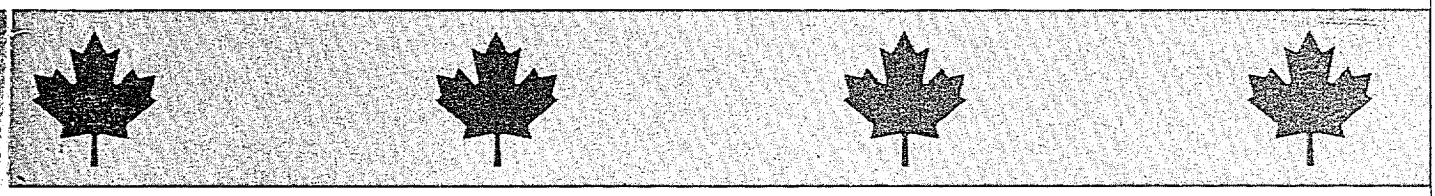
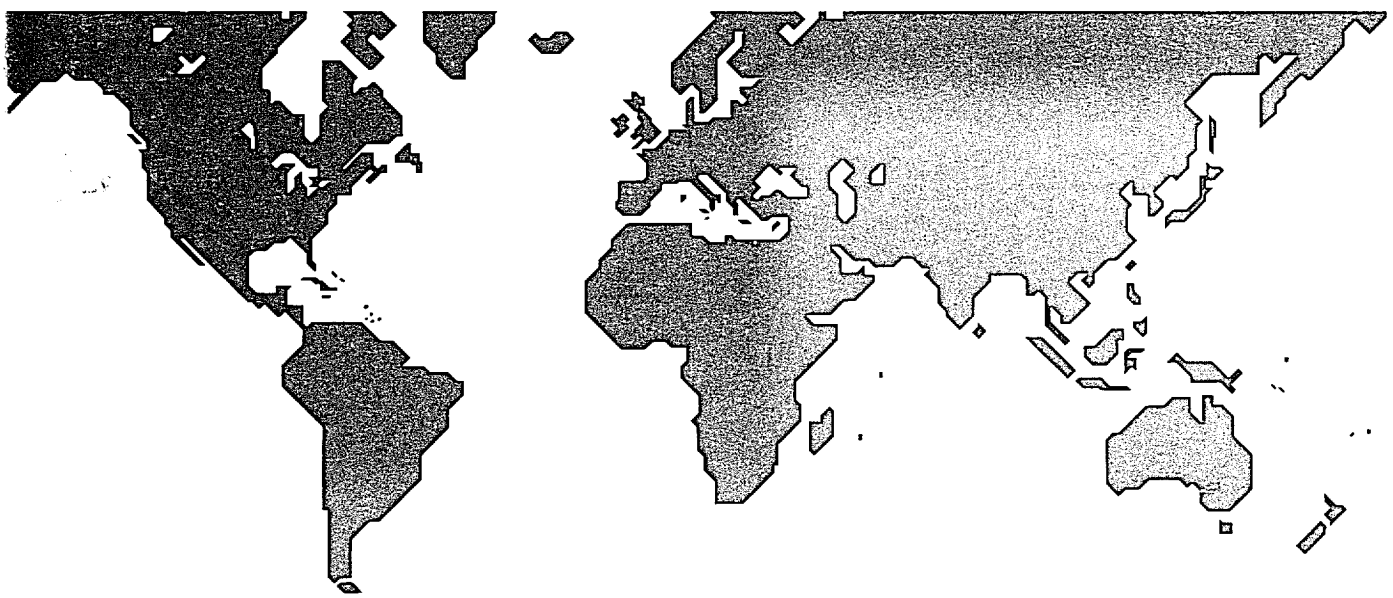
UNDERSTANDING AND CHOOSING A VALUE-ADDED NETWORK





UNDERSTANDING AND CHOOSING

A VALUE-ADDED NETWORK

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EXTERNAL AFFAIRS AND INTERNATIONAL TRADE CANADA

CANADIAN INTERNATIONAL FREIGHT FORWARDERS ASSOCIATION, INC.

