OpenText™

EDI Basics

How Successful Businesses Connect, Communicate, and Collaborate Around the World

GET STARTED



2017 EDITION

Table of Contents

Foreword **3**

What is EDI? **4**

The EDI Process 7

Sending EDI Documents 8

Receiving EDI Documents 9

Summary 11

The Benefits of EDI 12

EDI Milestones 14

What are EDI Documents and Standards? **15**

EDI Standards 16

Common Business Documents 18

What Are Your Communications Options? **20**

Direct Connection Model 21

Network Model 22

Direct or Network—Which is Better? 23

Most Commonly Used Communications Protocols 23

Which Business Processes Typically Benefit From EDI? **26**

Procurement 27

Shipping and Receiving 28

Invoicing and Payments 30

What Does an EDI Document Look Like? **32**

Segments 34

Envelopes 36

How Does a Company Implement an EDI Program? **37**

Do-It-Yourself Model 38

B2B Managed Services Model 41

Conclusion **42**

Next Steps **43**

Connect With Us 43

About OpenText 43

Foreword

Bill Clinton once observed, “The price of doing the same old thing is far higher than the price of change.” Companies that are slow to adapt new technology to their business processes may find themselves consigned to the proverbial dustbin of history.

Businesses have invested in technology such as Enterprise Resource Planning (ERP) systems to automate internal business processes, including accounts payable and receivable, inventory control, and intra-company communication. However, many of these same companies are slow to automate their business-to-business transactions, such as the exchange of purchase orders, invoices, and bills of lading.

Electronic commerce (e-commerce) is the exchange of information via electronic media, such as the internet and private communications networks. There are two types of e-commerce: Business-to-Business (B2B) and Business-to-Consumer (B2C). Almost every day, each of us experiences B2C e-commerce, such as when we book airline tickets or hotel reservations online and then receive an electronic confirmation. This book focuses on electronic data interchange (EDI), the most commonly used B2B ecommerce technology.

In today’s business environment, EDI remains a gamechanger across all industries, including retail, banking, manufacturing, high-tech, and services. For many companies, it has become the lifeblood of their business, making them more efficient, driving down costs, and increasing customer satisfaction. It is the means by which they can differentiate themselves from their competition. Using EDI, a manufacturer in Detroit, Michigan can send a purchase order to its supplier in Japan, receive an electronic document indicating that the item is out of stock, and immediately react by sending the purchase order to an alternative supplier in Brazil—all in just minutes. This high level of visibility that is enabled by the use of EDI is critical to business success.

EDI Basics introduces you to this electronic way of doing business so that you can participate knowledgeably in the conversation at your company about moving away from the old, manual processes.

The pages that follow answer the questions: What is EDI? How does it work? What does it take for your company to get started?

More than 85% of all electronic business transactions take place using EDI. This method of exchanging documents is used in industries including retail, banking, high-tech, manufacturing, and services.

OpenText™

What is EDI?

In this chapter, you will learn:

- The definition of EDI
- How the EDI process works for sending and receiving documents
- The benefits of EDI

READ MORE



Electronic communication has changed the way companies conduct business with each other. Business-to-business (B2B) electronic commerce (e-commerce), which includes EDI, XML (Extensible Markup Language), and online catalogues, has enabled the integration of companies throughout the world into communities of business partners (often called trading partners) with benefits for all.

In today's business environment, B2B integration is a key to success; in fact, many companies will no longer do business with you if you can't do business electronically.

While many businesses have incorporated emails and faxes into their B2B communication, these processes still involve human handling and are thus slow and prone to error. Although they provide improvements over postal mail-based processes, they lack the power and functionality of e-commerce. Figure 1 shows a simplified scenario in which a buyer faxes or mails an order to a supplier, who then faxes or mails an invoice back to the buyer.

As you can see, this manual process involves a lot of paper, people, and time. Mail can be slow and paper documents can be misplaced or lost. Once received, mailed and faxed documents must be manually entered into a computer application, a process that frequently results in errors. And even though an email is sent electronically, it too must be entered manually, because the computer application has no way of knowing where each piece of data needed is located within the email.

Having people involved slows down the processing of the documents and also introduces errors.

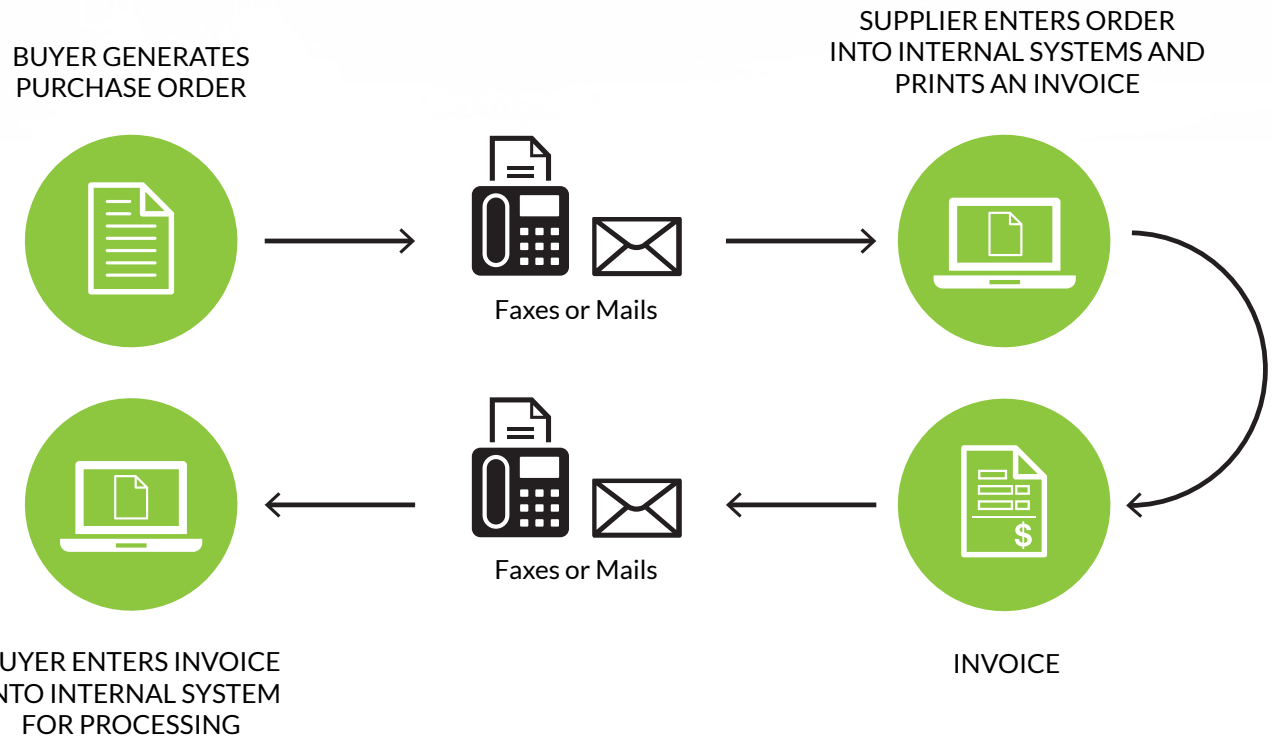


Figure 1: Manual Document Exchange

In the 1960s, the railroad industry, which needed to find a faster and more efficient way to communicate information about goods being transported, began to send this data electronically. Other businesses realized the value of electronically exchanging information and so, beginning in the 1980s, many industries adopted EDI, the electronic exchange of standard-formatted business documents between computers. At first, only those businesses that could afford large mainframe computers were able to participate. But with the advent of the personal computer and then the availability of the internet, use of EDI became available to all companies regardless of size.

Electronic Data Interchange (EDI) is the computer-to-computer exchange of business documents, such as purchase orders and invoices, in a standard electronic format between business partners, such as retailers and their suppliers, banks and their corporate clients, or car-makers and their parts suppliers.

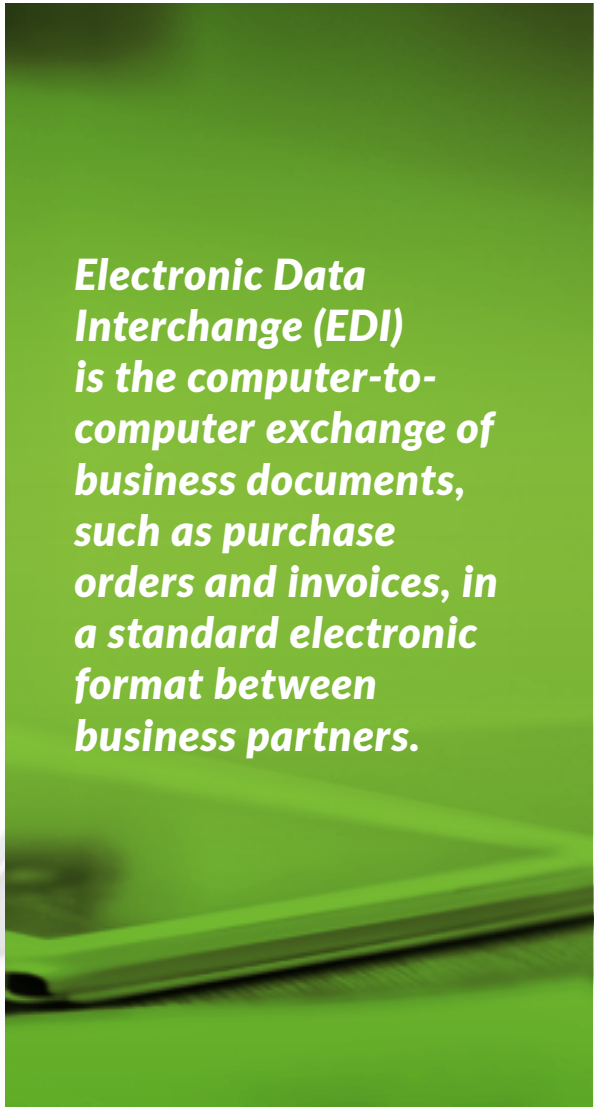
The most common documents exchanged via EDI are purchase orders, invoices, and advance ship notices. But there are many others, such as bills of lading, customs documents, inventory documents, shipping-status documents, and payment documents.

Because EDI documents are processed by computers, the computer's program must know where to find each piece of information in the incoming document and the format of that data. For example, are the numbers included in the data integer (e.g., 12) or decimal (e.g., 12.0)?

Are the dates in the form mmddyy or mmddyyyy? Just as two speakers of different languages cannot hold a conversation, two business systems, each with its own proprietary format rather than a common format, cannot exchange data with each other. Thus, a common, standard format is the language by which businesses communicate with each other via their computers.

EDI standards have been developed by organizations of concerned businesses to identify needs, create plans to meet those needs, and come to an agreement on the proposed standards. Subcommittees continually meet to propose new standards or changes in response to evolving business requirements. There are several EDI standards in use today. The most common cross-industry standards are ANSI, primarily used in the United States, and EDIFACT, primarily used in Europe and Asia. In addition, there are standards for specific industries, such as SWIFT for banking and RosettaNet for high-tech.

Let's now look at how the EDI process works.



The EDI Process

Today, all types of business documents for industries such as retail, automotive, high tech, logistics, and banking can be exchanged using EDI. These documents can flow from the sender's computer straight through to the appropriate application on the receiver's computer (e.g., the order management system), where processing can begin immediately.

With a fully integrated EDI system, the process can look like this—no paper, no people, and almost no time.

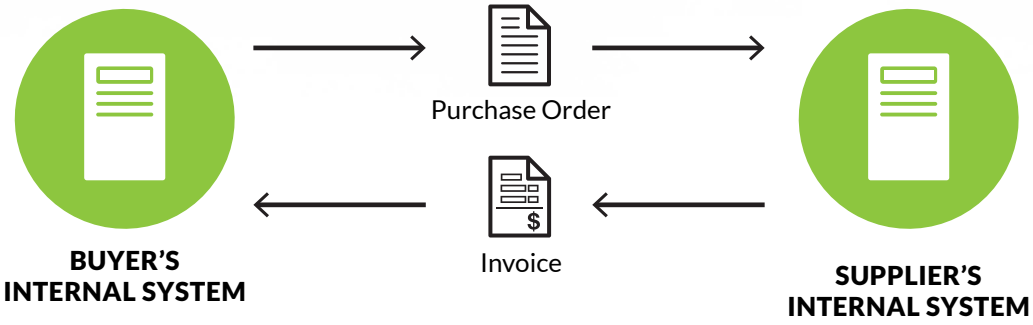


Figure 2: EDI document exchange

As you can see, sending and receiving EDI documents can be a seamless and efficient way to conduct business.



Sending EDI Documents

To send an EDI document, you need to identify the data, create an EDI document, and transmit it.

Step 1: Identify the data

The first step is to identify the data you want to include in the purchase order, invoice, advance ship notice, etc.

The sources of data and the methods available to generate the electronic document can include:

1 computer programs that extract data from system databases, such as from a retailer's purchasing system or a shipping company's logistics system;

2 computer programs that extract data from spreadsheets; and

3 people keying in the data via webform data entry screens.

Step 2: Create the EDI document

In the next step, software converts your internal data into the EDI standard format. This requires specialized translation software that defines how your internal data is to be mapped (i.e. correlated) to the EDI format (see Figure 3).

Translation software is available to suit just about any computing environment and budget, from large systems that handle thousands of transactions daily to PC-based software that need only process a few hundred or fewer transactions per week.

