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BELLSOUTH®

Electronic White Pages Interface Specifications

Technical Reference

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ELECTRONIC WHITE PAGES
INTERFACE SPECIFICATIONS

CONTENTS

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1. INTRODUCTION

This is a BellSouth publication and is being issued to provide technical information about the interfaces to Electronic White Pages service. Subsequent revisions to this document will be issued as required. Actual availability and functionality is subject to business decisions and bilateral agreements with other companies.

BellSouth's Electronic White Pages (EWP) will provide the means for a customer to initiate a name search in the Telephone Company's EWP data base system without the use of a Directory Assistance operator.

2. SCOPE

This interface specification is limited to data base query and associated error and recovery mechanisms only. It will not support data base update procedures or modification mechanisms.

3. INTERFACE OVERVIEW

The purpose of this document is to provide a description of interface requirements which will allow users direct access into the BellSouth EWP data base without intervention by a human operator.

It is expected that EWP will ultimately migrate toward the X.500 protocol. The timeframe for this migration is to be decided.

4. ACCESS PROTOCOLS

Access to the BellSouth EWP data base is X.25 or X.75 via the Public Packet Switch Network (PPSN). Additionally, asynchronous dial−up (through a PPSN PAD) is also being supported. See attached references regarding BellSouth PPSN interfaces.

4.1 X.25 Public Packet Network Access

The X.25 Packet Network Access interface will conform to CCITT X.25 and/or X.75 standards. Access to the Pulselink Public Packet Network will conform to BellSouth TR 73513 "Pulselink X.25 Interface Specification" and BellSouth TR 73516 "Pulselink Physical Interface Specifications".

4.1.1 Parameters and Options

The following parameters and options will be used when accessing the BellSouth EWP host via an X.25 interface. More detailed information may be obtained from BellSouth Publication TR 73513 "Pulselink® X.25 Interface Specification".

(a) Switched Virtual Calls only

(b) Default maximum packet size of 128 octets with no negotiation of packet size allowed.

4.2 Asynchronous Dial−up

Dial access to the BellSouth EWP will be supported for any asynchronous terminal device.

4.2.1 Format

The asynchronous dial−up interface will utilize a 10−bit data word with one start bit, seven data bits, one parity bit and one stop bit. X−ON and X−OFF need not be supported. The send signal for data streams is the carriage return (hex 13 odd parity). EWP responses will be in the proper combination of upper and lower case characters as exhibited in the BellSouth White Pages Directory.

4.2.2 Data Baud Rate

The data BAUD rate will be either 1200 or 2400 bps. Other speeds may be supported in the future.

4.2.3 Terminal Characteristics

The system will support either ANSI (X 3.64), or VT−100 terminal characteristics.

5. EWP PRESENTATION

BellSouth's EWP will support multiple types of data presentations. It is expected that these, or their future variations will provide sufficient flexibility for the accessing user to obtain maximum utilization from the service, while at the same time minimizing access. It is BellSouth's intention to ultimately migrate to national and international data base retrieval standards for EWP service, e.g., X.500 protocol.

5.1 Presentation Modes

Three modes of communication presentation will be supported: Block Mode, Command Line and Interactive Menu. Since both Command Line and Interactive Menu are fully interactive, users of these two modes will be able to convert from one to the other while on line. User profiles, established by subscription, will determine the default mode.

5.1.1 Block Mode

Initial introduction of BellSouth's EWP offering will be in the Block mode format. A detailed description of this format can be found in Section (6) of this document. Block mode format is also compatible with AT&T's Electronic Directory Assistance (EDA) as defined in the AT&T Technical Reference TR−41454. While Block mode will initially be fully compatible, ongoing compliance with future releases of AT&T's TR−41454 will be at BellSouth's discretion. Furthermore, future enhancements introduced by BellSouth, may or may not be supported by AT&T's EDA specification. This Technical Reference will be updated to provide BellSouth's current interface implementation specifications.

5.1.2 Command Line Mode

Command Line (CL) mode will allow an accessing user to initiate EWP inquiries from programmable Customer Premise Equipment (CPE) equipment in a limited "batch" mode configuration. Note, for purposes of this document, batch mode is being defined as a computer to computer communication, but in this application, is limited to a single request per data base inquiry. Format for a CL inquiry message and its associated data base responses will basically adhere to Block mode format defined elsewhere within this document. (For additional detail, see Section−6 "Block Mode Specification".) It is not BellSouth's intention to support true batch mode operation initially (multiple searches blocked into a common data stream), however this feature may be considered at a later time.

Although CL mode is intended to support mechanized data base access, it does not preclude access from terminal devices. In the CL mode, the accessing system/user will be presented with a prompt from the EWP data base. Responses to the on line prompt will determine appropriate action from the on−line data base.

5.1.3 Interactive Menu Mode

Interactive Menu (IM) mode is intended to support human interaction with the EWP data base. Utilizing a menu format, the BellSouth EWP will guide an accessing user through the necessary responses required to perform a data base inquiry.

5.2 On Line Assistance

Both CL and IM mode operation will provide user support through On−Line help functions. In the CL mode, options are available to provide an overview of the service and description of user input fields required to perform a data base search. Mandatory and optional fields are also identified.