UNDERSTANDING AND CHOOSING A VALUE-ADDED NETWORK

CONTENTS

Foreword

This publication arose from discussions between External Affairs and International Trade Canada (EAITC) and the Canadian International Freight Forwarders Association (CIFFA) about competitveness in international trade. The Association had identified electronic data interchange (EDI) as a critical element in international competitiveness and suggested that CIFFA and EAITC colloborate on a study of "Value-Added-Networks" (VANs). This publication is the result of that effort. Although intended for freight forwarders, the information contained in the publication is relevant to any company trading internationally.

This guide cannot be exhaustive; individual circumstances, interests and needs will dictate how companies make their particular decisions about using VANs. In light of constantly evolving circumstances, users of this guide are cautioned to confirm information when deciding on VAN options.

Exporters are invited to submit, to the address below, their comments regarding this publication and suggestions for others which may be useful to them in the course of increasing Canadian exports.

This publication follows others in a series on transportation and distribution which should be of interest to the freight forwarding community. Other companies involved in international trade should also find them useful. These publications include Export Markets: The Trading House Connection; Safe Stowage; The Exporters' Guide to Transportation; and Transportation Services Between Canada and Mexico.

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Also of interest to the freight forwarding community is The FIATA Legal Handbook on Forwarding, written by transportation and insurance lawyer, Peter Jones, available from Les Edition Yvon Blais Inc. 430, rue St-Pierre, Montreal, Quebec H2Y 2M5.

The opinions expressed in this report are those of the authors and do not necessarily represent the past or current policy of the Government of Canada.

May, 1992

EXECUTIVE SUMMARY

Efficiency, responsiveness and cost-effectiveness await those companies who are willing to invest in them. Indeed, that is the real promise of electronic data interchange. When utilized in conjunction with a well chosen value-added network, EDI can deliver the greatest benefits of all. Careful study of and frequent reference to this manual, before choosing a VAN, will ensure that the widest choice is made.

It is important to underscore the advisability of adequate preparatory work at the very beginning of the VAN selection process. With that in mind, readers are reminded to pay particular attention to Chapter 4, which not only provides a shopping list for would-be subscribers, but offers practical advice on how to analyze and arrange in importance the various features offered by value-added networks.

Careful study of Chapter 5, which represents the very heart of this report and provides results of the survey of VANs known to be actively conducting business in Canada, will equip readers with the requisite information for making an informed decision. The VANs are measured against specific criteria so that readers can easily do some time and dollar-saving comparison shopping.

Finally, readers are reminded that this guide is not exhaustive, and that individual circumstances, interests and needs will dictate how companies choose a value-added network. Moreover, the menu of services offered by VANs varies and all are subject to change. Realizing that, readers are cautioned to confirm information before seeking a VAN.

INTRODUCTION

Efficiency, responsiveness, cost-effectiveness -- fundamental business principles that are as important today as they always have been. Business operators who ignore them, and who fail to invest in them, can't expect to continue operating profitably. Experience has taught us that a common sense approach to achieving new efficiencies, improved responsiveness and greater cost-effectiveness is very important, otherwise we spend time and money on systems we don't understand and from which we never realize the benefits. This publication, which has resulted from a collaboration between the Canadian International Freight Forwarders Association and the Department of External Affairs, is aimed precisely at this problem. It seeks to help you, the business manager, who is willing to make the investment in technology to improve his or her businesses but who needs to have a better understanding before spending decisions are made.

Electronic Data Interchange (EDI) is a simple concept. Instead of sending paper documents to your trading partners, the information is converted to electronic form by computer and sent over the telephone lines. But before EDI can be properly implemented, it is necessary to put a system in place. This system includes a number of components that are new to most managers. In the following pages, we will explain what these components are and how they work together. In particular, we will focus on the transport mechanism used for EDI transactions, the so-called Value-Added Network or VAN. After reading this document, you should be able to make a more informed decision about which VAN you would want to subscribe to for your EDI exchanges.

There is more to EDI than choosing a VAN wisely: you will need software, too. Moreover, you must look at the implications of EDI. It would not be an overstatement to say that EDI will require you to re-engineer your business processes, nor that it will, ultimately, have a profound affect on your competitiveness and profitability. You should have high expectations that EDI will deliver on its promise. But you should also prepare yourself for the ubstantial changes it will require your business to make.

