

EDI ADDRESS: DESCRIPTION AND BUSINESS CASE

This paper describes the business case and requirements for the development of EDI Address specifications, including electronic address syntax and code structure.

1.0 Business Case for Development of EDI Address Specifications

Health care information operates in a many-to-many communications environment, involving tens of thousands of payers and hundreds of thousands of health care providers, as well as clearinghouses, network operators, and other participants, where every doctor, hospital, payer, and other participant potentially communicates with any other participant. EDI based solely on interlocking bilateral arrangements is too limiting. The requirement is for an addressing structure that is standard.

EDI Addresses are essential for equal participation. They are a part of giving every participant, especially providers, the ability to receive transactions without having to poll multiple possible senders.

Health care participants are being assigned unique identifiers. An identifier contains within itself no intrinsic address intelligence that would enable computers to direct EDI transactions to their destinations. Identifiers will be listed in publicly available electronic directories, which may include such data as name, alias, postal address, telephone, fax, email, security information, and a new field called the EDI Address.

2.0 Objective of the EDI Address Project

This project is to define the syntax of a comprehensive, standard EDI Address, including attributes such as described here, and to define the associated code structure. Its deliverable is intended to have technical specificity.

3.0 Definition of an EDI Address

An EDI Address specifies the protocol and destination for an EDI transaction; it tells a computer how and where to send a transaction, but not the route.

3.1 What is the difference between destination and route?

Say you mail a paper letter to 1 Wall Street, New York. The destination is 1 Wall Street, New York. If you send the letter via Federal Express, the route would be through the FedEx hub in Memphis. If you send the letter via another courier or the U.S. Postal Service, the route would not be through Memphis. You are not particularly interested in the route the letter takes; only that it gets there. Regardless of the route, the address is the same, because the address specifies the destination, not the route. It is the same for delivery of electronic mail.

3.2 Examples of electronic addresses

a. Telephone Number (e.g. 414-555-1234)

A computer can call another computer over telephone lines. That is not enough, though, for EDI. The two computers also need the protocol, such as async or bisync, acceptable baud rates, character set, login script, security information to initiate the session, and transaction standards that the address can accept, in addition simply to the phone number. We call these additional factors, *attributes* of the address.

b. URL Internet Address (e.g. ftp://domain-name/specific resource/)

In this example, "ftp" indicates file transfer protocol, which might be used to send batch EDI transactions. Another familiar protocol is "http", which is widely used on the World Wide Web. In addition, the address would need attributes dealing with what security the recipient can accept, how EDI transactions are packaged, and other factors.

c. Proprietary Network Address

Within a proprietary network, an address is frequently represented only in routing tables using coding and syntax specific to each network. How to represent it in standard form may be a difficult task.

3.3 Technical definition of an electronic address

An address is a hierarchy of sub-identifiers that together specify the destination such that the computers can recognize and are able to interpret the sub-identifiers successively from high order to low order as the transaction moves from origination to destination. For example, an ordinary telephone number is an electronic address, made up of 3 sub-identifiers as described in the table below:

3.4 What is the difference between an address and an identifier?

An identifier does not contain any intrinsic address intelligence that would tell a computer how to move the transaction closer to its destination. The computer must refer to a database to obtain the address for the identifier before it can steer the transaction to its destination. The difference between an address and an identifier is illustrated with the following examples:

USAGE	EXAMPLE	TYPE	EXPLANATION
Telephone	(262) 241-8080	Address	A regular telephone contains three sub-identifiers: 262=Southeastern suburban Wisconsin; 241 = Mequon east of the river; 8080 = phone known to local exchange.

USAGE	EXAMPLE	TYPE	EXPLANATION
Telephone	(800) 555-1234	Identifier	An 800 number contains no intrinsic value to indicate the destination. The originating exchange must first obtain an address from the 800-number database before it can direct the call.
Email	jblow@abc.edu	Mnemonic Address	An email mnemonic address contains the following sub-identifiers: "abc.edu" is call the domain, and it identifier the destination switch, while "jblow" is a user identifier known to the destination computer. Note that the sub-identifier "abc.edu" itself does not have any intrinsic address value, and computers must look up it up in a directory in order to translate it into a processable address.
NPI PlanID	12345-67890 123 456 7890 ¹	Identifier Identifier	A National Identifier contains no intrinsic address value interpretable by a computer to steer the transaction. The computer, given an identifier, must look it up in a directory to obtain an address.

3.5 But doesn't a computer have to look up the sub-identifiers? Yes.

The question is, if an address is made up of sub-identifiers, doesn't the computer have to look up the sub-identifiers? Yes, but only at the level appropriate for its processing. For example, a computer in San Diego dials the phone number (262) 241-8080. The San Diego exchange need only look at the sub-identifier "262" in an area code directory, which is probably represented to it as a memory resident table, and determines a port or other instruction that it uses to hand the call to the next node in the network. [This simplifies a bit].