In the IM mode, text files are available which can be retrieved by the user. The text files describe BellSouth's ESP and its accessibility in an interactive environment. A description of each IM command is included in the help file.

Feedback messages will also be supported, and will allow a user to report difficulties and system anomalies to BellSouth administrators.

6. BLOCK MODE SPECIFICATION

This section defines the presentation protocol used for Block mode communication between (Customer Premise Equipment (CPE) and the EWP host. Block Mode specifications are also supported in the Command Line mode. The protocol is basically independent of the transport methods described earlier. This specification is also convergent with AT&T's EDA Specifications TR−41454. Note earlier disclaimer of ongoing compatibility.

6.1 Overview

Communications between the CPE and the EWP host is via exchange of block or "data stream" transactions. Each data stream is composed of ASCII characters with the ASCII carriage−return (cr) marking the end. Each record begins with a backslash (\) followed by an upper case alpha character identifying the transaction type. Multiple records may be present in the EWP Host data stream.

6.2 Record Fields

Each record is divided into fields. The three field types are keyword, ordered and positional.

6.2.1 Keyword Field

A keyword field begins with a one (1) letter identifier, followed by an equal sign (=) character and ends with either a field separation pipe (¦) character, a backslash (\) indicating a new record or the end of data stream indicator (carriage−return) character. Keyword fields can appear in any sequence within a record.

Keyword fields are utilized by CPE data base queries only.

6.2.2 Ordered Field

An ordered field begins after a field separator (¦), or in fixed position if it is the first ordered field, has a variable length, and ends with a field separator. The identity of an ordered field is determined by the number or fields that have preceded the field (e.g., nth field of a record). The absence of data in an ordered field is represented by a field separator, followed by another field separator, a new record indicator, or an end of data stream indicator.

6.2.3 Positional Field

A positional field begins in a fixed character position, has a defined length and ends in a fixed position. There should be no padding in positional fields.

6.3 Record Field Contents

This section defines the data elements of fields in CPE and EWP Host type records.

6.3.1 CPE Type Record Field Contents

Following is a description of field data elements by CPE record type:

(a) CPE U "User" Type Record Fields

USERID − [Mandatory]

A ten (10) character A/N (Alpha/Numeric) identification used for security LOGIN.

PASSWORD − [Mandatory]

A four (4) character A/N identification used in conjunction with USERID for security LOGIN.

(b) CPE Q "Query" Type Record Fields

Key identifiers must be formatted exactly as follows: "A=", "L=", "N=", "I=", "P=", and "S=". If key identifier data contained in the CPE "Q" record is in error the EWP Host will return an error message (Type M) and abort any search attempt. **NOTE: Key IDENTIFIER alpha characters are always in UPPER CASE.**

Data elements accompanying key identifiers must be left justified following the equal sign (=) of the key identifier. The last character of the last data element contained with key identifiers must be immediately followed by a field separator pipe character or an end of record carriage−return character [blank (space) characters are **NOT** permitted between data and/or field separator or end of record indicator].

AREA CODE − [Mandatory]

Literal "A=" immediately followed by three (3) NUM character NPA.

LOCALITY NAME − [Mandatory]

Literal "L=" immediately followed by fully spelled ALPHA Locality Name (maximum 30−characters). Locality field data may be the name of a City, Town, Hamlet, Neighborhood (i.e., Germantown, Frenchtown, Little Italy, Atlanta, Helena, Richmond, Staten Island, Manhattan, Birmingham, etc.)

SEARCH INDICATOR − [Mandatory]

Literal "I=" is immediately followed by one (1) ALPHA character representing "R" Residence, Business "B", Government Municipality "M", Government County "C", Government State "S", or Government Federal "F".

Government Municipality (I=M) relates to Cities, Towns, Townships, Hamlets, Neighborhoods, Boroughs, etc.

Government County (I=C) relates to Counties, Parishes, Territories, Regions, etc.

Government State (I=S) relates to States, Alabama, Florida, etc.

NOTE: The initial introduction of EWP will not fully segregate Government listings as defined above. Data base responses may return multiple Government listings if found.

SEARCH NAME − [Mandatory]

Name (N=) field data for Residence type search may (**optionally**) contain Given Name information in the form of First Name or Initial immediately preceded by a comma (,) after the surname, and second (middle) Name or Initial immediately following a comma (,) after the First name or Initial. Name (N=) Field data for Business or Government type search must consist of fully spelled word(s).

PLACE NAME − [Optional]

Literal "P=" immediately followed by fully spelled A/N Street (place) name, or initial. The spelled street may not exceed twenty−two (22) A/N characters. The term of the name that ends in the twenty second character position is wildcarded in the EWP Host's data base search. This field is optional.

SUBORDINATE SEARCH − [Optional]

Literal "S=" immediately followed by fully spelled subordinate search name for Business and Government only. Examples of Subordinate Searches are: Business − "Auto", "Retail Stores", "Customer Services", etc. For Government − "Courts", "Juvenile", etc. Maximum twenty−two A/N characters. The term of the name that ends in the twenty second character position is wildcarded. This field is optional.