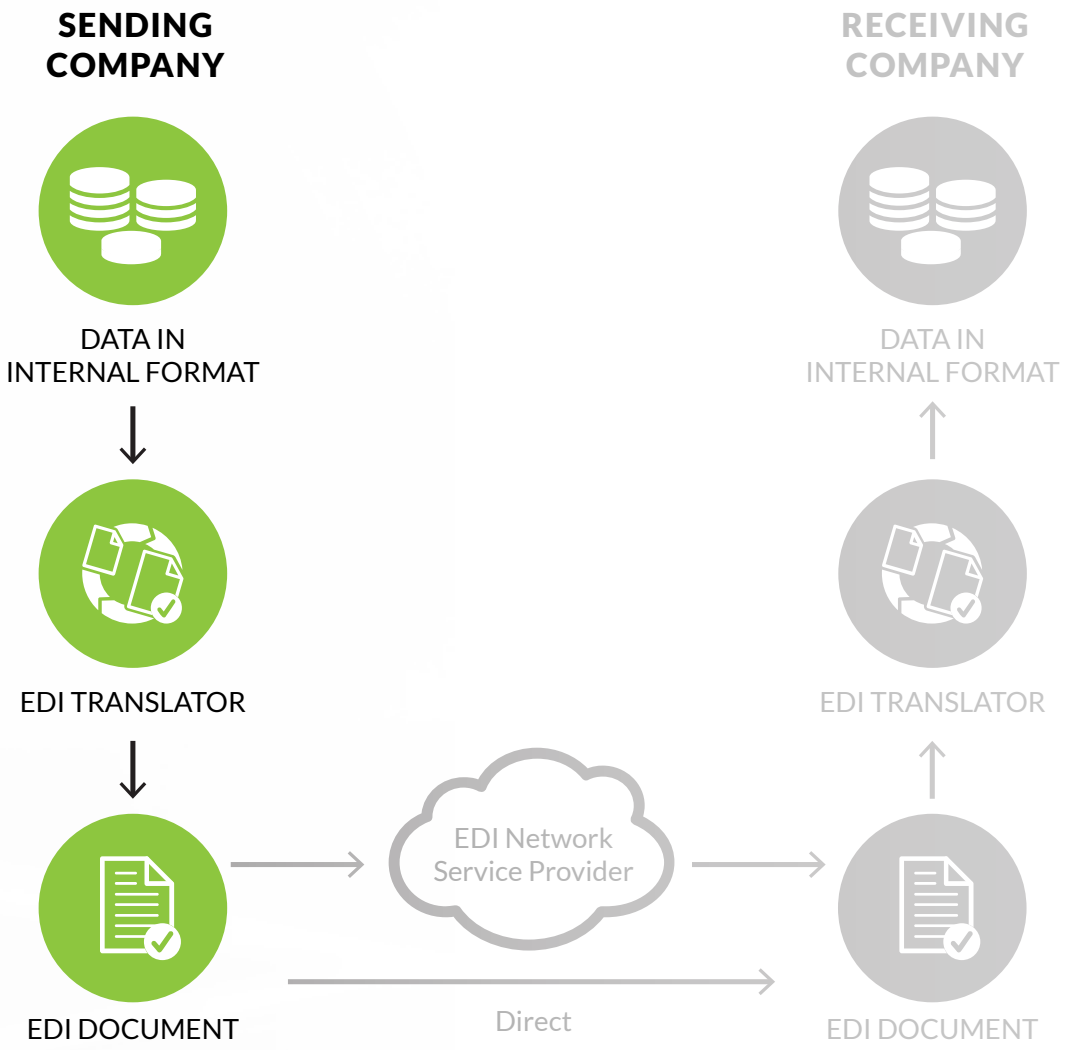


Figure 3: Creating the EDI Document

Step 3: Transmit the EDI document

There are two basic ways to transmit an EDI document. The first option is to send it directly to your business partner, usually via the internet. The other option is to use the services of an EDI Network Services Provider, in which case you send the EDI document to the Provider, who then makes it available to your business partner.

Using a Provider is often the easiest and best approach when you have many business partners, each using a different communications protocol (rules) that you would otherwise need to accommodate. See Figure 4.

Receiving EDI Documents

Receiving an EDI document is basically the reverse of the sending process.

1 you receive the transmitted EDI document;

2 your system converts the EDI data for your internal system; and

3 the data is fed into your internal system for processing, such as into a bank's payment origination system or a supplier's order management system.

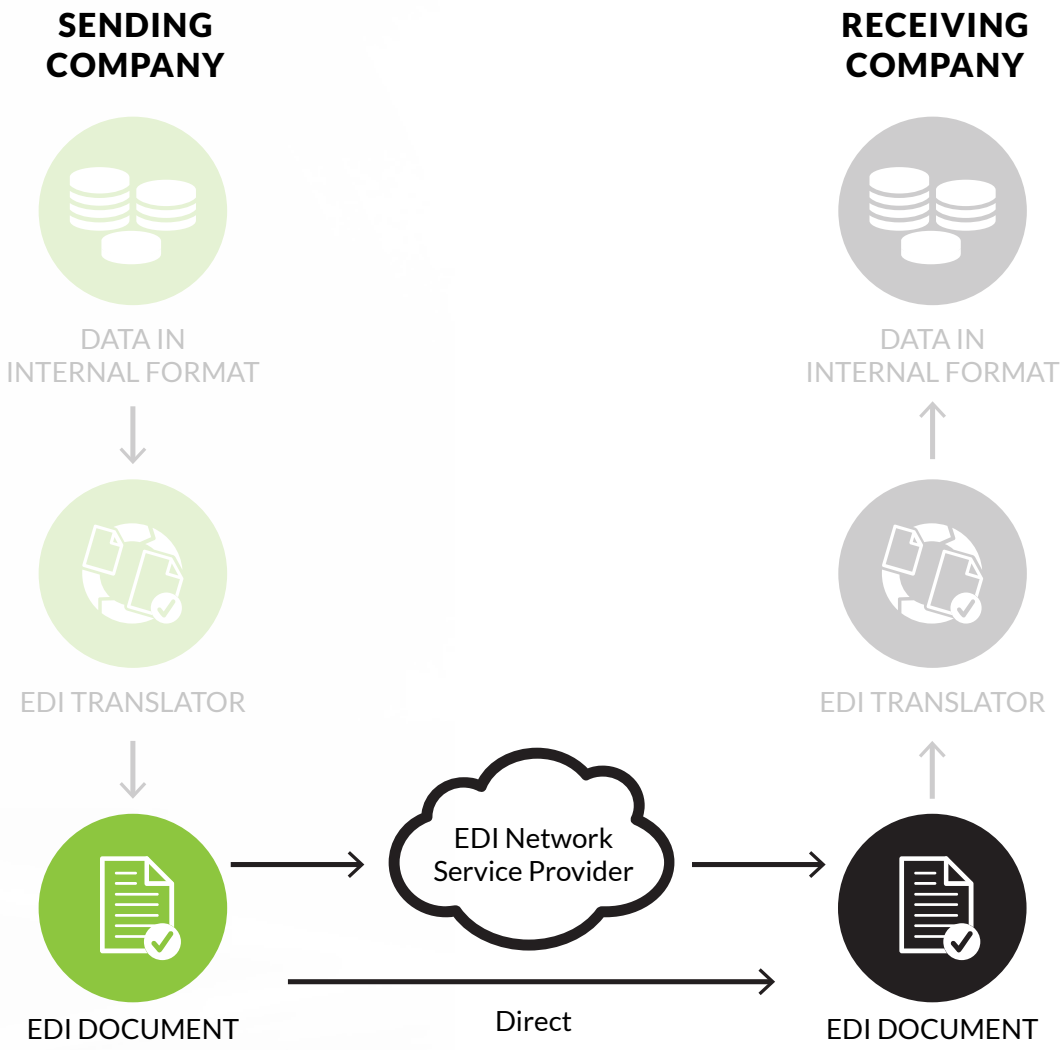


Figure 4: EDI Transmission Options

Step 1: Receive the transmitted EDI document

As with sending a document, there are two basic options. You can receive the EDI document directly from your business partner or you can use the services of an EDI Network Services Provider, in which case your Provider receives the EDI document from the sender and then makes it available to your internal system.

Step 2: Convert the EDI document for your internal system

Software now converts the data from the incoming EDI document into the format used by your internal system. This requires specialized translation software that defines how the EDI data is to be mapped (i.e. correlated) to your internal data format.

The same specialized translation software that is used to create EDI documents for sending is used in the receiving process (see Figure 5).

Step 3: Feed data into your internal system for processing

Your computer application can now automatically feed the translated data into your system, such as your order management system, for immediate processing. Or, often for smaller companies that haven't fully integrated EDI with their internal systems, the incoming data is made available either as a report or on the computer screen.

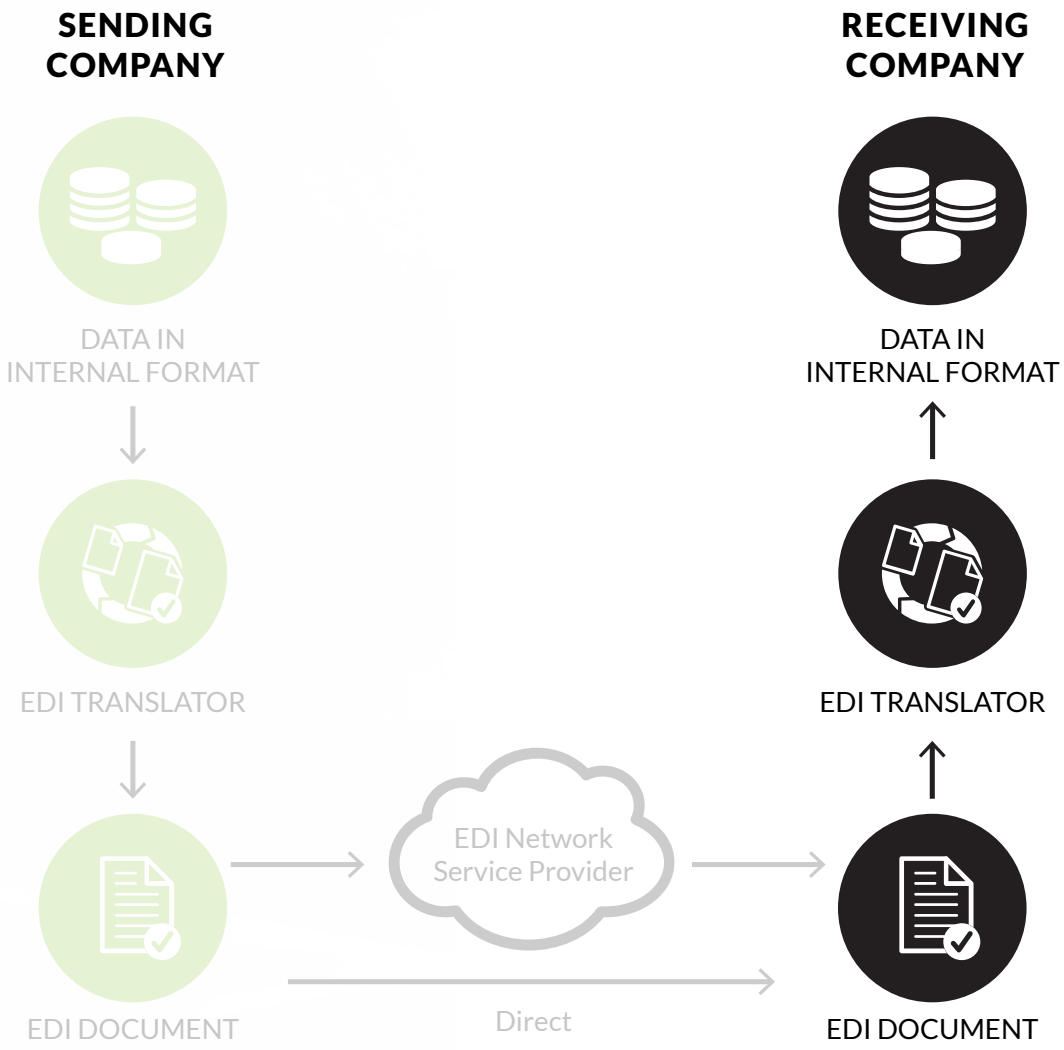


Figure 5: Converting the EDI Document

Summary

Thus, there are several options available to you when configuring an EDI system for your business. You can perform data conversion in-house or use the services of an EDI Network Services Provider. You can transmit your documents directly to your business partners via the internet or transmit via an EDI Network Services Provider. Or, you may use a combination of these options in order to satisfy the requirements of your various trading partners.

Figure 6 provides an overview of an EDI process in which the sender and the receiver each manages its own data conversion processes.

With a fully integrated EDI system, the process involves no paper, no people, and almost no time.

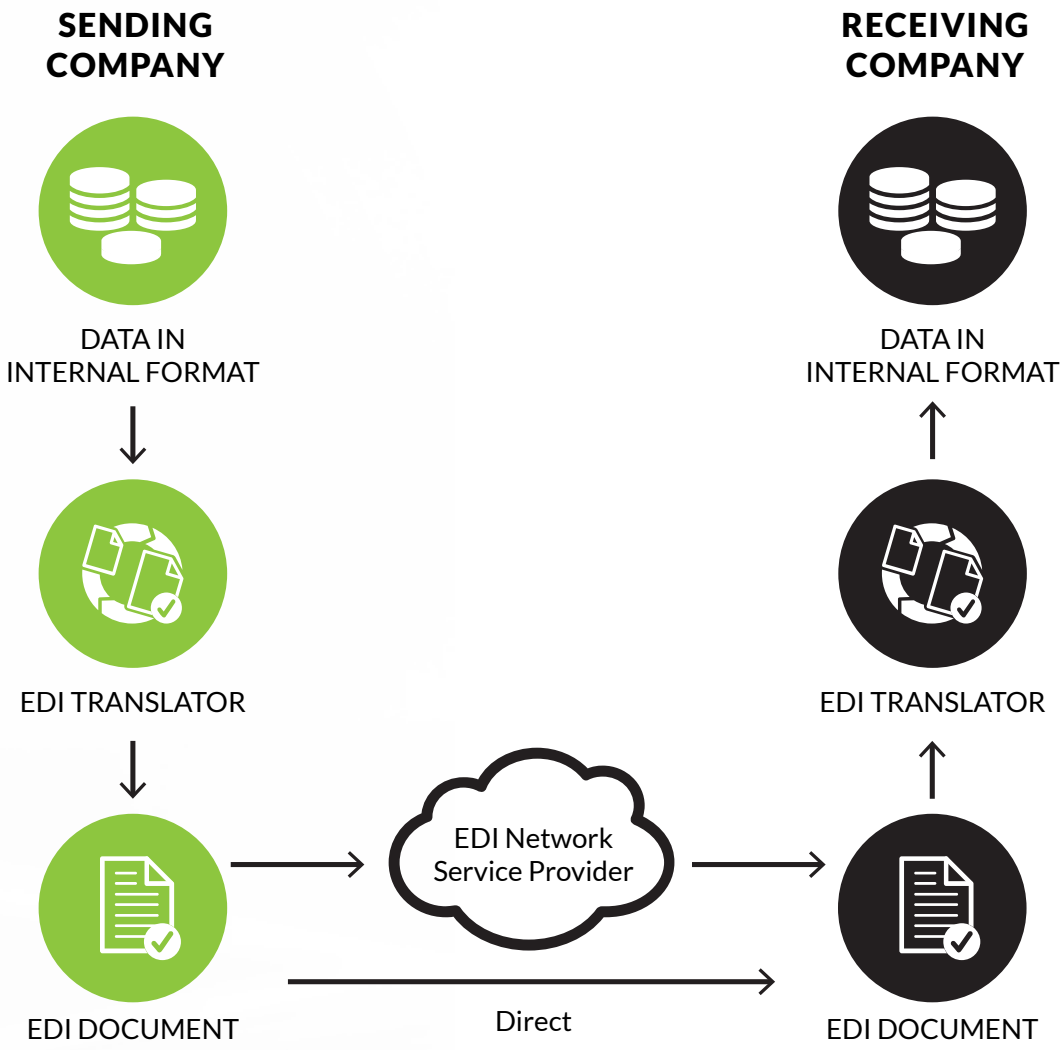


Figure 6: EDI Process Overview

The Benefits of EDI

EDI has helped simplify and improve commerce between trading partners for more than 30 years and its benefits continue to expand as it improves business processes such as electronic procurement, automated receiving, electronic invoicing, and electronic payments. EDI can help your company reduce the cost of personnel and office space, improve data quality, speed up business cycles, improve efficiency, and provide strategic business benefits.Let's look at the benefits that businesses across all industries are realizing by using EDI.