FIGURE 1
THE ELECTRONIC DATA INTERCHANGE PROCESS

FREIGHT FORWARDER

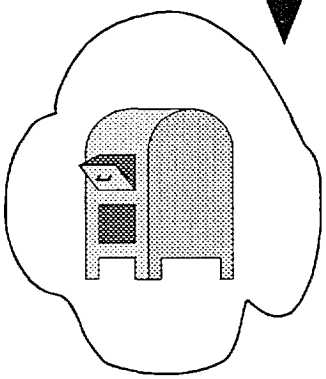
Computer-generated WAYBILL

Translation Software

Communications

Send
Standardized WAYBILL

VAN
Electronic
Mailbox



PRODUCT DELIVERY

Receive
Standardized WAYBILL

Communications

Translation Software

Communications

CARRIER

1. What is EDI?

As well as moving goods around the globe, freight forwarders are major movers of information, which is their lifeblood. Its swift and accurate movement through the organization and externally to domestic and foreign trading partners is essential. Much of the information contained in these messages is generated by computers. Thus it should be possible to transmit the information in electronic form over telephone lines directly from one party, such as a freight forwarder, to another party -- a customs broker or transport carrier, to name a couple of examples. Information sent electronically obviates the need for paper documents that have to be read by a person on the receiving end prior to their manual entry into yet another computer. Electronic transfer of information reduces human handling, paper and time, not to mention potential errors.

Electronic Data Interchange (EDI) is the term used internationally to refer to this electronic exchange of standardized messages. Several elements are used together to constitute an EDI exchange from one trading partner to another. **Figure 1** illustrates these elements. At either end are the trading partners, any two organizations -- forwarders, carriers, banks, customs brokers, government agencies, etc. -- who wish to send each other information. Let's examine how EDI typically handles the flow of information; in this case, a waybill:

1. The freight forwarder's computer generates a file containing the electronic data which is *translated* by software in the same computer into a standard waybill format. The standards used include ANSI X.12 and EDIFACT, both of which will be explained later.

2. The standardized EDI message is then transmitted through telephone facilities to a Value-Added Network (VAN), a company which runs a computer that has an electronic mailbox system for routing transactions. The VAN's mailbox is used like a private electronic post office. The incoming EDI message is electronically *posted* to the electronic *address* of the recipient.

3. The carrier's computer then dials up the electronic mailbox to retrieve the EDI message, which is *un-translated* (sometimes called interpretation) and is finally submitted for processing to the appropriate computer application running on the carrier's computer.

The entire series of transactions can take as little as 60 seconds to complete, from beginning to end. If necessary, one can send thousands or even hundreds of thousands of messages a day. It is economical, efficient and fast. The costs can be substantially

lower than manual means of exchanging information. In fact, the use of EDI has saved many industries millions of dollars over time. The source of such savings will be discussed later.

Before reading further about what EDI *is*, it is important to clarify what EDI is *not*. It is not electronic mail or *e-mail*. E-mail services which are widely available, are used very differently from EDI services. The key difference is document structure. When one uses an E-mail system, one simply sits in front of a blank screen and types a message in any fashion desired, using words and even graphics anywhere on the screen. By contrast, EDI messages are highly structured documents with specific requirements for the placement of data in defined positions -- just as in the case of a paper purchase order, for example. It is the adherence to EDI message standards that enables one computer to understand what the other computer has sent and to interpret it accurately. Some organizations still use non-public standards for EDI, such as CADEX, which are called proprietary standards. And though they are very useful, they are not universal. The eventual harmonization of standards on an international scale will enable more rapid and widespread use of EDI to occur with less difficulty.

E-mail and EDI are non-competing and wholly complementary messaging systems that can be used effectively together, but for different purposes. Proprietary versus public standards, on the other hand, are forces pulling in opposite directions. As much as possible, business should adopt public standards so the benefits of EDI can be fully realized.

2. The Promise of EDI

2.1 Why have companies implemented EDI?

Just as the telephone and fax before it, EDI is fast becoming a required business tool. In the long term, EDI can reduce costs and improve customer service. As with any business investment, timing is determined by the need to meet customer requirements and the likelihood of achieving the benefits.