(c) CPE M "More" Record

MORE LISTINGS REQUEST − [Conditional]

Literal "MORE" four (4) character ALPHA comment.

(d) CPE L "Logoff" Record

USER LOGOFF − [Mandatory]

Literal "LOGOFF" six (6) character ALPHA comment.

6.3.2 EWP Host Type Record Field Contents

EWP Host record type alpha characters are always in upper case.

Following is a description of field data elements by EWP Host record type:

(a) EWP Host B "Block" Record

NPA ACCESS DENIED −

Type B records indicate the EWP inquiry is restricted from requesting records from this NPA. BellSouth EWP has two restrictions: 1) "Home" NPA users requesting listings of Foreign NPAs (an NPA other than their own) and 2) "Inter" NPA − a user requesting listings from their "Home" NPA.

(b) EWP Host U "User" Record

LOGIN REQUEST −

Literal "E1" two (2) character A/N comment (code).

(c) EWP Host V "Valid" Record

LOGIN VALID −

Literal "E7" two (2) character A/N comment (Code). Acknowledges valid Login of User

(d) EWP Host I "Invalid" Record

LOGIN INVALID −

Literal "E2" two (2) character A/N comment (Code). Notification of invalid user Login

(e) EWP Host S "Search" Record Fields

"S" records are EWP Host echoes of the user (CPE) query request (Q−Record)

AREA CODE[1] − (1st Field of S record)

Three (3) character NUM NPA

TOTAL NUMBERING LISTINGS − (2nd Field of S record)

Two (2) character NUM in the range of 00−99 representing total number of data base listings identified in the search. Total number of listings, is the cumulative count of "Q" type records which are available for transmittal to CPE. Caption records are not included in this total.

Note that although the maximum number of records in a Data Stream is set to 11 (1−"S" and 10−others "C", "Q", etc.), this does not necessarily dictate that 10−Listings will be included in the Data Stream (screen). For Business and Government listings, multiple levels of captions/ headers ("C" type records) are transmitted for formatting purposes and limit the total count of Listings which can be displayed on a given screen. See Glossary for definition of Listings.

COPYRIGHT YEAR − (3rd Field of S record)

Four (4) characters NUM year supplied by EWP Host. Copyright Year of EWP data base.

INDICATOR[1] − (4th Field of S record)

One (1) characters ALPHA representing Residence, Business or Government (same as in CPE Record Type Q).

NAME[1] − (5th Field of S record)

Characters (30−maximum) used by EWP Host to search the data base for matching name(s).

LOCALITY[1] − (6th Fields of S record)

Characters (30−maximum) used by EWP Host to refine the selection of listing records that matched on SEARCH LISTING NAME.

PLACE NAME (STREET)[1] − (7th Field of S record)

Characters (22−maximum) used by EWP Host to refine the selection of listing records that matched on SEARCH LISTING NAME.

SUBORDINATE INFORMATION[1] − (8th Field of S record)

Characters (22−maximum) used by EWP Host to refine the selection of subsets of caption and listing records that matched CPE's inquiry search request.

(f) EWP Host C Caption Record Fields

LEVEL OF INDENT −

Caption tier number preceding associated listing records. Tier numbers are one (1) character NUM in range of 1−9 representing the level of indent of caption in a set.

CAPTION TEXT −

[1] Echo of CPE "Q" Record inquiry data.

Entire Caption tier text (max. 70 char. ALPHA).

(g) EWP Host Q "Query" Record Fields

Host listing which results from data base inquiries. Typically this record contains the directory number identified by the data base.

Non−Published and Non−Listed numbers are not included in the BellSouth EWP data base.

NOTE: Total aggregate number of characters in combined "Name", "Address and Street", and "Locality" fields is limited to ninety (90). Listing "Telephone Number" is excluded from this count.

TIER NUMBER − (1st Field of record)

One (1) character NUM number in range 0−9 representing level of indent. A tier number of zero (0) represents a stand alone listing; not part of a caption set.

LISTING NAME[2] − (2nd Field of record)

Maximum of fifty nine (59) character A/N name in recovered listing.

TELEPHONE NUMBER − (3rd Field of record)

Range of 3−18 character (including hyphens between segments) A/N telephone number.

ADDRESS[2] − (4th Field of record)

Max 59−character A/N address and street in recovered listing.

LOCALITY[2] − (5th Field of record)

Max 59−character A/N locality name in recovered listing. May differ from a Search Locality due to differing locality searches by the data base application.

(h) EWP Host "M" Record Fields

"M" type records allow the EWP Host to communicate error conditions or irregularities back to the CPE.

LOCALITY INVALID −

Inquiry Locality field has been found to be invalid for this directory. No matching Locality found in the search.

ENTRY INVALID −

User entry is invalid. Entry is identified by "(KEY)=".

SEARCH MISSING −

Mandatory Search criteria was found missing. Missing Search criteria is identified by (ACD/LOC/IND/NAM).

MAXIMUM EXCEEDED −

[2] The maximum aggregate number of characters in the combined total of characters of the name, Address & Street and Locality may not exceed ninety (90) characters.

The maximum number of characters has been exceeded.