Reduced costs

EDI reduces the costs of personnel, supplies, and office and storage space. Since paper documents are replaced by EDI transactions, expenses associated with paper—printing, reproduction, storage, filing, postage, and document retrieval— are all reduced or eliminated. Moving from a manual to an EDI process frees up personnel to concentrate on other aspects of the business.

Improved data quality

When bad data makes its way into your internal systems, such as your accounts payable or transportation management systems, the results have a negative impact on your business. This includes overpayments, late or underpayments resulting in additional fees, lost revenue due to delays, and poor customer service.

The root of most data errors is the keying in of data from a paper document into your internal system. First, if the paper document is handwritten rather than computer-generated, it may be difficult to read, leading to input errors or phone tag to obtain clarification, both of which can cause delays in the business cycle. Even when the document is typed or computer-generated and thus legible, keying errors can still occur. In the order entry process, these errors can result in shipping the wrong product, in the wrong quantity, at the wrong price, to the wrong address.

The electronic capture of business documents enables critical business data to be fed directly into your internal systems without relying on errorprone, manual re-keying, which is required when you use paper-based or email-based processes. Having more accurate data means that the entire supply chain is more efficient.

Shorter business cycle

We have just discussed how manual data entry can greatly slow the business cycle. In addition, when using postal mail, your documents will take days to arrive. Sometimes, it may be weeks before you discover that the mail has been lost. Delivery services such as UPS and FedEx are very reliable but quite costly. And even with faxes, documents can remain at the fax machine or sit on someone's desk before any action is taken.

In contrast, EDI transactions can be exchanged in minutes instead of the days or weeks associated with postal mail. Furthermore, there is significant time saved by the elimination of data re-keying and its high error rate, which results in time-consuming corrective actions.

For many companies that use EDI, transactions that used to take five days using paper can be completed in under an hour. This reduced cycle time leads to faster payments and thus improved cash flow. Cash is no longer tied up in inventory or goods in transit and, therefore, can be applied to other areas of the business.

Improved business efficiency

The benefits of streamlining processes with EDI can have a ripple effect throughout many of the operations of a business. Automating paper-based tasks frees staff to concentrate on higher-value tasks and provides them with the tools to be more productive.

For example, the use of EDI leads to less reworking of orders and invoices resulting from the elimination of errors due to manual data entry, invalid data, or missing data. EDI ordering and shipping provide greater visibility into the supply chain, leading to fewer stock-outs and resulting lost sales. EDI invoicing enables buyers to process and approve invoice payments faster. This allows buyers to take full advantage of timely payment discounts, which in turn means improved cash flow for the suppliers.

The use of EDI reduces order processing and delivery times, enabling organizations to reduce their inventory levels. In the automotive industry, which relies heavily on Just-in-Time manufacturing, the exchange of EDI documents is an absolute necessity. Its speed and accuracy are at the heart of a Just-in-Time environment.

Improved data security and ease of auditing

In this highly competitive, international world of business, data security is paramount to the success of a company. Documents that circulate in an office or that can be changed by several people may not be secure. With fully integrated EDI, in which data flows directly from computer to computer, data can be exchanged in a highly secure environment. In addition to keys and passwords to protect the data, encryption and decryption programs are used, so that even during the few seconds it takes to transmit the data from sender to receiver the data is secure. Even when an EDI Network Services Provider is used to perform translation, there can be "encryption at rest" programs, so no one at the Provider's data center can see or violate the data. Of course, in today's environment, it is necessary for companies to install firewalls in their own data centers to prevent hackers from stealing data. But this is true of internal systems, whether you use EDI or not.

Corporate auditing is made easier and faster since the EDI process eliminates many of the discrepancies and problems that can creep into a paper-based system. Moreover, all the EDI transactions can be made easily available to the auditor in reports, thereby improving accuracy and reducing productivity loss during the auditing process.

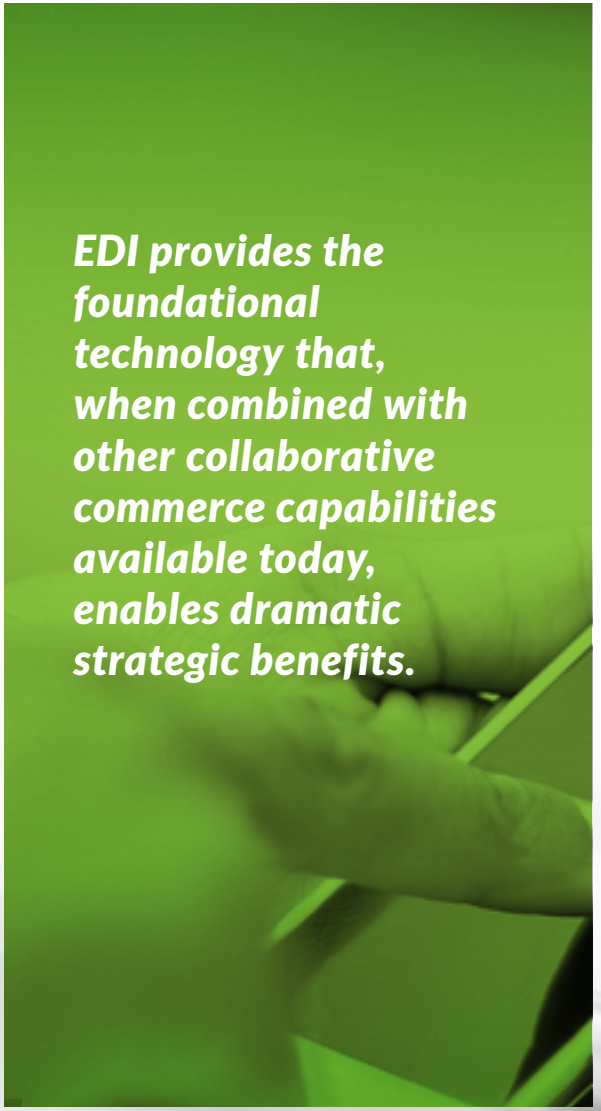
Strategic business benefits

Beyond the direct cost and time-saving benefits of EDI described above, it provides the foundational technology that, when combined with other collaborative commerce capabilities available today, enables dramatic strategic benefits. For example, in today's fast-paced business environment, electronic transactions enable real-time visibility into transaction status. This, in turn, enables faster decision-making and improved responsiveness to changing customer and market demands.

In some industries, EDI enables businesses to adopt a demand-driven business model rather than a supply-driven one, because it shortens the lead times for product enhancements and new product delivery, streamlines the ability to enter new territories and markets, and provides a common business language that facilitates the communication and collaboration of businesses throughout the world.

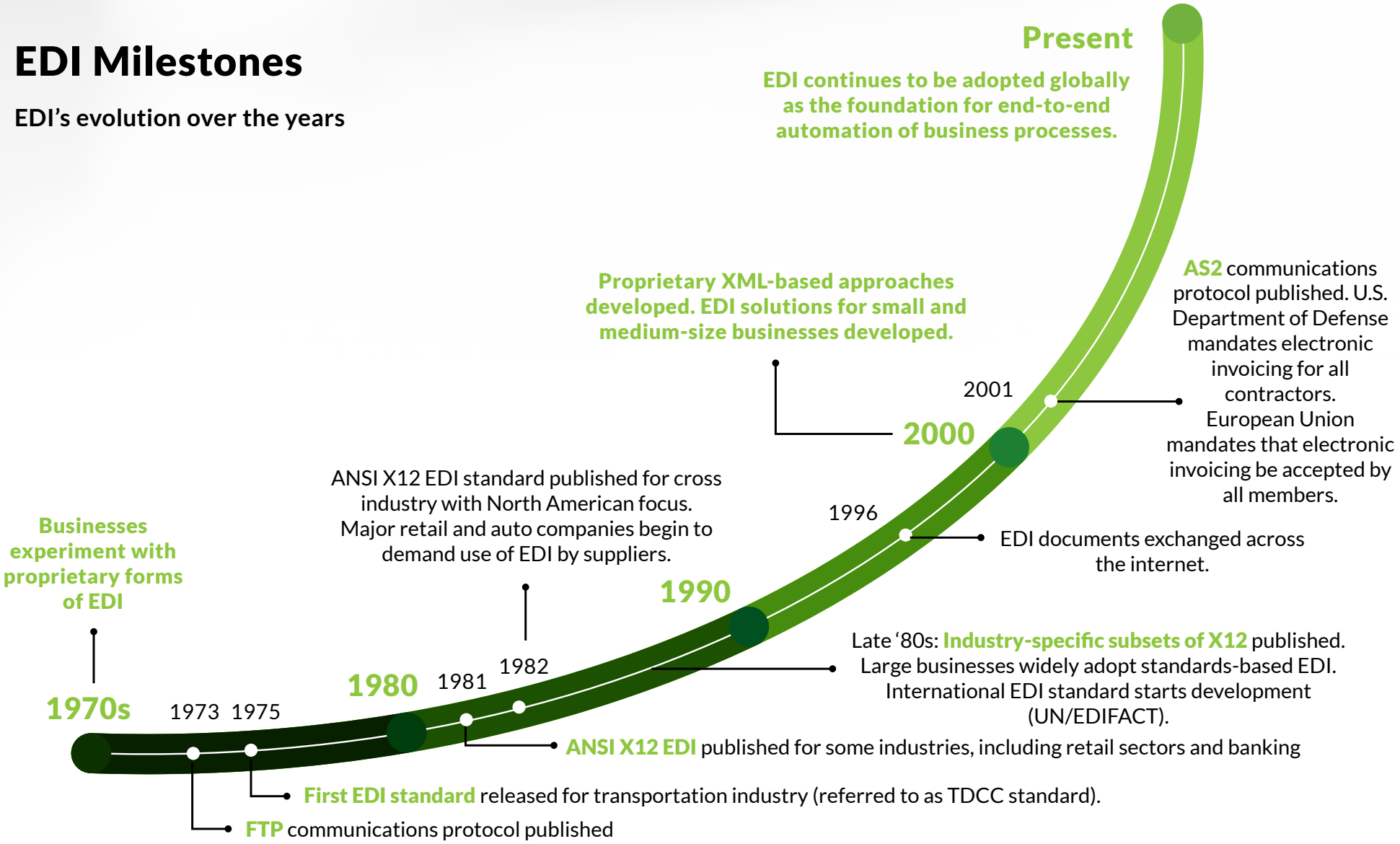
Moreover, EDI promotes corporate social responsibility and sustainability by eliminating paper from the supply chain and replacing paper-based processes with "green" electronic alternatives. This will both save you money and make your company part of the solution to our overall "carbon footprint."

As we have seen, the benefits of using EDI are many and have a far-reaching effect throughout the company. Later, we will examine how EDI brings benefits to specific business processes, such as ordering, invoicing, receiving, and payments.



EDI Milestones

EDI's evolution over the years





OpenText™

What are EDI Documents and Standards?

In this chapter, you will learn:

- The role of EDI standards when exchanging EDI documents
- The most commonly used EDI documents in the procure-to-pay, order-to-cash, manufacturing, logistics, and financial business processes

READ MORE

An EDI document is simply an electronic version of a paper document that adheres to the rules of a standard format. When two companies use the same EDI standard format for their business documents, their computers "speak" the same language. This enables the exchange of documents between the computers without human intervention.

EDI Standards

Many EDI standards are available, but ANSI X12 is most commonly used in North America, while EDIFACT is most commonly used throughout the rest of world.

There continues to be confusion as to whether or not XML is an EDI standard. XML is not actually a standard at all; it is a powerful language that gives a company a great deal of flexibility in defining and constructing business documents, such as the documents defined by ANSI and EDIFACT. A major structural difference between XML and EDI is that whereas EDI is based upon strict rules governing the position of data within a file, data in an XML file is not bound to a specific location and is instead identified by tags, such as "<quantity>300 </quantity>" to indicate a quantity value of 300. This results in XML files being much larger than their comparable EDI files. Some standards, such as RosettaNet, are based on XML.

At one point, it was expected that XML would replace EDI. However, many businesses that have invested heavily in EDI, which is efficient and works extremely well, see no need to spend the money "to reinvent the wheel." Thus, EDI will be a mainstay for business into the foreseeable future.

The ANSI and EDIFACT standards can be applied across all industries. Subsets of these standards, such as VICS and EANCOM, have been developed to meet the special requirements of certain industries. These subsets define industry-specific documents, data fields, and rules.

The two most common EDI standards are:

ANSI X12

In 1979, the American National Standards Institute (ANSI), which had been founded "to oversee the creation, promulgation and use of…norms and guidelines…to ensure competitiveness of U.S. businesses," formed the Accredited Standards Committee (ASC) X12 to develop uniform standards for the inter-industry electronic exchange of business transactions. From its inception, ANSI X12 was designed to support companies across different industry sectors in North America. Today, there are hundreds of thousands of companies worldwide using X12 EDI standards in daily business transactions.

Two examples of ANSI subsets currently in use are:

- **AIAG:** The AIAG standard was developed by the Automotive Industry Action Group (AIAG) for the North American automotive industry.
- **VICS:** The Voluntary Interindustry Commerce Standard (VICS) is used by the general merchandise retail industry in North America, including thousands of department and speciality retail stores, mass merchandisers, and their respective suppliers.

UN/EDIFACT

The Electronic Data Interchange for Administration, Commerce and Transport (EDIFACT) was developed with versions for individual European countries. Under the auspices of the United Nations, and with input from the American National Standards Institute (ANSI), a UN/EDIFACT standard was developed to address the international business community. Today, this is the most common standard used by European businesses.

Two examples of EDIFACT subsets currently in use are:

- **EANCOM:** Developed in 1987 by GS1, a global standards body, EANCOM is a subset of UN/EDIFACT. The key benefit of this standard is that it incorporates the European Article Number (EAN), a system of product codes to identify products throughout the world. This greatly facilitates international trade, since a company can easily order an item from a supplier anywhere in the world without knowing the specific item code used by the internal system of that particular supplier. EANCOM was originally developed for the retail sector and has subsequently grown to become the most widely used UN/EDIFACT subset. It is now used in a variety of other industry sectors such as health care, construction, and publishing.
- **ODETTE:** The ODETTE message standard was developed by the Organisation for Data Exchange by Tele Transmission in Europe (ODETTE), specifically for the automotive industry in Europe.

