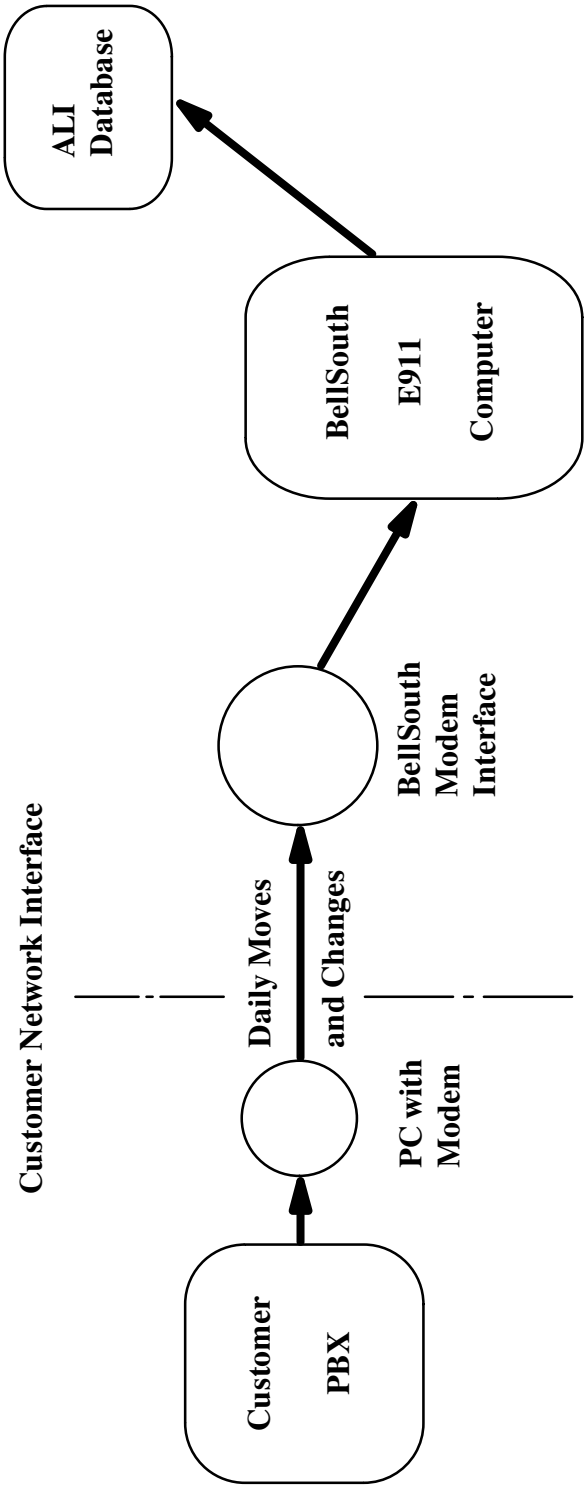

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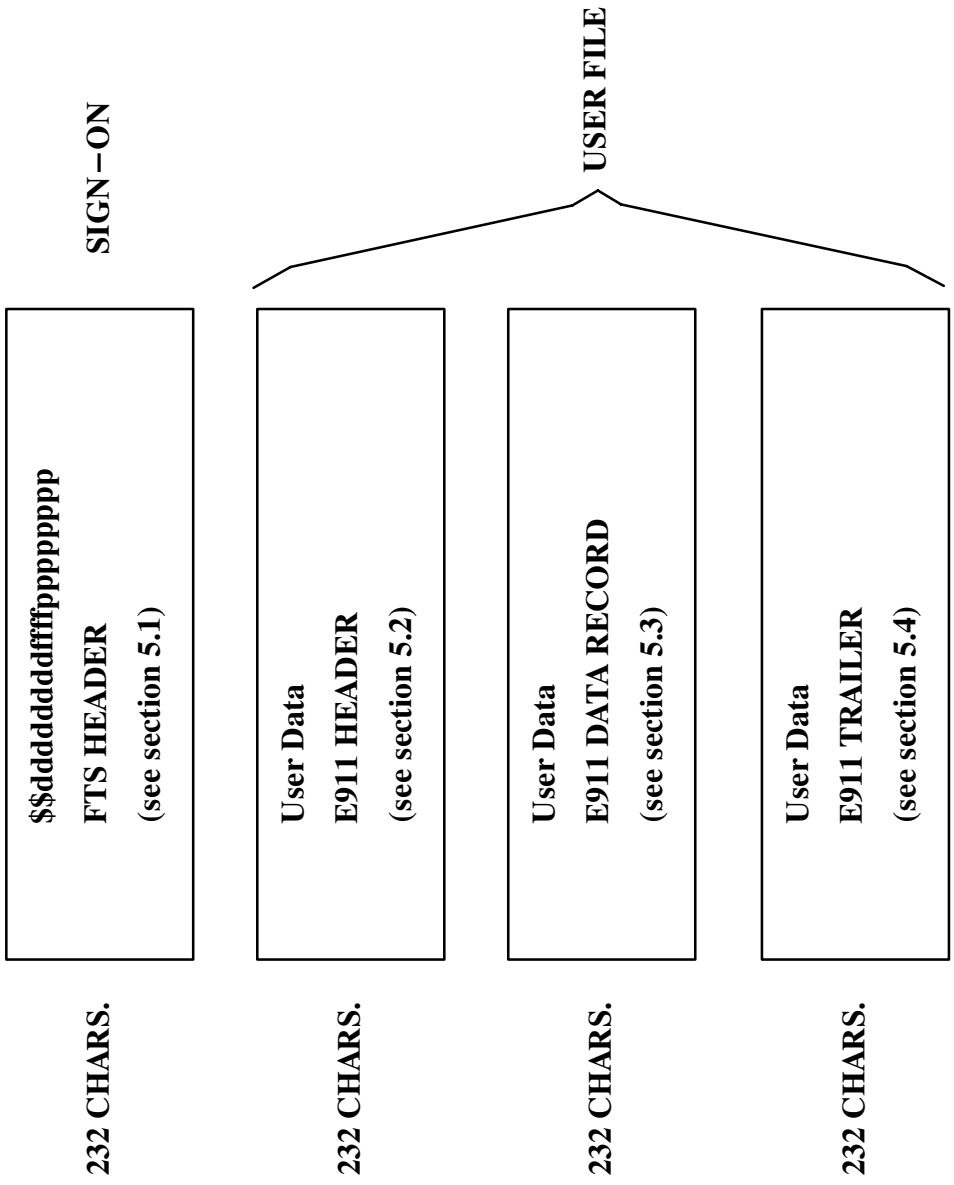

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