KEYWORD INVALID −

Invalid Keyword received by EWP Host.

INVALID AREA CODE −

Area Code requested is invalid for this data base.

TYPE INVALID −

Invalid Record Type was received from CPE. Up to 123 characters or record.

TYPE OUT OF SEQUENCE −

Record Type detected out of sequence.

DUPLICATE KEYWORD −

Redundant Keyword identified in user query.

IND & SUB INCOMPATIBLE −

Search elements requested by user are incompatible.

(i) For EWP Host “G”, “H”, “N”, “E”, “T”, “D”, “R”, and “L” Type Record Fields, see Table 2.

6.4 Combinations of Records in a EWP Host Data Stream

EWP host data streams may contain concatenated records as follows:

6.4.1 EWP Host record Types U, V, D, and I

EWP Host record types U, V, D, and I are stand alone records and are **never** combined with other EWP Host records in a data stream.

6.4.2 EWP Host Record Type D

EWP Host record type D is a stand alone record when CPE fails to produce a valid USER ID and PASSWORD in 3− attempts.

6.4.3 EWP Host Record Type T

Record type T is a stand alone record when CPE fails to produce a valid LOGIN when the DA Host detects that the time allotted for LOGIN has been exceeded. Record types T and L are concatenated with type L following type T when the EWP Host detects that the time allotted for receipt of CPE date stream has been exceeded any time after CPE has successfully completed a valid LOGIN.

6.4.4 EWP Host Record Type L

EWP Host record type L is a stand alone record in a EWP Host data stream when it is the response to CPE record type L. Record type L from a EWP Host may be combined with record type T as described above.

6.4.5 EWP Host Record Type S

EWP Host record type S is always the first record in a EWP Host data stream consisting of possible combinations of S and Q, N, E, R, H, M, G, B, and C type records.

(a) When one or more M records follow an S record there are no other type records allowed in the data stream.

(b) When either an N or E or G or H or R or B type record immediately follows an S record there are no other records allowed in that data stream.

(c) When a C record follows an S record either a C, Q or multiple C and Q records will follow the C record. B, G, H, N, R, E and Q records are never combined with each other in a data stream.

(d) When a Q record follows an S or C type record there may be more Q & C records concatenated after the first Q record in that data stream (up to the maximum of eleven concatenated S, C and Q records.) Only M, C and Q type records may appear in multiples in a EWP Host data stream. M and Q type records will not appear together in the same data stream. Consequently M and C type records will not appear together in the same data stream.

6.4.6 EWP Host Record Types B, R, N, G, H, and E

EWP Host record types B and N or G or H or E or R are concatenated in a data stream as described in Section 6.4.5, and subparagraphs 6.4.5.(b) and 6.4.5.(c).

6.4.7 EWP Host Record Type C

EWP Host record type C is concatenated in a data stream as described in Section 6.4.5, and subparagraphs 6.4.5.(c) and 6.4.5.(d).

6.4.8 EWP Host Record Type M

EWP Host record type M is concatenated in a data stream as described in Section 6.4.5, and subparagraphs 6.4.5.(a) and 6.4.5.(b).

6.4.9 EWP Host Record Type Q

EWP Host record type Q is concatenated in a data stream as described in Section 6.4.5, and subparagraphs 6.4.5.(c) and 6.4.5.(d).

6.5 Session Initialization and Data Flow

The following represents a logical sequence of events during a session. The steps do not include error and recovery procedures. These events are also described in further detail in AT&T's TR−41454.

CPE will initiate connection to the EWP host via dial−up modem connection or X.25. The host will respond with the \U login request record. If the CPE does not respond within one (1) minute the EWP host responds with the \T record and terminates the session. If the CPE sends a \U record with valid userid/password the EWP host responds with a \V record. The CPE has three (3) attempts to send a valid \U record before the host will respond with a \D record and terminates the session.

The CPE will initiate Queries by the appropriate \Q Query record. The Host will respond to each Query with \S Search Criteria plus the appropriate answer to the CPE Query of \M, \E, \N, \Q or \C and multiple \Q records.

STEP	**PROCEDURE**
START	CPE initiates Packet or Dial Modem connection signal to ESP Host computer.
A	• EWP Host responds with \U Login request record.
	• EWP Host sets (or resets) 1−minute timer to measure CPE idle Time.
	• EWP Host monitors timer to determine if 1−minute has elapsed before a CPE response.
	• If timer ≥ 1−minute, EWP Host sends \T record and then executes procedure in step (G). else CPE sends \U Login security data.
	• If CPE login is valid, EWP Hosts sends \V Login valid record to CPE. EWP Host sets (or resets) 10−minute timer. else if this is CPE's third unsuccessful attempt to Login, EWP Host sends \D disconnect message to CPE. EWP Host then executes procedure step (G). else EWP Host sends \I Invalid Login record to CPE and then returns to procedure step (A).
B	• If timer ≥ 10−minutes, EWP Host executes step (E). else CPE sends \Q Query record to EWP Host.
C	• EWP Host answers CPE Query with \S Search Criteria record plus the appropriate answer to CPE Query of either \M, \E, \N or \Q or \C and multiple \Q records; or just multiple \Q records.
	• EWP Host resets 10−minute timer.
	• If the number of \Q listings received by CPE is < total number of \Q listings found by EWP Host. If CPE desires to see more of the found listings, If timer < 10−minutes, CPE sends \M request for more listings to EWP Host. EWP Host executes procedure step (C). else EWP Host executes procedure step (E). else CPE executes procedure step (D).
D	• If CPE wants another new Query CPE executes step (B). else if timer ≥ 10−minutes, EWP Host executes procedure step (E). else CPE sends \L Logoff request record to EWP Host. EWP Host then executes procedures step (F).
E	• EWP Host sends \T Timeout record to CPE
F	• EWP Host responds with \L Logged Off record to CPE.
G	• EWP Host releases host port and transport facility.