Other standards include:

HIPAA

The Health Insurance Portability and Accountability Act (HIPAA) was enacted by the U.S. Congress. A key component of HIPAA is the establishment of national standards for electronic healthcare transactions and national identifiers for providers, health insurance plans, and employers. The standards are meant to improve the efficiency and effectiveness of the U.S. health care system by encouraging the widespread use of EDI. The HIPAA EDI transaction sets are based on ANSI X12.

RosettaNet

The RosettaNet standard, based on XML, was developed by a consortium of major computer, consumer electronics, semi-conductor manufacturers, and telecommunication and logistics companies. It facilitates industry-wide global supply chain processes.

SWIFT

The Society of Worldwide Interbank Financial Telecommunication (SWIFT) developed a financial messaging network between banks and other financial institutions for a standards-based exchange of financial information. The SWIFT document standard governs aspects of financial activity: payments, trade services, and securities.

Tradacoms

Introduced in 1982, Tradacoms is an EDI standard primarily used in the UK retail sector that utilizes the product code system developed by the UK Article Numbering Association. Though superseded by EANCOM, it is still used by many businesses in the UK today.

VDA

VDA is a standard developed by the German automobile association, Verband der Automobilindustrie. VDA standards are used by companies such as VW, Audi, Bosch, Continental, and Daimler AG.

Common Business Documents

The document standards discussed above define hundreds of business documents from which different industry groups select those that pertain to their business. The documents used most commonly, however, deal with the procure-to-pay and order-to-cash processes. Some of the most frequently used documents are listed below with their ANSI numerical and EDIFACT six-letter name identifiers:

Product Catalog (832/PRICAT)

A document provided by a supplier to its customers, containing a list of products and services available, including information such as description, pricing, quantities available, and unit of measure. The buyer can then directly issue a purchase order for items in the product catalogue. This document is extremely popular in the retail industry.

Purchase Order (850/Orders)

A document issued by a buyer to a seller that defines the terms of sale under which the buyer will purchase the seller's goods. This document can also be used as a blanket purchase order against which the buyer can issue an EDI Material Release (830/DELFOR) for partial deliveries as needed throughout the life of the purchase order.

Purchase Order Acknowledgment (855/ORDRSP)

Confirmation to the buyer that the supplier will be filling the purchase order as requested.

Advance Ship Notice (856/DESADV)

An electronic version of a printed packing slip that tells a buyer that goods have been shipped, how they have been packed, and the estimated arrival time. The Advance Ship Notice document is also referred to as a Delivery Notice or Despatch Advice. This extremely important document is at the core of many automated business processes, such as Evaluated Receipt Settlement, drop shipping, and Just-in-Time delivery. These and other business processes are discussed in more detail later in the book.

Invoice (810/INVOIC)

A request for payment for goods or services that communicates to a buyer the specific items, prices, and quantities. Payment terms will usually accompany the billing information.

Remittance Advice (820/REMADV)

A notification from a buyer to a supplier that payment has been made, usually via electronic funds transfer. Receipt of this document enables suppliers to reconcile which invoices have been satisfied by any given payment.

In addition, there is a special EDI document that is not a business document, but serves to streamline the EDI process:

Functional Acknowledgment (997/CONTRL)

Often referenced as an FA, this is an electronic "receipt" from the receiver of an EDI transmission to its sender to indicate simply that the EDI document was successfully received and read by the computer. It does not indicate that the receiver is acting upon the contents of the document. Other documents acknowledge that the contents are being acted upon, such as the Purchase Order Acknowledgment and the Purchase Order Change Acknowledgment.

Most commonly used EDI documents:

- *Purchase Order*
- *Advance Ship Notice*
- *Invoice*

Others frequently used:

- *Product Catalog*
- *Purchase Order Acknowledgment*
- *Remittance Advice*

Manufacturing Specific Documents

Manufacturers commonly exchange:

- *Planning Schedule*
- *Shipping Schedule*

In addition to the documents noted above, manufacturers such as original equipment manufacturers (OEMs) in the automotive industry commonly use the following documents with their suppliers:

Planning Schedule/Material Release (830/DELFOR)
A forecast notification from the manufacturer to the supplier of the materials needed for a period of time, for example, for the coming 20 weeks. When used by an OEM, this is not an actual order; rather, it is a forecast to enable suppliers to manage materials and other resources to ensure that they can ship when the goods are finally ordered. When used by other manufacturers, it can serve as both a forecast and a shipping schedule that authorizes the supplier to ship the goods on specific dates.

Shipping Schedule (862/DELJIT)
An authorization from the manufacturer to the supplier to ship goods according to a specific short-term schedule. It provides detailed shipping requirements and adds more specific instruction to the Planning Schedule/Material Release that may have been provided earlier.



Logistics EDI Documents

Logistics documents commonly exchanged between shipper, carrier, and recipient:

- *Freight Details and Invoice*
- *Carrier Load Tender*
- *Transportation Carrier Shipment Status*

The Advance Ship Notice, described above under Common Business Documents, is a central document in the logistics process. It can be sent by the shipper to the recipient and/or by the carrier to the recipient. The following documents are also commonly used:

Freight Details and Invoice (110 for air carriers, 210 for motor carriers, 310 for ocean carriers and 410 for rail carriers/EDIFACT IFTMCS)
Sent from the freight carrier to the shipper to bill for shipment services. The document can include details of the items being shipped, as well as other information normally found on an invoice.

Carrier Load Tender (104 for air carriers, 204 for motor carriers, 304 for ocean carriers and 404 for rail carriers/EDIFACT CONTEN)
From the shipper to carriers, these documents have multiple uses, such as providing information needed by carriers to bid on freight services or by Customs to clear shipments. It contains information such as a description of the goods, destination and other shipping instructions.

Transportation Carrier Shipment Status Message (214 for domestic, 315 for international/EDIFACT IFTSTA)
A notification by the carrier to the shipper or receiver regarding the status of a shipment. It can include the estimated date and time of arrival, destination point, reasons for delays, and so on.

Financial EDI Transactions

Financial documents frequently exchanged between payers, payees, and their banks or other financial institutions:

- *Payment Instruction*
- *Lockbox*
- *Application Advice*
- *Debt Authorization*

The following EDI transactions are commonly exchanged between the payers, payees, and their banks and/or other financial institutions.

Payment Instruction and Remittance Advice (820/REMADV)
A notification from a business to its bank to make a payment. Payment can be made via check or electronic funds transfer, such as Automated Clearinghouse (ACH) or wire transfer.

Lockbox (823/DEBADV)
A document used by a financial institution to share details about checks collected in a wholesale or retail lockbox facility. This is used by a bank's client, such as a credit card company, that needs to collect payments from many sources. This document is sent from the bank to its client with information about all the individual payments received, enabling reconciliation of each account.

APPLICATION ADVICE (824/APERAK)
A notification from the financial institution to the payer that there is a problem executing payment due to such factors as incorrect routing or a wrong account number.

DEBIT AUTHORIZATION (828/DIRDEB)
Sent from a business to its financial institution to authorize payment of a debit request.


OpenText™
What Are Your Communications Options?
In this chapter, you will learn:
• The basic approaches to connecting to your trading partners and how to choose the best one for your company
• The most commonly used communications protocols and the five factors you should consider when selecting the best one for your company
READ MORE

When your company exchanges business documents electronically with your business partners—your customers, suppliers, logistics providers, and/or banks—you need to make two major communications-related decisions. First, what is your overall approach for connecting to all your partners? And second, which of the various communications protocols will you need to implement? Communications protocols are rules that govern the format and transmission of data between computers.

Direct Connection Model

In the direct connection approach, you and your trading partner connect directly via the internet using the same communications method or protocol. However, this approach can become very complex and resource intensive if your other trading partners are using different communications protocols. Your system must then be able to support each of these protocols.

This approach is most commonly used by large corporations that have business partners with whom they exchange a high volume of EDI documents.

If you choose to implement the direct connection model, you will need to purchase a software package that enables you to use all the agreed upon protocols, such as AS2, SFTP, FTPS. Then you will need to agree with each of your partners on (1) which of these communications methods or protocols you and the trading partner will use and (2) the specific protocol settings or options to be used when exchanging your files of EDI documents. Figure 7 illustrates the direct connection scenario. This model can be very complex due to the wide variety of communications protocols that must be used and supported. Very few businesses today connect directly to all their trading partners.

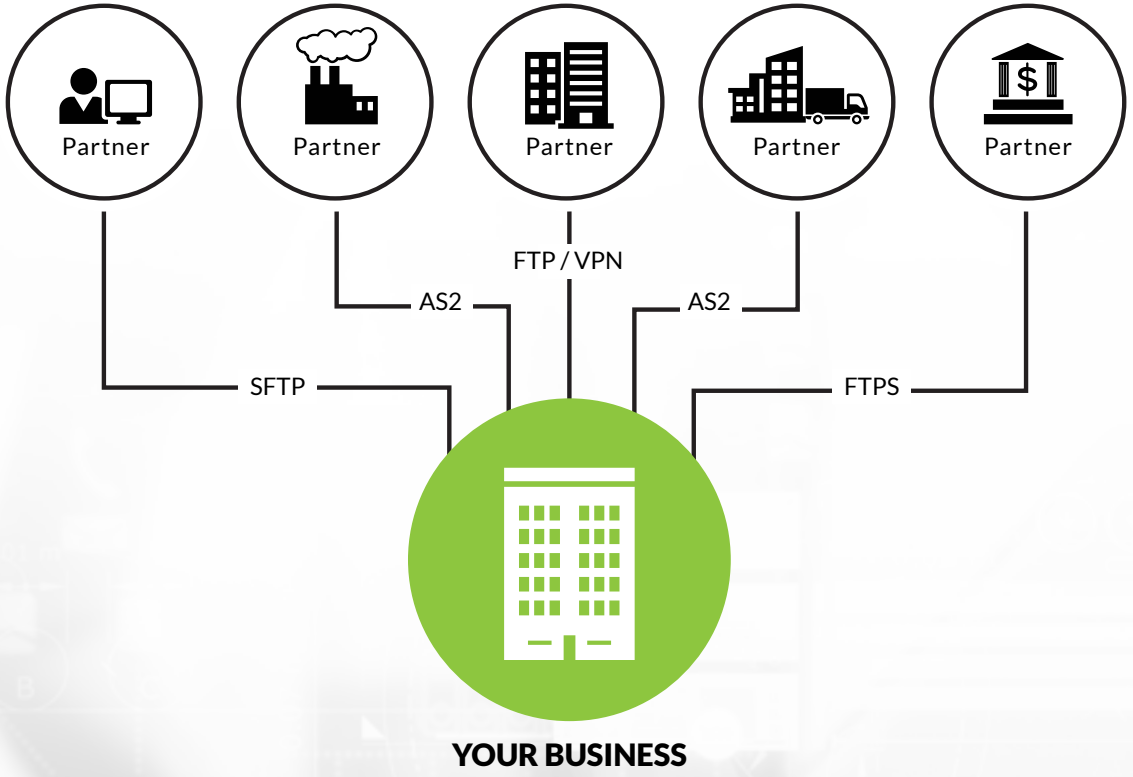


Figure 7: Direct Connection Model

Network Model

An alternative to the direct connection model is to work exclusively through an EDI Network Services Provider, which, in the days prior to the internet, was referred to as a Value-Added Network (VAN). Many businesses use the network model to shield themselves from the complexities of supporting varying communications protocols required by different business partners.

In the network model you have just a single connection to your Provider for all your EDI transactions and all your trading partners, using whatever protocol you prefer, such as AS2 or one of the secure FTP protocols. You don't have to worry about which protocols your partners are using. At the same time, your business partners also connect to a Provider, either the same one you are using or a different one. If different, most Providers will connect to each other in order to complete the EDI file exchange.

In this way, each partner makes an independent decision regarding its preferred communications protocol, relying on the Provider to mediate the differences between the various trading partner protocols. There are additional benefits to using an EDI Network Services Provider, such as ensuring data security, validating the identity of the sender (non-repudiation), and providing audit information, reporting, backup, and recovery. Using a Provider also relieves all community members of the resource intensive responsibilities for resolving communications issues.

The EDI Network Services Provider charges transaction fees for these services, to a large extent based upon the volume of transactions handled. Your business is still responsible for generating and processing all EDI documents exchanged, which means you must have highly skilled EDI personnel. However, you do not need the specialized communications resources required in the direct connection model.

The graphic here illustrates the EDI network model in which you and your business partners—each of you using your own preferred communications protocol— exchange EDI documents using an EDI Network Services Provider.

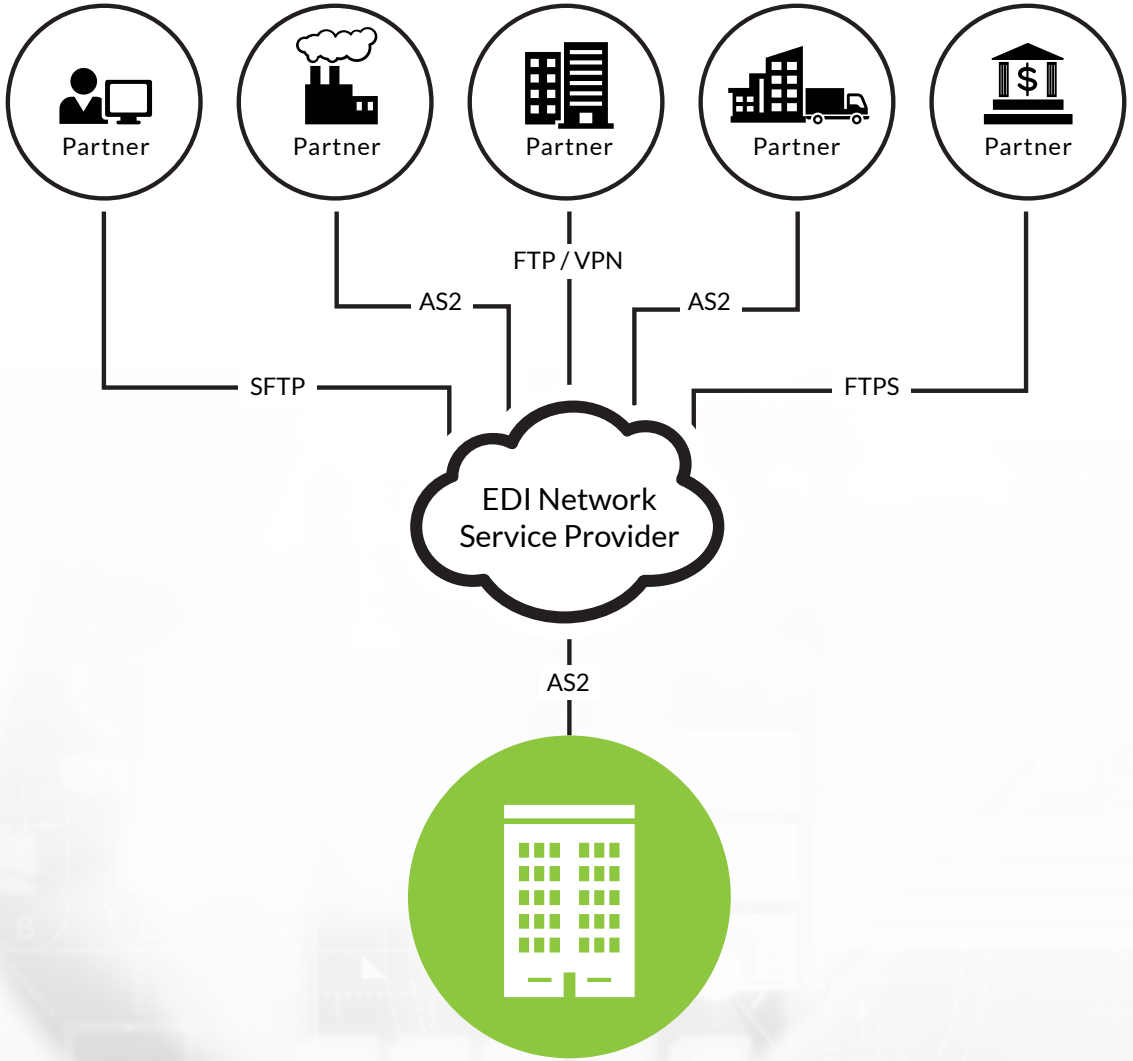


Figure 8: Network Model

Direct or Network—Which is Better?