4.0 Why Put EDI Addresses in the Public Domain?²

If identifiers are listed in publicly available directories, the directories could be called electronic phone books, to be distributed at reasonable cost to clearinghouses, network operators, providers, payers, and other participants for use by their own computers, either by replication or by cached access. There are two reasons for making addresses public:

4.1 It is more efficient because public availability of a directory enables the structure of the health data networks to be built in forms and scales according to their inherent requirements without regard to the source and form of access to the

¹ The number of digits and presentation format of NPI and PlanID are not yet known.

² The discussion here about directories is for orientation. This project is concerned with writing specifications for EDI Addresses and their associated attributes, not directories. Directories are being dealt with in other workgroups.

address information as would be the case if addresses were maintained in private, proprietary address tables.

4.2 It is more fair because it enables smaller health care participants, including also TPAs, clearinghouses, and network access providers, to compete on an equal footing, as regards transaction processing, with large participants, because the addresses are equally available to all. Competition is then based more on service and price than on network scaling or artificial construct.

5.0 What Attributes Should be Included in an EDI Address?

The syntax and coding for a standard EDI Address will include attributes as described below. This project is concerned with defining the syntax and codes by which the attributes are to be expressed in standard form. The WEDI-AFEHCT Health Care Communications Security and Interoperability project ("Interoperability") will be defining what attributes are needed. So this project and the Interoperability project must coordinate closely.

5.1 Medium or Network. Media include dial-in, proprietary network, and Internet.

Note on Proprietary Network. There are national level proprietary networks in health care, as well as many local and regional networks. Why should proprietary networks be included? There are two reasons: to be comprehensive of the needs of the industry--most traffic is now processed by networks--and to be fair, to level the playing field. Fairness cuts both ways. Just as addresses should be publicly available to be fair to the smaller local and regional participants, so proprietary networks should be included to be fair to larger participants. Let competition to be based on service and price, not system constructs.

5.2 Address. The address element is:

- For Internet, it is the domain name and specific further addressing.
- For direct computer-to-computer dial-in connection, it is the telephone number.
- For networks, it is the network's address and the network's coding assigned to the recipient.

5.3 Protocol and packaging, including async, bisync, acceptable baud rates, login script, batch vrs interactive, how the transaction is packaged, and other attributes as may be relevant to the medium.

5.4 Transaction type capabilities. This attribute indicates what standards and transactions the recipient can accept at the address. For example, a given address may accept, say, an interactive eligibility inquiry, but not accept a batch of claims.

4.5 Security capabilities. Every connection requires security governing initiation, authentication, and data protection. Depending on the medium, security provisions will be of different types. In the EDI address, this attribute would indicate a requirement or acceptability of a given type of security. A given address may be capable of more than one type of security.

4.6 Other attributes. There may be other attributes required by the Interoperability project.

6.0 Should an EDI Address be One or More than One Data Element?

The question is whether the EDI Address should be defined as a single data element or as two or more associated data elements:

6.1 Single Data Element

The requirement in order for the address to be represented in a single field is that the medium, protocol, and other attributes of the address must be determinable from the data in the field. It means that a single scheme is required that will be comprehensive of the different telephone, Internet, and proprietary network connections. Advantages of this approach are:

- It will prove easier to incorporate the EDI Address into EDI transaction and, more likely, communications standards if it consists of a single field, where there may exist an equivalent field at present, than if additional fields must be added to the standards.
- The single field method should be more attractive to users. A telephone number and an Internet address are presently distinguishable; so in effect, this requirement means that proprietary network addresses should be defined to be encompassed within the structures of these. However, the requirements of certain of the attributes require the addresses to carry indicators for protocol and so forth.

6.2 Multiple Data Elements

Under this approach, one or more code fields in addition to the address itself would define the address and its attributes. For example, there might be a code for the media attribute, one value to indicate telephone, one for Internet, one for proprietary network. There might be a code to indicate different protocols on telephone connections. The several codes could be combined into a single code that would correspond to a permutation of values, there then being defined a reasonable set of such permutations.

The disadvantages of this approach may be greater difficulty incorporating the address into transactions and communication standards, greater change required in directories, and a more complicated structure to be understood by users.

7.0 The Proposed Work

This project will pursue the following:

- Write technical specifications for syntax and code structure for the EDI Address including its associated attributes. The sequence is to begin with the easier and continue to the more difficult.
- Define attribute code tables.
- Determine required changes, if any, in X12 and other standard transactions.
- Coordinate with WEDI-AFEHCT Health Care Communications Security and Interoperability project. Coordination between the two projects is critical.

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