6.6 CPE Initiated Logoff

The CPE will send a \L Logoff request to the EWP Host. The host will respond with a \L record and terminate the session.

6.7 Error and Recovery Procedures

If a reset occurs on a packet transport facility and a data stream was lost or garbled as a result, the CPE will resend the data stream transaction involved at the time the reset happened. The EWP Host will send a "\G" record if it receives a garbled transaction within 1−second after receipt of a network reset.

If the connecting public switched network link is lost during a dial up session, the CPE will re−initiate the dial up procedure. After successful Logon, the User will resume transacting with the EWP Host by re−sending the last Q Query record attempted before the link was lost.

6.8 Example of CPE Data Stream

(a) CPE User Logon Request

\U7343477629ABCD (cr)

(b) CPE User EWP Data Base Query

\QA=205¦L=HELENA¦I=R¦N=Res¦P=ELME (cr)

(c) CPE Requests More Listings

\MORE (cr)

(d) CPE Requests Logoff From System

\LOGOFF (cr)

6.9 Examples of EWP Host Data Streams (b = blank space)

(a) Host Login Request

\UE1 (cr)

(b) Host Notice of Invalid Login

\IE2 (cr)

(c) Idle time Exceeded − System Disconnected

\TE3 (cr)

(d) Disconnect

\DE4 (cr)

(e) User Logoff Response from Host

\LE5 (cr)

(f) Host Resource Failure

\S513¦01¦1988¦R¦KINGbM¦DAYTON¦INDEPENDENCE¦¦
\RE6 (cr)

(g) Host Notice of Valid Login

\VE7 (cr)

(h) Host Data Response for Residence Listing

\S513¦01¦1987¦R¦KINGbM¦DAYTON¦INDEPENDENCE
\Q0¦KINGbMARTINbLUTHERbJR¦555−2222¦302b
INDEPENDENCEbBLVD¦DAYTON (cr)

(i) Host Data Response for Business Listing

\S201¦02¦1987¦B¦SEARSbROEBUCKbCOMPANY¦BRIDGEWATER¦CATALOG
\C1¦SEARSbROEBUCKbCOMPANY¦BRIDGEWATER¦CATALOG
\C2¦DEPARTMENTbSTORES
\C3¦BRIDGEWATER
\C4¦SOMERSETbSHOPPINGbCTR
\Q5¦CATALOG−TObPLACEbANbORDER¦555−7400¦¦BRIDGEWATER
\Q6¦CATALOG−TObCHECKbANbORDER¦555−3200¦¦BRIDGEWATER (cr)

(j) Host Response for Government Municipality Listings

\S201¦03¦1987¦M¦FIREbDEPARTMENT¦SOMERVILLE¦¦
\C1¦SOMERVILLEbBOROUGHbOFb−
\C2¦BORObOFFICES
\C3¦FIREbDEPARTMENTb170bMAINbSMVL−¦
\Q4¦TObREPORTbAbFIRE¦555−0331¦SOMERVILLE¦
\C5¦FORbOTHERbPURPOSESb−
\Q6¦ENGINEbCObNOb1b170bEbMAINbSMVL¦¦555−7301¦¦SOMERVILLE¦
\Q6¦CENTRALbHOOKbANDbLADDERbCOb24bDIVISIONbSMVL¦555−7302¦¦
SOMERVILLE (cr)

(k) Host Notice of No Listing Found

\S201¦00¦1987¦KINGbM¦TRENTON¦INDEPENDENCE¦¦
\NF1 (cr)

(l) Host Notice of Too Many Listings Found

\S312¦00¦1987¦R¦SMITH¦CHICAGO¦¦
\EF2 (cr)

(m) Locality Invalid for this Directory

\S201¦00\1987¦R¦SMITH¦CHICAGO¦TRIPP¦¦
\MF3LOC=CHICAGO (cr)

6.10 Maximum Data Communication Limitations

6.10.1 Maximum Data Stream Characters

The maximum number of characters in a data stream depends upon whether the data stream contains one or more records. A CPE data stream will always consist of only one record.

A EWP Host data stream may consist of one or more records. Two or more records can be contained in a EWP Host data stream when it is in response to a CPE query (host echo of query fields). A maximum of (11) data base records can be contained in a single data stream (full−screen of listings).