Use of the EDI network model for 100 percent of an EDI trading community was extremely popular before the rise of the commercial internet. Today, many businesses use a combination of the two approaches. In order to save on Provider transaction fees, they connect directly via the internet to the trading partners with whom they exchange the highest volume of transactions, using one or two preferred protocols. They will also leverage the EDI Network Services Provider, with its benefits, for trading with their large number of lower-volume trading partners, as well as with those partners using a communications protocol they cannot support.

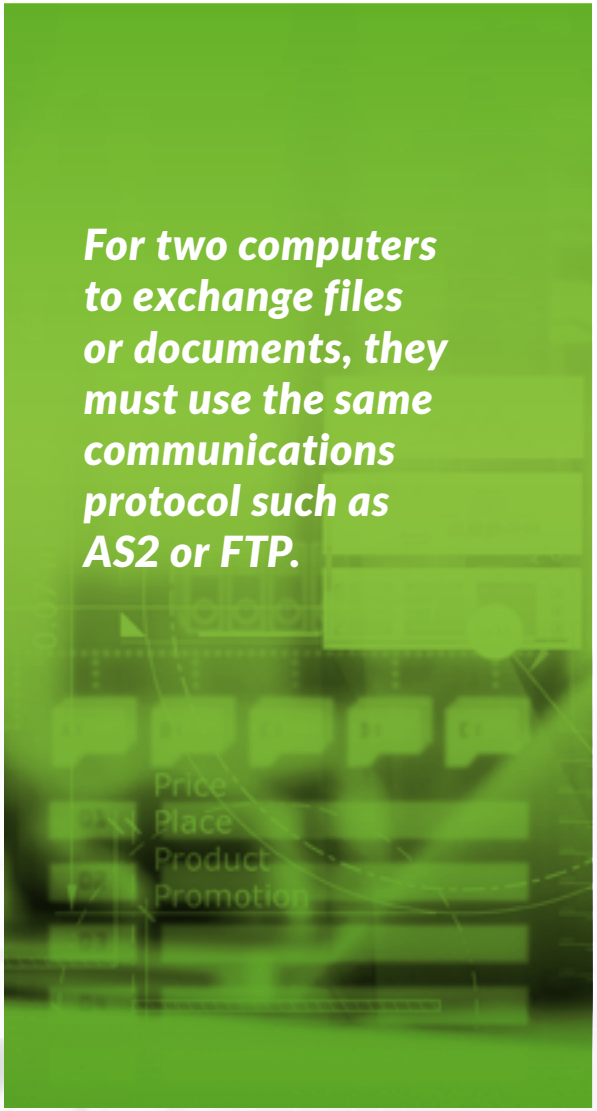
Advocates of the direct connection approach argue that it is much cheaper than using an EDI Network, particularly for high volumes of EDI documents. However, when calculating your overall costs, you must factor in the cost of purchasing, managing, and maintaining the additional communications software and the cost of highly skilled personnel with expertise in secure internet communication, as well as in EDI. Furthermore, as the size of your community grows, you will need additional resources to implement and support each new trading partner.

You need to continually monitor communications, manage trading partner calls, and resolve issues quickly. All these vital processes are resource and time intensive.

Most Commonly Used Communications Protocols

The rapid growth of the internet to the point of near universal connectivity is now enabling business partners to communicate and exchange files more easily than ever before, although sometimes at the expense of other requirements, such as security, privacy, and manageability. Therefore, when you choose a communications protocol such as AS2 or FTP for exchanging business documents via the internet, you need to choose carefully.

In order for two computers, whether within your company or across the internet, to exchange files or documents, your system needs special file-handling software that follows certain communications rules (protocols). If you communicate directly, both you and your partner must use the same protocol. If you communicate directly with many partners, each of which uses a different protocol, you will need software that supports each one of those protocols. This is a major reason why many companies select the network model—it shields them from this complexity.



For two computers to exchange files or documents, they must use the same communications protocol such as AS2 or FTP.

There are five key factors you should consider when selecting the best communications protocol for your company:

Data security

When you are dealing with documents that contain sensitive data, you must be sure that while they are being transmitted across the internet, they are safe from others who may try to intercept and read them. Each communications protocol takes a different approach to securing information. Some protocols encrypt everything in the transmission (channel encryption), whereas others encrypt only the actual data (payload encryption).

Non-repudiation

Repudiation refers to the ability to confirm that a document was actually sent by the sender indicated within the file being exchanged. This also serves as proof when business partners deny having sent you a document.

Message management

When you exchange documents with your business partners, you need to know whether the documents were successfully received and decrypted. For example, a major factor in determining whether you get paid is whether your partner received the bill. Or, if you're trying to plan for the arrival of a shipment at your receiving dock, getting a shipment notice is crucial. Thus, confirmation of receipt for EDI documents is extremely important for businesses to operate efficiently.

Ease of setup and use

Different protocols may necessitate different levels of resources to install and monitor its operation on a day-to-day basis.

Interoperability

Many software vendors offer versions of each protocol. However, versions of the same protocol provided by two different vendors may not always be able to communicate with each other. So, when you and your partners select a protocol, you must be sure of interoperability.

Below is a list of the most commonly used communications protocols for the exchange of EDI documents via the internet and how well each addresses the five key factors listed above. Any of these can be used to connect to business partners directly (direct connection model) or to connect to them via an EDI Network Services Provider (network model).

FTP (File Transfer Protocol) with VPN (Virtual Private Network)

FTP was the first robust, reliable file transfer protocol developed and is still used today by many businesses, particularly for file exchange within a company. However, FTP by itself does not provide the security needed for documents exchanged with other companies over the internet. For this reason, businesses that use FTP use it in conjunction with VPN software to provide the security layer needed.

However, neither FTP by itself nor FTP with VPN provides non-repudiation or message management. Moreover, interoperability may be an issue because there are many different ways of implementing VPN on your system, as well as possible differences in versions of VPN. Although FTP with VPN does not address all five factors, you can use it to connect to an EDI Network Services Provider, which then provides the non-repudiation, message management, and interoperability required.

SFTP (Secure File Transfer Protocol) and FTPS (File Transfer Protocol Secure)

Both SFTP and FTPS are secure internet protocols. The major difference is in how each provides security and performs encryption. The security layer used by SFTP was developed by the internet Engineering Task Force, while the security layer used by FTPS was developed by the internet browser company Netscape.

Both protocols encrypt the data while in transit, keeping it safe while moving over the internet, and then decrypt it upon arrival at its destination. However, neither provides non-repudiation or message management. As with FTP with VPN above, interoperability is a major issue, and again you can use either to connect to an EDI Network Services Provider, which then provides the non-repudiation, message management, and interoperability required.

Five factors to consider when choosing a communications protocol:

1. *Will it keep data safe from hackers?*
2. *Can you be confident that the sender is legitimate?*
3. *Does it let you know whether your partner has successfully received your transaction?*
4. *Does it require a lot of resources to install and maintain?*
5. *Will your version work with your partner's version?*

AS2 (Applicability Statement 2)

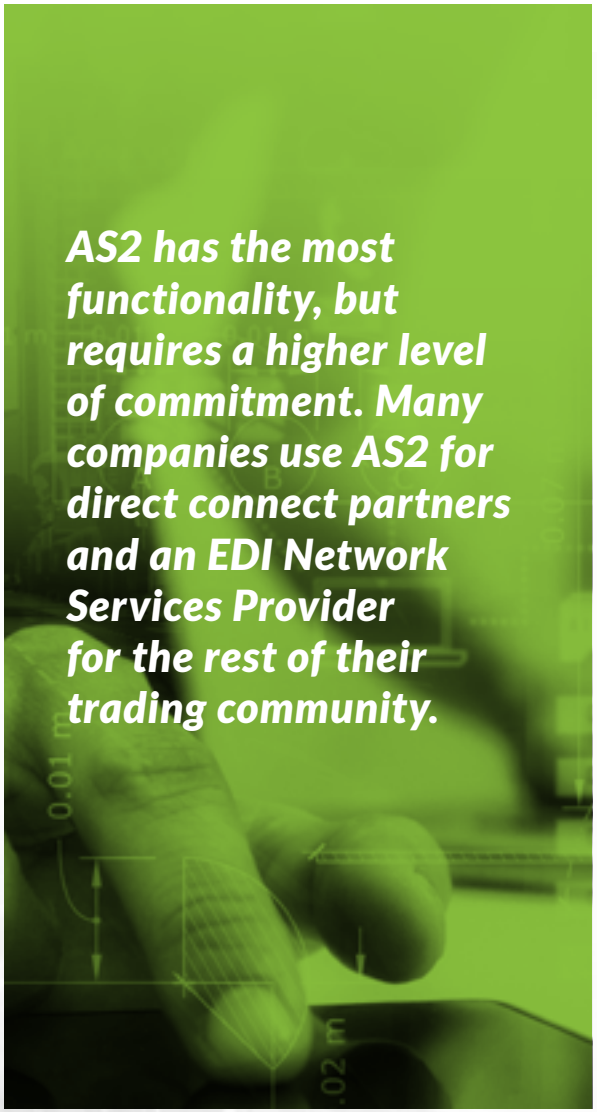
AS2 was developed specifically to overcome the limitations of the other security protocols listed above. In addition to providing a high level of data security, it addresses non-repudiation, message management, and interoperability. It was developed by the internet Engineering Task Force (IETF). The major boost to its usage was when it was mandated by Walmart as the only acceptable communications protocol for suppliers wishing to do business with them. Its usage soon spread to other major businesses.

Let's look at how AS2 addresses non-repudiation, message management, and interoperability.

- **Non-Repudiation:** AS2 uses a system of keys to ensure non-repudiation. A private key is used by one business to encrypt its digital signature (a special identity code) on a file being transmitted. That company's public key is provided to all its business partners for use in decrypting the digital signature. No other key will work, thus verifying the identity of the sender.
- **Interoperability:** AS2 is backed by the Drummond Group, an organization that certifies that versions from different vendors are compatible. Thus, you are guaranteed that if you buy any two products from the list of Drummond-certified products, they will work together well.
- **Message Management:** AS2 provides a status message called the Message Disposition Notification (MDN), which informs you that the transmission was successfully received, decrypted, and verified.

There are several challenges to successfully implementing AS2. AS2 is a "push" protocol, meaning documents are sent as soon as they are available and the business partner must be ready to receive them. The recipient's server must be up and running 24x7, with personnel ready to troubleshoot any communications issues. In addition, management of the private and public encryption keys used for non-repudiation and security adds another layer of complexity to its operation. Moreover, because AS2 is much more sophisticated than the other protocols, a highly skilled staff will be needed to support it.

In summary, you have several choices when selecting a secure communications protocol for your EDI documents. AS2 best addresses all the key requirements, but requires a higher level of commitment. Because of its full functionality, many companies opt to use AS2 for exchanging EDI documents when connecting to both their direct connection partners and to an EDI Network Services Provider for the rest of their partner community. If you use one of the other secure protocols, then use of a Provider should be considered in order to address the gaps in capabilities.



OpenText™

Which Business Processes Typically Benefit From EDI?

In this chapter, you will learn:

- How EDI can streamline the procurement process
- How EDI can streamline the shipping and receiving process, including a look at cross-docking, drop shipping, and direct store delivery
- How EDI can streamline the invoicing and payment process, including the non-PO and evaluated receipt settlement processes

READ MORE

As we have seen, EDI enables organizations to reduce cost and inefficiency resulting from manual, transaction based processes. By automating the exchange of data between applications across a supply chain, EDI can ensure that business-critical data is sent on time, every time; is securely sent to or received from trusted trading partners; can be tracked in real-time; and can be audited after the event.

In today's highly competitive world, the use of B2B technology such as EDI may be the difference between success and failure. We will now discuss how EDI can streamline three common business processes: procurement, shipping and receiving, and invoicing and payment.

Procurement

Procurement was the first business process for which the use of EDI was widely adopted across industries. Typically, a company's Enterprise Resource Planning System (ERP) or other back-office system automatically generates the purchase order. It is also common to order goods from an electronic catalogue. In the latter process, after negotiating specific terms and prices with a customer, the supplier creates an electronic catalogue for that specific customer, which may be on the supplier's system, hosted by an EDI Network Services Provider, or sent to the customer for integration with its procurement system. An employee or the procurement system accesses the catalogue and places the order, which then automatically triggers the creation of the EDI Purchase Order. The basic EDI document flow in the procurement process involves four key documents: the Purchase Order, the Purchase Order Acknowledgment, the Purchase Order Change, and the Purchase Order Change Acknowledgment (see Figure 9).