6.10.2 EWP Host Data Base Record Size

A EWP data base record will not exceed 128 characters [including the start of record indicator "\", the record identifier (alpha character), field separators (pipe "¦") and the potential end of data stream indicator (carriage−return character). Only the last record in a data stream contains the end of data stream indicator carriage return.

6.10.3 EWP Host Data Base Field Truncation

The total number of characters in combined name, address and street, and locality is limited to ninety (90). The Host data stream will truncate the address and street field first then the locality field to ensure that the maximum name field will not be truncated below fifty−nine (59) characters.

6.10.4 CPE Query Limitations − By Fields

The maximum number of characters (by field) allowed in a CPE query is as follows:

Name − thirty (30)
Location − thirty (30)
Place − thirty (30)
Listing Subordinate Search − twenty−two (22)
Area Code − three (3)
Search Indicator − one 91)

NOTE: #−characters does not include Field Indicator (e.g., "P=") within a CPE inquiry.

6.10.5 Records Per Data Stream

The CPE data stream will consist of a single record or query. The host data stream may contain one or more records up to a maximum of eleven (11) records.

6.10.6 Characters in a Record

The maximum number of characters in a Record is 128, including the start of record indicator "\", the record identifier (ALPHA character), field separators (pipe "¦"), and the potential end of data stream indicator (carriage return).

6.10.7 Characters in a Message

The maximum length message is 125 characters of content.

6.10.8 Maximum Number of Listings

The maximum number of "Listings" returned to the user (utilizing multiple screens) will be as follows:

Response to Residential Queries − Sixty (60)
Response to Business/Government − Ninety−nine (99).

For Bus/Gov. searches, the number of "Listings" identified in the 2nd field of "S" EWP to CPE records ("Total Number Listings"), will NOT truly represent the correct number of "Screens" already returned (or remaining to be transmitted from EWP) due to introduction of formatting caption/header records included in the Data Stream. To maintain an accurate count of "Listings" already received as well as a count of those "Listings" pending for transmittal to CPE, a cumulative tally of "Q" records will be required by the CPE software − with the difference being those "Listings" still pending.

6.10.9 Maximum Packet Size

The default maximum packet size is 128−octets with no negotiation of packet size allowed.

6.11 Transmission Requirements

The EWP Host will not echo CPE data stream characters.

Data forwarding is not permitted to occur until the data forwarding carriage−return character is detected in the data stream.

7. COMMAND LINE MODE SPECIFICATION

In the Command Line mode, a user will receive a prompt from which system commands and searches can be initiated directly without the necessity of following a menu tree. Command Line mode is a subset of Block Mode, however several additional navigational type commands are included, i.e., Change Mode (CL/IM), Terminal Options, etc. Where appropriate, all requirements and limitations associated with Block mode are also applicable to the Command Line mode.

8. INTERACTIVE MENU MODE SPECIFICATION

EWP Menu mode will allow a user to access the system with a "dumb" terminal type interface or PC using terminal emulation type software. Upon completion of Logon, the user will be presented with an application menu which provides guidance on a field by field basis.

Appropriate Help, Feedback, Terminal/System Options, and prompts will assist the user perform the search with minimum effort.

9. CUSTOMER IDENTIFICATION

EWP customers will be identified by a 14−character User ID. The ID consists of a 10−digit Customer Identification Code and a 4−character alpha−numeric Personal Identification Number (PIN) security code. A single Customer Identification Code can have 1−4 PIN codes associated with it.

10. ERROR AND RECOVERY PROCEDURES

If a reset occurs on the packet network the CPE will resend the data stream transaction outstanding at the time of the reset. This feature implies that the network will pass reset notification to the CPE (X.3 parameter 6 set to pass reset notification.) If data stream is garbled during transmission between the CPE and a PAD over a dial facility, the EWP host will return a "\G" record.

If the connection to the PSTN is lost during a dial up session, the CPE will re−initiate the session using the standard procedure. Once the CPE has successfully completed the LOGIN procedure the user will resume interaction with the EWP host by sending the last outstanding Q query record from the previous session.

GLOSSARY

ALPHA	Alpha Character(s)
A/N	Alphabetic, Numeric and Special Characters Allowed
ANSI	American National Standards Institute
ASCII	American National Standard Code for Information Exchange
CCITT	International Telegraph and Telephone Consultive Committee
Data Stream	A block or string of ASCII characters that start with a backslash (\) and ends with the (cr) character. A data stream can contain one or more records. **Note: the maximum number of records is a EWP Host data stream is eleven (11).**
EWP	Electronic White Pages
Field	A field is a logical sub−division of a record. One or more fields may be present within a record. Three type fields are Keyword, Ordered, and Positional.
IND	Search Type Indicator (Category)
Listing	A listing is defined as any data base record containing a telephone number "Listing" or a "Non Published" indicator. Captions/headers are excluded and not considered a "Listing".
LOC	Locality (City)
NPA	Number Plan Area
NUM	Numeric Character(s)
LOC	Locality (City)
IND	Search Type Indictor (Category)
PLC	Place (Street)
Record	A record starts with a backslash (\), followed by an upper case alpha character (e.g. "\L'). Multiple records may be present in a data stream. A record shall not exceed 128 characters, including the record indicator (\), and the potential end of data stream character (cr).
Screen	For purposes of this document, an EWP "Screen" represents a Data Stream transmitted to the CPE resulting from a user Query (CPE type "Q" record) search request. The EWP "Screen" response may contain "S", "C", "Q", "N", "E", or "M" type records.
SUB	Subordinate Search Information

TABLE 1

CPE RECORDS AND IDENTIFIERS

Orig.	Record Type	Record/Field Description	Field Name	Field Type	Pos. Key Ord.	Content Type	Mandatory	Max. Char	Code	Comments
CPE	U	USER LOGON	USERID	POS	3	A/N	YES	10		User Identification
			PASSWORD	POS	13	A/N	YES	4		User Password
	Q	USER QUERY	AREA CODE (NPA)	KEY	A=	NUM	YES	5		"A=" (NPA)
			LOCALITY NAME	KEY	L=	A/N	YES	32		"L=" (City, Town Neighborhood, etc.)
			SEARCH INDICATOR	KEY	I=	ALPHA	YES	3		"I=" ('R' or 'B') or ('M', ~C', 'S', or 'F')
			SEARCH NAME	KEY	N=	A/N	YES	32		"N=" (Res, Bus, or Gov Name)
			PLACE NAME	KEY	P=	A/N	NO	24		"P=" (Street Name)
			SUBORDINATE SEARCH	KEY	S=	A/N	NO	24		"S=" (Specification Identification within a caption set−Bus & Gov only)
	M	USER REQUEST CONTINUATION OF LISTINGS FROM SAME QUERY	MORE LISTINGS REQUEST	POS	3	ALPHA	YES	4		"MORE"
	L	USER REQUEST FOR LOGOFF FROM SYSTEM	USER LOGOFF	POS	3	ALPHA	YES	8		"LOGOFF"

TABLE 2

HOST RECORDS AND IDENTIFIERS

Orig.	Record Type	Record/Field Description	Field Name	Field Type	Pos. Key Ord.	Content Type	Mandatory	Max. Char	Code	Comments
EWP HOST	B	NPA ACCESS BLOCKED	NPA ACCESS DENIED	POS	3	A/N	YES	9	H1	"ACD=" (3−Char Code) NPA restrictions apply
	U	HOST LOGIN REQUEST	LOGIN REQUEST	POS	3	A/N	YES	2	E1	
	I	HOST NOTICE OF INVALID LOGIN	LOGIN INVALID	POS	3	A/N	YES	2	E2	
	T	IDLE TIME EXCEEDED SYSTEM DISCONNECTED	USER TIME EXCEEDED	POS	3	A/N	YES	2	E3	
	D	DISCONNECT	USER DISCONNECTED	POS	3	A/N	YES	2	E4	
	L	USER LOGOFF RESPONSE FROM HOST	SESSION ENDED	POS	3	A/N	YES	2	E5	
	R	HOST RECOURSE FAILURE	RESOURCE FAILURE	POS	3	A/N	YES	2	E6	
	V	HOST NOTICE OF VALID LOGIN	LOGIN VALID	POS	3	A/N	YES	2	E7	
	G	NETWORK TRANSPORT FAILURE	GARBLED CPE DATA STREAM	POS	3	A/N	YES	125	E8	Up to 123 Char of Record
	H	DIRECTORY UNACCESSIBLE	DATA BASE LOCK OUT	POS	3	A/N	YES	2	E9	
	S	SEARCH AREA CODE	AREA CODE	POS/ ORD	3/1	NUM	YES	3		(NPA)
		NUMBER OF LISTINGS RETURNED	TOTAL NUMBER LISTINGS	ORD	2	NUM	YES	2		Number and Range (00−99)
		COPYRIGHT YEAR	COPYRIGHT YEAR	ORD	3	NUM	YES	4		Data base Copyright year (i.e. 1990)
		SEARCH INDICATOR	INDICATOR	ORD	4	ALPHA	YES	1		('R' or 'B') or ('M', 'C', 'S', or 'F')

TABLE 2

HOST RECORDS AND IDENTIFIERS (continued)

Orig.	Record Type	Record/Field Description	Field Name	Field Type	Pos. Key Ord.	Content Type	Mandatory	Max. Char	Code	Comments
EWP	S	SEARCH NAME	NAME	ORD	5	A/N	YES	30		Residence, Business or Government Name
		SEARCH LOCALITY NAME	LOCALITY	ORD	6	A/N	YES	30		City, Town, Neighborhood etc. Name
		PLACE NAME	STREET	ORD	7	A/N	YES	22		Street
		SUBORDINATE SEARCH INFORMATION	SUBORDINATE INFORMATION	ORD	8	A/N	YES	22		Subordinate Name
	C	CAPTION TIER NUMBER	LEVEL OF INDENT	POS/ ORD	3/1	A/N	YES	1		Number in Range (1−9)
		TITLE INFORMATION	CAPTION TEXT	ORD	2	A/N	YES	70		Tier Caption for Bus, or Gov Listings or Free Form Test
HOST	Q	LEVEL OF INDENT	TIER NUMBER	POS/ ORD	3/1	NUM	YES	1		Number in Range (0−9)
		NAME	LISTING NAME	ORD	2	A/N	YES	59[3]		Residence, Business or Government Name
		LISTING TELEPHONE NUMBER	TELEPHONE NUMBER	ORD	3	A/N	YES	18		Hyphenated Listing Telephone Number
		LISTING ADDRESS AND STREET NAME	ADDRESS	ORD	4	A/N	YES	59[3]		Listing Address
		LISTING LOCALITY	LOCALITY	ORD	5	A/N	YES	59[3]		City Town, Neighborhood, etc.