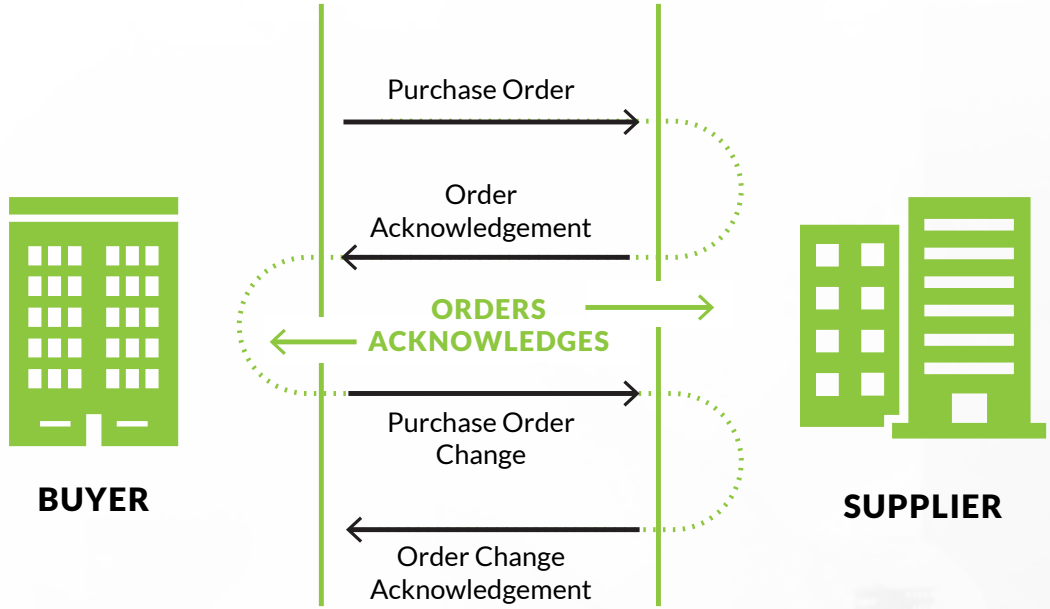


Figure 9: Basic EDI Document Flow in the Procurement Process

The buyer transmits an EDI Purchase Order to the supplier. A supplier can then send a Purchase Order Acknowledgment back to the buyer, in which the supplier agrees to fulfill the order according to the terms of the purchase order.

If the supplier is unable to meet all the purchase order requirements, the Purchase Order Acknowledgment can provide information as to which portions of the order can be fulfilled. The buyer can then transmit a Purchase Order Change document when there is a need to change the original purchase order, due either to a change in the buyer's needs or because the supplier cannot meet all the requirements in the original purchase order. The supplier then sends a Purchase Order Change Acknowledgment back to the buyer. Use of the Purchase Order Change and Purchase Order Change Acknowledgement documents simplifies a process that otherwise, when handled manually, can be very complex. In fact, in some industries such as the general merchandising segment a purchase order is often changed four or more times.

Upon receipt of each document, the EDI system automatically sends a Functional Acknowledgment to notify the sender that the document was successfully received. Automating the exchange of purchase order-related documents provides numerous benefits:

- Faster, more accurate order-to-receipt process due to the elimination of slow, error-prone manual ordering;
- Reduction or elimination of resource-intensive and time-consuming order status inquiries by both buyer and seller due to the use of EDI status documents that provide you with new visibility into your supply chain;
- Increased buyer flexibility due to the speed and accuracy of the EDI process. For example, the buyer can quickly seek alternative suppliers when a purchase order cannot be fulfilled;
- Higher levels of satisfaction by the seller, the buyer, and the buyer's customers resulting from the benefits above.

Shipping and Receiving

EDI enables goods to be shipped in a timely and accurate manner according to ever-changing buyer-specific requirements. This is vital to a manufacturer operating in a Just-in-Time (JIT) environment and to a retailer with a continuous replenishment program (CRP) for its inventory. The critical document in support of all shipping processes is the Advance Ship Notice (ASN), which lists the details of a shipment of goods due to arrive from a supplier, a third party logistics provider (3PL), or a fulfillment agent. Typically, the ASN includes much of the information that was included on the buyer's original purchase order. It also includes carton identifications, content descriptions, and transportation details. New uses are continually found for the ASN. For example, some companies use data in the ASN to help them generate the Customs 10+2 Importer Security Filing for international shipments entering the United States.

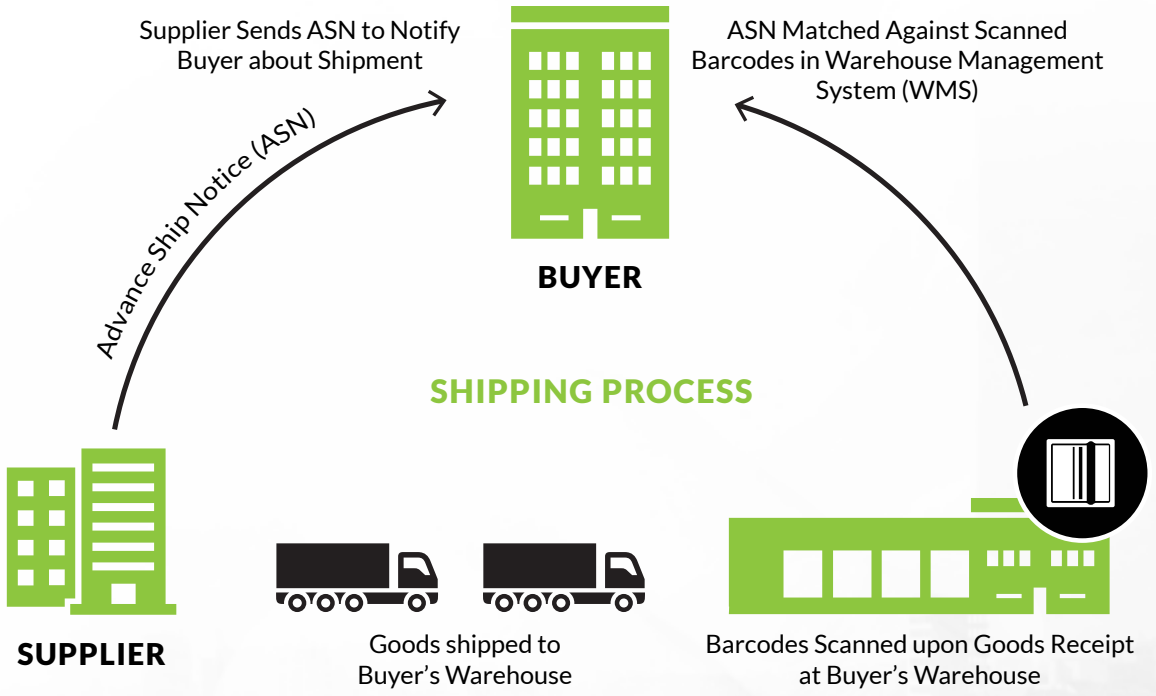


Figure 10: Basic EDI Document and Goods Flow in the Shipping Process

EDI documents, such as waybills from air and rail carriers, EDI status updates from truckers, and Bills of Lading from ocean carriers, can enable both the shipper and the receiver to see where the shipment is in transit. This enables them to take any action required, such as expedited shipments when there is a delay.

The ASN often works together with the barcoded shipping label that suppliers affix to the carton/pallet/boxes being shipped. The identifying numeric characters of the barcode are also included in the ASN document, which can be read into the buyer's warehouse management system (WMS). When a shipment arrives, receiving personnel scan the barcode affixed to the pallet of goods. The barcode is then automatically matched against the records in the warehouse management system to verify shipment accuracy. As a result, inventory levels are updated and warehouse personnel are notified where to forward the received goods.

Although the ASN is the most popular shipping transaction, there are many other EDI transportation documents that are used in the supply chain, particularly for international freight. For ground, air, or ocean shipments there are specific EDI load tender documents used by shippers to solicit bids from transportation carriers to provide delivery services. The carrier selected to make the delivery can provide EDI delivery status updates to both shipper and receiver. In some cases, the carrier will send shipment status updates as the goods reach different points in the supply chain.

For the retail industry, the ASN enables suppliers to participate in cross-docking, drop shipping, and direct store delivery (DSD) initiatives.

Cross-Docking

The majority of goods received into distribution centers are not destined to stay very long. Often, shipments are to be forwarded to another location, such as a nearby manufacturing plant, a retail store, or a customer location. In the practice known as cross-docking, goods are immediately moved from the receiving dock to the outbound dock. Informed by the ASN and the barcode as to what has arrived and where, the warehouse management system can now route cartons internally through automated conveyor systems for cross-docking. The use of the ASN in the crossdocking process can significantly reduce inventory across the supply chain.

Drop Shipping

The ASN document is a critical component of a successful drop shipping process. With drop shipping, after a consumer places an order on a retailer's website, the retailer sends an EDI Purchase Order directly to the supplier for fulfillment. Some retailers even provide the supplier with custom-branded packaging materials to create the appearance of the package having been shipped directly from the retailer. The supplier includes all required paperwork, such as special packing-list forms and return label, with the shipment. The supplier ships the package directly from its warehouse to the consumer and sends an EDI Invoice and ASN to the retailer. The ASN includes the carrier tracking number, as well as other drop shipping information.

The retailer then notifies the consumer of the shipment, usually via email, and provides the tracking number of the shipper (e.g., UPS, FedEx, DHL) so that the consumer can link to the shipper's site for additional status updates. The consumer receives the goods, at which point the carrier updates the shipment status as "delivered." Another EDI document that is integral to the drop shipping process is the Inventory Advice, which notifies the retailer of product availability. This enables the retailer to be confident that consumer orders can be filled.

Direct Store Delivery (DSD)

In the highly competitive retail market it is vital that there is always stock on hand to meet consumer demand. The direct store delivery model enables a retailer to order goods for delivery directly to its stores, bypassing the retailer's distribution centers and thus shortening delivery time. This is especially important for perishable items such as produce and baked goods, when delays in shipment mean shorter shelf life. The key to this process is a section of the EDI Purchase Order that enables the buyer to specify multiple store destinations with quantities for each, all in a single document. The supplier processes the EDI Purchase Order, ships directly to each store, and sends a separate ASN for each shipment.

Using EDI in the shipping and receiving processes enables both the supplying and receiving companies to compete in a business environment in which efficient delivery of goods to the right place at the right time is key to success. Also crucial to both is quick and seamless invoicing and payment.

Invoicing and Payments

Finance teams are increasingly focusing on streamlining the accounts payable (AP) department to achieve further cost efficiencies, improve visibility into financial performance, and reduce the risk of both internal and external fraudulent activity. Eliminating the mountains of paper invoices received from non-EDI suppliers is clearly an important first step.

Many countries have enacted legislation that permits an electronic invoice (e-invoice) to serve as legal evidence during tax audits, removing the need to keep paper originals. In order to more efficiently collect taxes and to prevent tax avoidance, governments throughout the world, including those of Mexico, Brazil, and Denmark, have mandated the use of e-invoicing for the public sector. Within the United States, some federal agencies, e.g., the Department of Defense and the Department of Veterans Affairs, have mandated e-invoicing. Today, e-invoicing is becoming the way to do business for both governmental agencies and the private sector, whether the company is small, medium, or large.

While e-invoicing regulations are often similar in purpose, the specific requirements frequently vary by country. For example, EDI invoices must adhere to country-specific regulations for data format, data storage, and data access requirements. Some of the legal requirements for e-invoicing that differ from one European Union member to another include:

1 **Digital Signatures:** some countries, such as Spain, require EDI invoices to be digitally signed (using an encrypted code) in order to guarantee their origin and integrity;

2 **Archiving:** many countries require the archiving of EDI invoices for extended time frames, e.g., Germany requires data archiving for ten years and the UK requires six years;

3 **VAT Compliance:** VAT (Value-Added Tax) rules in Europe vary widely by country.

There are three typical models for the invoicing and payments process. The most common, particularly in the retail industry, involves the generation of a purchase order and an invoice. In the second model, an EDI Purchase Order is not generated—just an EDI Invoice. And in the third model, the reverse is true: an EDI Purchase Order is generated, but no EDI Invoice.

Standard Model

EDI Purchase Order and EDI Invoice: In a fully automated invoicing and payment process (see Figure 11):

1 the supplier's order management system processes the incoming EDI Purchase Order and, once the order is filled,

2 the accounts receivable system generates and sends an EDI Invoice. The invoice is received and processed by the buyer's accounts payable system after receipt of goods or performance of service. The AP organization reviews and approves the invoice.

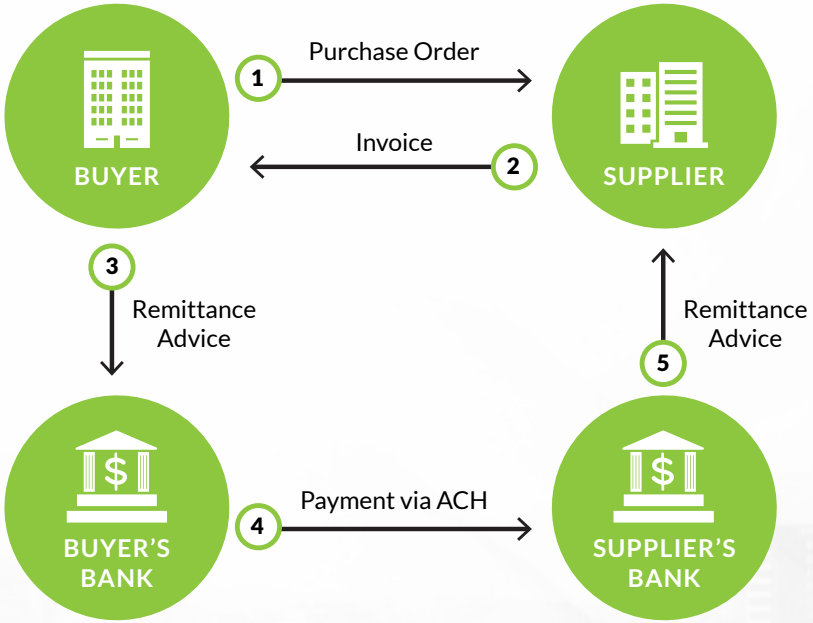


Figure 11: Basic Invoice and Payment Process

3 A few days before the invoice is due, the AP team will generate an EDI Payment Order/Remittance Advice, which is sent to the buyer's bank for

4 payment via the Automated Clearinghouse Network (ACH).

5 When the supplier's bank receives payment, it generates another EDI Remittance Advice informing the supplier that payment has been made.

Non-PO Invoice

In some instances, particularly for services provided, there is no purchase order to start the procurement process. This may occur, for instance, when there is a long-term standing contract to provide services, such as office leasing or electrical utility services.

There are two process differences from the standard invoicing process previously described. First, since there is no EDI Purchase Order, the company providing the service cannot use content from an EDI Purchase Order to generate the EDI Invoice. Thus, the EDI process begins with invoice creation by the service provider. This is commonly referred to as a "non-PO invoice." Second, since a purchase order, which often functions as automatic pre-authorization for forthcoming invoices, was not generated, these incoming EDI Invoices must first go through a payment approval workflow process.