3 Total aggregate of characters in combined name, address and street, and locality is limited to ninety (90).

TABLE 2

HOST RECORDS AND IDENTIFIERS (continued)

Orig.	Record Type	Record/Field Description	Field Name	Field Type	Pos. Key Ord.	Content Type	Mandatory	Max. Char	Code	Comments
	N	HOST NOTICE OF NO LISTING	NO LISTINGS FOUND	POS	3	A/N	YES	2	F1	
	E	HOST NOTICE OF TOO MANY LISTINGS FOUND	TOO MANY LISTINGS	POS	3	A/N	YES	2	F2	
		LOCALITY INVALID FOR THIS DIRECTORY	LOCALITY INVALID	POS	3	A/N	YES	36	F3	"LOC=" Up to 30 Char. Entry
		INVALID ENTRY	ENTRY INVALID	POS	3	A/N	YES	36	F4	"(KEY)=" Up to 30 Char. Entry
		REQUIRED SEARCH CRITERIA MISSING	SEARCH MISSING	POS	3	A/N	YES	18	F5	"(ACD/LOC/IND/NAM)" Separated by Blanks
EWP		MAXIMUM CHARACTERS EXCEEDED	MAXIMUM EXCEEDED	POS	3	A/N	YES	125	F6	Field or Record Information
HOST	M	INVALID KEYWORD	KEYWORD INVALID	POS	3	A/N	YES	4	F7	First 2 Char in Keyword Position
		AREA CODE INVALID FOR THIS DIRECTORY	INVALID AREA CODE	POS	3	A/N	YES	9	F8	"ACD=" 3 Char Code
		INVALID RECORD TYPE	TYPE INVALID	POS	3	A/N	YES	125	F9	Up to 123 Char of Record
		RECORD OUT OF SEQUENCE	TYPE OUT OF SEQUENCE	POS	3	A/N	YES	125	G1	Up to 123 Char of Record
		REDUNDANT KEYWORD	DUPLICATE KEYWORD	POS	3	A/N	YES	36	G2	"(Key)=" Up to 30 Char Entry
		SEARCH ELEMENTS INCOMPATIBLE	IND & SUB INCOMPATIBLE	POS	3	A/N	YES	34	G3	"IND=R" "SUB=" Up to 22 Char

TABLE 3 (A)

HOST CODES CONTAINED IN DATA CONTENT FIELD

The following messages appear as single messages:

Message Meaning	Code	Type
Request for Login	E1	U
Invalid Login Incorrect Login	E2	I
Disconnected Three invalid attempts	E4	D
Resource Failure	E6	R
Login Valid	E7	V
Network Transport Failure Garbled CPE data stream	E8	G
Directory Unaccessible Data base lock out	E9	H
No Listings Found No valid responses to search	F1	N
Too Many Listings Res > 60 Bus/Gov > 99	F2	E
NPA Access Blocked HNPA user requesting non−HNPA Inter−NPA user requesting HNPA	H1	B

TABLE 3 (B)

HOST CODES CONTAINED IN DATA CONTENT FIELD

The following may appear in combination with other records:

Message Meaning	Code	Type
Idle Time Exceeded − System disconnected	E3	T
Session Ended Log off request	E5	L
Invalid Keyword Not a valid keyword	F7	M
Invalid Entry Blank found after the keyword	F4	M
Invalid Area Code Area code is not on this data base	F8	M
Invalid Locality Locality not found in table of valid cities	F3	M
Redundant Keyword Same keyword found more than once in search	G2	M
Invalid Record Type Record type is not of acceptable type	F9	M
Maximum Characters Exceeded NAM > 30 LOC > 30 PLC > 22 SUB > 22 ACD > 3 IND > 1 Total Record > 128	F6	M
Required Search Criteria Missing IND, LOC, ACD, AND NAM not all present	F5	M
Record Out of Sequence Invalid logical sequence for record type	G1	M
Search Elements Incompatible IND & SUB incompatible	G3	M

BELLSOUTH TECHNICAL REFERENCES

TR−73516 Issue B	Pulselink® Service Physical Interface Specifications
TR−73513	Pulselink® X.25 Interface Specifications
TR−73515	Pulselink® X.75 Interface Specifications
TR−73535	Pulselink® Service Asynchronous Terminal Access

BellSouth Documents may be ordered from

BellSouth Services Documentation Operations
North N5A1
3535 Colonnade Parkway
Birmingham, Alabama 35243
Phone (205) 977−8821

AT&T TECHNICAL REFERENCE

TR−41454	Electronic Directory Assistance

AT&T Documents may be ordered by calling AT&T Customer Information Services at 1−800−432−6600.