Evaluated Receipt Settlement (ERS)

The Evaluated Receipt Settlement process, which is known in Europe as Self-Billing, was pioneered in the United States by the automotive industry to streamline the procure-to-pay process with high-volume, trusted direct materials suppliers. The ERS process has since been widely adopted throughout other manufacturing sectors. In this model, once the purchase order has been received, the supplier (for example, a parts supplier in the automotive industry) fills the order and sends an ASN (Advance Ship Notice). However, no EDI Invoice is generated.

Upon receipt of the shipment, the buyer matches the information from the ASN against the original purchase order and the actual goods received to automatically calculate the payment. The payment process then proceeds as in the standard model.

In addition to the standard buyer/supplier invoicing and payment models detailed above, other payment scenarios can leverage EDI. Financial institutions use the power of EDI to process the tens of thousands of financial transactions each day. With such volumes, EDI is crucial to ensuring that correct payments are made to the correct accounts at the correct time. For example, businesses must make payments to suppliers, deposit payroll for employees, and issue dividends to investors. Large corporations often use EDI and other standards to instruct their banks as to when, to whom, and how to make these payments. ANSI X12 and EDIFACT are popular options for payment instructions. There are also a number of standards unique to the financial services industry. ISO 20022 XML, SWIFT MT, and MX messages are used globally. In addition, each country may promulgate unique payment instructions, such as NACHA (United States), CFONB (France), and CliOp (The Netherlands).

Regardless of which invoicing and payment process is used, both the buyer and the supplier realize benefits from using an EDI-based approach.

The benefits to the buyer include:

- **Reduced costs:** Companies that have automated their accounts payable process have realized major cost savings.
- **Improved cash management and risk management:** Real-time access to invoices and improved accuracy enable a company to better predict outbound disbursements and cash flow. In addition, e-invoicing programs typically result in fewer duplicate payments, payment penalties, and overpayments.
- **Maximized discounts:** EDI invoicing enables a company to process and approve invoices more quickly, enabling a business to take full advantage of timely payment discounts, such as a two-percent discount for payment within 10 days of invoice receipt or other prorated discount schedules.
- **Improved relationships with suppliers:** Faster, more accurate payments to suppliers result in the ability to forge more strategic relationships and ensure better customer service.

The benefits to the supplier include:

- **Faster payments:** E-invoicing eliminates mail delays and customers can easily route invoices for faster approval and processing since electronic invoices can automatically pass into the customer's invoice approval workflow system. Invoices are less likely to get lost and there are fewer exceptions. As a result, invoices can be paid in a timelier manner.
- **Reduced costs:** Companies that have automated their accounts receivable process have realized major cost savings due to savings in postage, materials, processing, and storage. Further savings result from a reduction in reprint requests and customer service calls. In addition, electronic invoices enable the implementation of a fully electronic payment system, thereby eliminating the costly processing of paper checks.
- **Increased productivity:** Utilizing electronic delivery of invoices, suppliers can verify that buyers have received their invoices and the time and date of receipt, thus reducing the need for status calls.

OpenText™

What Does an EDI Document Look Like?

In this chapter, you will learn:

- How EDI documents are constructed from data elements, segments, and envelopes

READ MORE

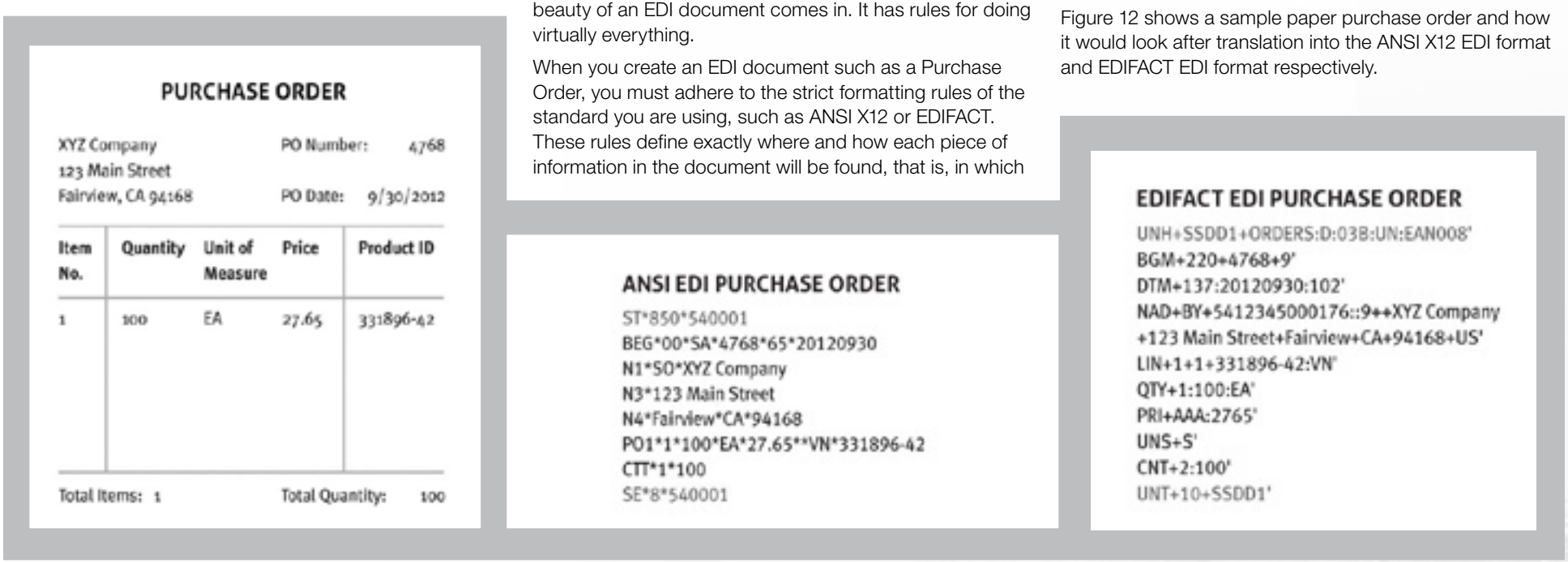
An EDI document needs to contain all the information that would be in the paper document of the same type. For example, in a purchase order you need to specify your company name, address, phone and fax numbers, and the products you wish to purchase, the quantity of each product, and so on.

In an EDI document, each piece of information is called a "data element." We call each line of data elements a "segment." A single EDI business document such as a Purchase Order, Invoice, or Advance Ship Notice is called a "transaction set" or "message." What makes the EDI document different from an email is that each data element is in a specific position on a specific line or segment.

For example, if the EDI rule is that your company's address will always be found after the first asterisk on a segment that begins with the code "N3," any EDI computer program in the world can now theoretically find your address by simply looking for a segment beginning with "N3" and reading after the first asterisk. Obviously, documents can be very complex. For example, how do you indicate multiple addresses for multiple locations? That's where the beauty of an EDI document comes in. It has rules for doing virtually everything.

When you create an EDI document such as a Purchase Order, you must adhere to the strict formatting rules of the standard you are using, such as ANSI X12 or EDIFACT. These rules define exactly where and how each piece of information in the document will be found, that is, in which segment and in what position within that segment. In this way, when the EDI translator on the receiving computer reads an incoming EDI Purchase Order, it will immediately know where to find the buyer's company name, the purchase order number, the items being ordered, the price for each item, and so on. The data will then be fed into the receiver's order management system in the proper internal format without requiring any manual order entry.

Figure 12 shows a sample paper purchase order and how it would look after translation into the ANSI X12 EDI format and EDIFACT EDI format respectively.



PURCHASE ORDER

XYZ Company
123 Main Street
Fairview, CA 94168

PO Number: 4768
PO Date: 9/30/2012

Item No.	Quantity	Unit of Measure	Price	Product ID
1	100	EA	27.65	331896-42

Total Items: 1 Total Quantity: 100

ANSI EDI PURCHASE ORDER

```
ST*850*540001
BEG*00*SA*4768*65*20120930
N1*SO*XYZ Company
N3*123 Main Street
N4*Fairview*CA*94168
PO1*1*100*EA*27.65**VN*331896-42
CTT*1*100
SE*8*540001
```

EDIFACT EDI PURCHASE ORDER

```
UNH+SSDD1+ORDERS:D:03B:UN:EAN008'
BGM+220+4768+9'
DTM+137:20120930:102'
NAD+BY+5412345000176::9++XYZ Company
+123 Main Street+Fairview+CA+94168+US'
LIN+1+1+331896-42:VN'
QTY+1:100:EA'
PRI+AAA:2765'
UNS+S'
CNT+2:100'
UNT+10+SSDD1'
```

Figure 12: Sample Paper Purchase Order

Data Elements

The EDI standard sets the rules for the type and format of each data element in a document. For example, the data type might be numeric for the quantity of goods ordered, alphanumeric for your address, and date format for the delivery date. The standard also provides codes that indicate the format or types of certain data elements. For example, because businesses today trade in a global economy, it is necessary to have a code to indicate the currency associated with any data elements expressing prices or costs. One code can indicate that prices are expressed in U.S. dollars, another in Euros, another in yuan, and so on.

Segments

If you were filling out information on a Purchase Order, you would expect to see groups of related data. For example, see Figure 13, which shows a paper purchase order in which only one item is being ordered. Note that there are four sections, each providing a different set of information: In an EDI document, each section is described by one or more segments; each segment consists of one or more data elements. Each segment begins with a segment identifier (e.g., ST, BEG, N1, in ANSI; UNH, BGM, DTM in EDIFACT) that describes the type of data elements that follow. The data elements within each segment are separated by a data element separator, such as an asterisk(*) or a plus sign(+).

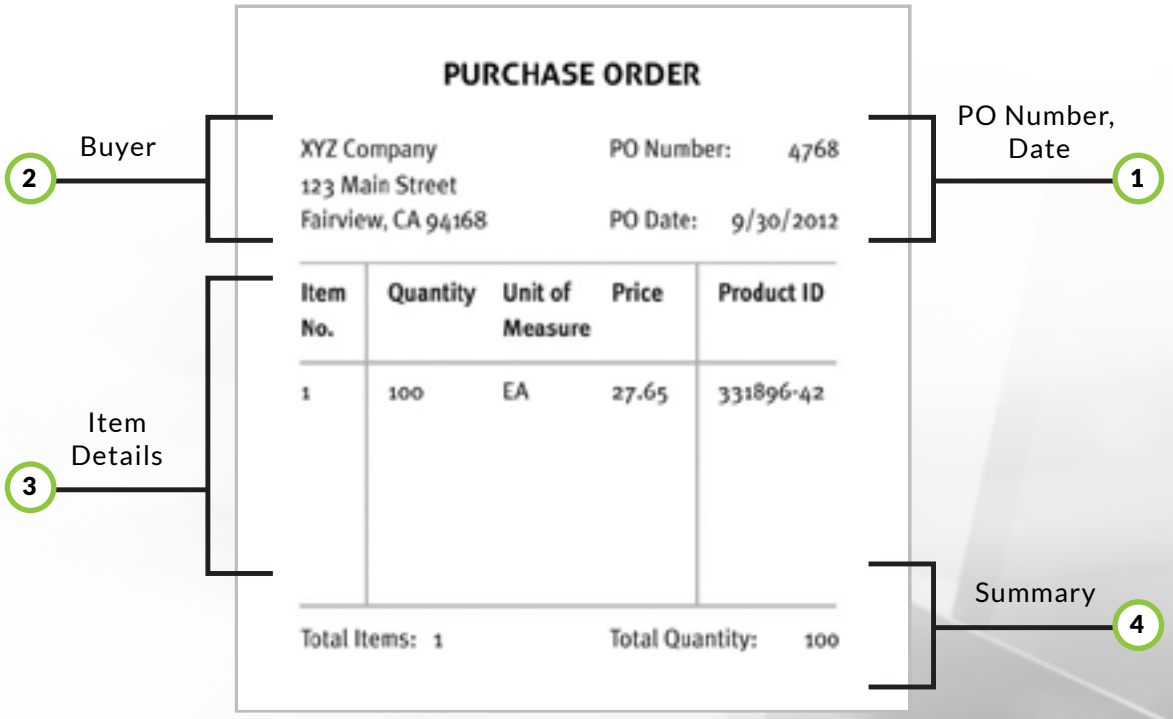


Figure 13: Purchase Order Sections

The ANSI X12 document for the above XYZ purchase order would look like this. (The numbers (1) to (4) correspond to the numbered sections in Figure 13.)

ST*850*54001	ST, to indicate start of a transaction set—in this case the 850 purchase order
BEG*00*SA*4768*65*20120930	BEG, to indicate the beginning of the PO, specifically (1)
N1*SO*XYZ COMPANY	N1, a name segment (2)
N3*123 MAIN STREET	N3, to provide street address
N4*FAIRVIEW*CA*94168	N4, to provide city/state/zip
PO1*1*100*EA*27.65 VN*331896-42**	PO1, to provide line item detail (3)
CTT*1*100	CTT, to provide summary data for the PO (4)
SE*8*1001	SE, to indicate the end of the PO

The EDIFACT document for the above XYZ purchase order would look like this:

UNH+SSDD1+ORDERS:D: 03B:UN:EAN008'	UNH, to indicate start of message —in this case "ORDERS"
BGM+220+4768+9'	BGM, to indicate the beginning of the PO message
DTM+137:20120930:102'	DTM, to indicate the date/time period (1)
NAD+BY+5412345000176::9 ++XYZ COMPANY+ 123 MAIN STREET+ FAIRVIEW+CA+94168+US'	NAD, to identify the buyer code corresponding to the name/ address (2)
LIN+1+1+331896-42:VN'	LIN, to describe line item detail (3)
QTY+1:100:EA'	QTY, to define the quantity
PRI+AAA:2765'	PRI, to define price
UNS+S'	UNS, section control segment to separate line item detail from summary information
CNT+2:100'	CNT, to provide the number of line items (4)
UNT+10+SSDD1'	UNT, to indicate the end of the PO

For each type of business document, the EDI standard defines:

- The segments that may be included and whether they are mandatory, optional, or conditional (conditional segments can be included only if another segment or data element is included);
- For each segment, the data elements that may be included (for each piece of information on a paper document there is a corresponding EDI data element); these data elements are defined in the standards dictionary and each standard has its own dictionary;
- The required sequence of the segments and data elements; and
- How many times a segment or group of segments (loop) may be repeated.

Envelopes

Once all the segments are assembled according to a prescribed sequence, they form a complete electronic document or "transaction set."

There are times when a business may need to send just one document to a business partner and other times when it may need to send hundreds. EDI provides a way of sending either one or multiple documents destined for one trading partner in a single file. We call this concept "enveloping" because it's just like taking paper purchase orders, stuffing them into an envelope, and sending them through the mail.

The EDI envelope is called an "interchange envelope." It includes a segment that precedes all the documents and a segment after all the documents. These envelope segments contain the identification of the sender and the receiver, the date and time of the transmission, totals that enable the receiving computer to verify that it has received the correct number of documents, and other information that is needed by the receiving EDI program to process the data elements.

Figure 14 shows the XYZ purchase order in an ANSI and EDIFACT EDI interchange envelope ready for transmission.

This chapter is intended to provide the rudimentary concept of what an EDI document looks like. Because EDI is so powerful, it is much more complex. There are, for example, layers of enveloping, types of data segments, and groups of data elements that have not been described here, but are subjects with which the EDI specialist needs to be familiar.

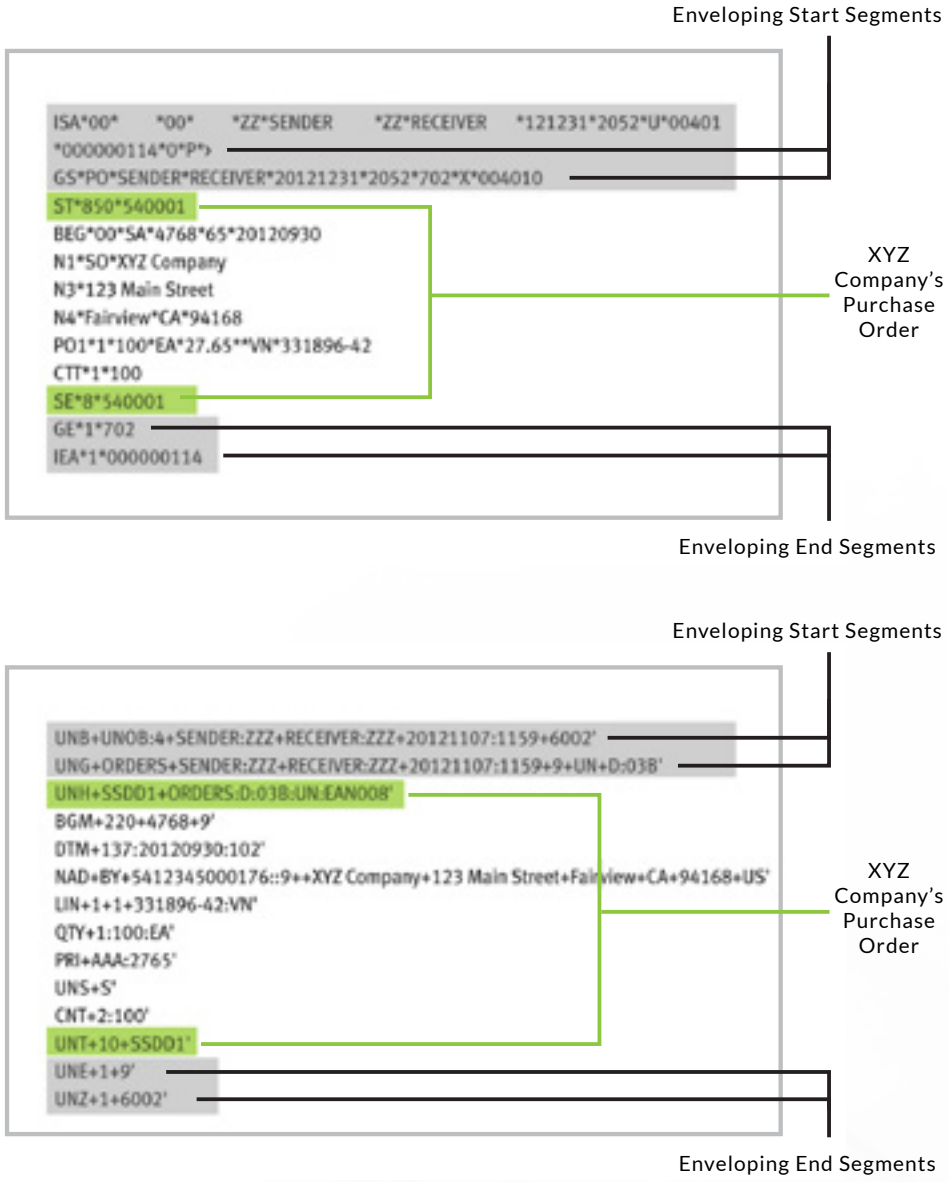


Figure 14: EDI Purchase Order with Enveloping

OpenText™

How Does a Company Implement an EDI Program?

In this chapter, you will learn:

- What is involved when you perform all EDI implementation tasks yourself
- What is involved when you outsource many EDI implementation tasks

READ MORE



Many companies need to implement EDI in order to satisfy the requirements of valued customers. For example, Chrysler mandates that its suppliers must either implement a fully integrated EDI solution or, for smaller-volume suppliers, use web-based forms or a service bureau that will generate EDI documents on their behalf. After complying with a business partner's EDI requirements, a company often sees the potential benefits of instituting its own EDI program with its broader trading community.

If your company has decided to implement EDI as part of a strategic initiative to cut costs and improve efficiency or in order to become easier for customers to do business with, you need to determine whether to do it yourself, outsource it all to a B2B Managed Services provider, or use a combination of the two approaches.

Do-It-Yourself Model

In order to make a decision as to which of the above three models best fits your company's needs, you need to appreciate the level of effort required to set up a do-it-yourself EDI program. Some companies, such as Walmart, have decided upon the do-it-yourself approach as part of their strategic decision to have complete control over every aspect of their business.

Now is an overview of the major tasks that need to be completed for a successful EDI implementation.

Develop the organizational structure

EDI is a significant investment and developing the correct organizational structure from the outset will pay dividends as the program evolves. Some of the key elements of the structure include:

- **EDI Coordinator:** An IT professional with in-depth experience in delivering EDI. The coordinator may come from in-house or be hired externally depending on the EDI resources of the organization.
- **Steering Committee:** Headed by the EDI Coordinator, this committee typically consists of the department heads of affected business units, the head of IT, and legal representatives.
- **Senior Management Sponsor:** As with any major IT program, senior management commitment is critical if the EDI implementation is to be a success.
- **Dedicated EDI Team:** The EDI team will be responsible for the actual implementation of the system.

Tasks in the do-it-yourself model:

- *Develop the organizational structure*
- *Conduct in-depth analysis*
- *Acquire the EDI infrastructure*
- *Develop EDI system requirements*
- *Implement the technical solution*
- *Roll out the program to your trading partner community*
- *Manage and maintain your EDI program.*

An important aspect of the role of the EDI coordinator is to regularly communicate with all sectors of the company that will be affected by the EDI program in order to ensure their support and buy-in. This ongoing communication is vital for educating the various organizations as to how the EDI program will benefit them and affect their processes.

Conduct in-depth analysis

This analysis identifies the most likely corporate applications and documents for EDI deployment and sets priorities for conversion to EDI. To this end, factors to be considered include the number of suppliers, customers, or other trading partners, and the volume and type of transactions to be exchanged. It includes a description of the present systems in each functional area and an explanation of how EDI will improve them.

The generation and receipt of each type of business document is based on a system of human and machine procedures, all of which must be documented and analyzed for EDI efficiencies. For best results, the goal should be to improve the business cycle, rather than simply automate it.



Develop EDI system requirements

The result of the previous analysis step provides an organization with the knowledge to develop a comprehensive specification for the EDI system. This includes:

1 the volume of expected EDI traffic and the IT infrastructure needed to support it;

2 the capacity of the internal network infrastructure to support EDI data;

3 the network connections needed to manage traffic with trading partners;

4 the programming required to ensure that internal systems comply with the data required by trading partners and with EDI standards; and

5 the amount of customizing required to integrate the internal and EDI systems.

With this information, EDI system design can begin. A key element of this design is selecting the communications model that best meets your needs. Although companies may choose to implement the do-it-yourself approach, most still choose to use the services of an EDI Network Services provider to connect to all or some of their business partners. Earlier in the book, we discussed the reasons for electing to leverage an EDI Network Services Provider. But it's important to recognize that not all providers are the same.

Some considerations for selecting the right one for your company include:

Network Reach
How many of your trading partners already use that particular provider? Does that Provider have a strong presence in your industry? Does that Provider have a global presence, not only for the exchange of documents, but also for providing local customer support?

Pricing Structure
EDI Network Services Providers offer various pricing structures, including pay-as-you-go and monthly or annual subscriptions. Most Providers calculate the charge based on the number of kilo(thousand)-characters (KCs) within a document. Other factors that impact the price may include the number of trading partners to be implemented, special requirements such as local language support for international partners, and the length of the commitment period.

Network Viability
Does the Provider's network have a proven track record and is it likely to be around for the foreseeable future? Does it provide disaster recovery and the capacity to handle peak loads without degradation of service?

Value-Added Services Offered
This includes services such as automatic rejection of documents with bad data before they reach your system, the ability for your line-of-business personnel to independently obtain data and reports on demand, and the ability to view the status of your business transactions at all stages in the supply chain. Quite often, these value-added services are a more important factor in your decision than is cost.

Acquire the EDI infrastructure

Now that your requirements have been defined, it will be necessary to purchase any hardware or software needed to support your EDI solution. This often entails the purchase of a dedicated server, particularly if you will be using the AS2 communications protocol. You will also need to acquire the communications software and the EDI translation software. The translation software creates an EDI document from your internal data and also converts incoming EDI documents into your internal data format.

When selecting an EDI translator, you should be aware that features vary in terms of efficiency in handling large volumes of documents, reporting capabilities, mapping tools for the correlation of your in-house data formats to the EDI format, ERP integration features, and others.

You need to select the EDI translator that is right for your business. And most important, you must have the proper personnel resources to implement and maintain the system. This may require the hiring of new personnel with expertise in communications and EDI.

Implement the technical solution

After purchasing the necessary hardware and/or software to support your EDI solution, a skilled EDI programming staff must next convert the requirements into reality. The staff must be fully knowledgeable of EDI standards, in-house systems, and communications protocols. The basic tasks that need to be performed include:

1 integrating EDI with your in-house business systems, which means extracting and loading data;

2 creating the EDI documents by mapping (correlating) the extracted data to the proper segments and data elements of the EDI transaction set, as well as providing the enveloping and other necessary data; and

3 installing and configuring the communications software for sending and receiving documents.

Each of these processes can be very complex, particularly when you have many trading partners each with its own requirements. That's why a good, technically skilled staff is essential.

Roll out the program to your trading partner community

If you are the initiator of the program with your business partners—for example, you want all your suppliers to be able to receive your purchase orders via EDI and to return EDI Invoices—you must have the skilled resources to develop, manage, and maintain an EDI rollout program to your supplier community. This includes:

1 surveying your community to understand each supplier's level of EDI readiness;

2 developing and implementing a community communication plan to convey your program goals and provide the education needed;

3 offering various EDI options such as web-based forms or Microsoft® Excel®-based forms for those suppliers that are not ready to integrate EDI with their back-office systems; and

4 supporting each supplier through the start-up process.

EDI infrastructure requirements may include dedicated server, communications software, EDI translation software, personnel with EDI and communications expertise

Manage and maintain your program

EDI programs must continually change to meet your evolving business requirements. You may add EDI document types, add EDI partners, or change communications settings. Be prepared with the skilled personnel required to handle these changes. You will need to invest in skilled personnel for the ongoing management of your EDI program in order to:

- Monitor and troubleshoot communications and data issues to ensure documents continue to flow;
- Respond to inquiries from trading partners 24x7 as issues arise;
- Report on trading partner activity and system usage; and
- Make updates to translation maps and/or communications protocols as you or your partners add new documents, make changes to current documents, or upgrade their communications processes.

B2B Managed Services Model

The alternative to the do-it-yourself approach is to use the services of a B2B Managed Services Provider that provides expertise, technical infrastructure, and program and process support on your behalf. With a B2B Managed Services approach you offload all the day-to-day operations of your EDI program to a third party who provides all the services needed, including:

- Integration with your in-house systems;
- Connectivity and protocol mediation with all your trading partners (your customers, suppliers, logistics providers, financial institutions);
- Data translation to and from your document format and the document format of your trading partners;
- Working with each trading partner to fully integrate their processes with yours, including setup, testing, communications monitoring, and 24x7 Help Desk support for you and your trading partners;
- Community rollout and enablement services; and
- Reporting of trading partner activity and system usage.

With B2B Managed Services, you no longer need to manage and/or purchase upgrades to your B2B hardware and software. In addition, if you already have an in-house EDI program in place, then moving to a B2B Managed Services approach enables you to redeploy the personnel currently assigned to the EDI program to support other business needs.

Typically, you pay an up-front implementation fee and then an ongoing monthly fee that is based upon the volume of your EDI document transactions.

Of course, no two companies' business needs are identical. A solution that meets the needs of one company may not work for another. But one of these three general approaches can be tailored precisely for the challenges that your company must meet in order to adapt, grow, and excel in today's ever-evolving business environment. All companies now have the opportunity to trade electronically with 100 percent of their trading partners. Easy-to-use options are available that eliminate earlier barriers to full participation by small and medium-size trading partners. These options include customized web based forms and direct integration with Excel or other accounting software. All companies, big and small, can now realize the benefits of using EDI as a core technology component in streamlining their procurement, receiving, invoicing, and payment processes. Moreover, these internet-based options are available worldwide. Therefore, companies that want to leverage emerging markets can now utilize EDI to communicate electronically everywhere in the world, despite the complexities of different time zones, regulations, and languages.

OpenText™

Conclusion

In the foreword to this book, we used the example of a company in Detroit, Michigan that uses EDI to exchange business documents with its suppliers in Japan and Brazil virtually instantaneously. If your business wants to compete successfully with a company like that—one that has an integrated B2B e-commerce program—now is the time to begin the conversation about implementing EDI in your company. We hope that after reading this book, you are better prepared to lead that discussion.

OPENTEXT™

Next Steps

Additional information and resources, such as case studies, reference materials, glossary, tutorials, sample RFPs, and frequently asked questions, can be found on **www.edibasics.com**

Connect With Us

- OpenText Business Network blogs
- @opentext
- facebook.com/opentext
- linkedin.com/company/opentext

About OpenText

OpenText™ operates the world's leading B2B network. Built on the strength of the OpenText Cloud™, it connects more than 600,000 businesses that execute in excess of 16 billion transactions per year to facilitate the mission-critical transfer of goods, money, and information between customers, suppliers, and service providers. **Learn more about OpenText B2B Managed Services**

Contact us

Copyright © 2016 Open Text SA or Open Text ULC (in Canada). All rights reserved.Trademarks owned by Open Text SA or Open Text ULC (in Canada). (01/2017)06379EN