EDI enables transactions between a company and its trading partners to be conducted more efficiently. For example, EDI eliminates the need for re-keying of data. Rather than re-keying an invoice printed from a trading partner's computer, EDI allows the invoice to be sent directly from one company's computer to that of its trading partner. This automated exchange of messages means documents can be processed much faster, more efficiently and accurately.

EDI delivers the most benefits when it is part of re-engineered business practices. The following examples illustrate this point:

Just-In-Time Manufacturing	EDI's timely and accurate information exchange allows Just-In-Time (JIT) inventory control to be truly effective. JIT provides significant savings by reducing inventories and material handling and storage costs. A critical feature of JIT is the bar code scanning of each shipment and the transmission of an Advance Shipping Notice. Thus, when a company changes its approach to inventory and handling, adds some enabling technology and uses EDI, it can expect to gain substantial payback.
Quick Response Retail Supply	This version of JIT allows retailers to reduce their inventories and improve their receiving functions. Combined with item, case and shipment bar coding and unit price code (UPC) point-of-sale scanning, EDI ensures that in-demand merchandise is available when it is needed thereby reducing labour costs.

Vendor-managed Inventories	This variation on Quick Response, sees the responsibility for maintaining retail shelf stock levels shifted from the retailer to the manufacturer. With this changed business relationship, point-of-sale information is transmitted directly to the manufacturer throughout the day for next-day replenishment.
Evaluated Receipts Settlement	An example of a re-engineered business practice, this method eliminates the need and cost for the invoice. Payment is automatically made based on the actual goods received.

In each of these examples, the application of EDI to repetitive transactions significantly reduces errors, improves quality, speeds up document processing, and improves customer service. Over time, EDI also reduces administrative costs.

In most cases, the financial benefits of EDI are realized over the long term. Initially, expenditures are required to fully integrate EDI into a company's business processes and computer applications. Only when a sufficient volume of business is transacted via EDI will the cost saving aspects of EDI be delivered. However, many EDI subscribers have gained significant advantage even in the early stages. EDI can provide an important point of differentiation in a competitive environment. It can make a company more responsive, thus improving its ability to contribute to the prompt flow of goods and services. New business won by marketing EDI capabilities can help recoup investments.

When EDI is implemented solely as an accommodation to a customer, there is a danger that it will add costs without bringing any perceived benefits. Even in this case, retention of valued customers by accommodating a specific business request can be beneficial. Add to this the opportunity to extend the use of EDI beyond customer satisfaction, and a company can reap greater rewards from EDI by its wider application.

The costs of utilizing EDI vary considerably in the short run. For many companies, the question is: Can they afford **not** to? In many industries, EDI has become a required business practice. This is certainly the case for Canadian automotive, grocery and retail suppliers who can suffer tangible penalties, including having customers turn their backs on them, for failing to use EDI. Even without such arm-twisting, EDI has many positive contributions to make and ought to be embraced widely by Canadian businesses.

2.2 International Freight Forwarders and EDI

Huge volumes of information are exchanged to facilitate the movement of goods internationally. The entire shipping process involves a complex flow of information that requires the frequent exchange of numerous documents between many trading partners.

International shipments involve many specialized businesses, including freight forwarders, agents in foreign countries, air and ocean carriers, brokers, customs, warehouses, motor carriers, banks and import/export firms. Many different types of documents have evolved over time to serve these various organizations. For individual shipments, these documents may include shipment advice, booking request, waybill, manifest, commercial invoice, delivery instructions, pre-alert, customs declaration and release, certificate of origin, letter of credit, duty invoice, duty payment, as well as shipping invoice and payment.

It clear, then, that there are significant opportunities for business efficiencies and cost savings for freight forwarders who communicate by means of EDI with their customers. The traditional paper-based environment is error-prone and has many inherent inefficiencies that EDI can readily overcome. Using conventional methods, the flow of information between forwarders and their trading partners involves redundant re-keying of the same information with manual processing and manual delivery of documents throughout the process. By electronically exchanging required shipment information between partners, document processing costs can be significantly reduced. Just as importantly, time in the shipment process can be reduced by processing shipment information in advance of the shipment.

3. Value Added Network Services

3.1 Introduction

Value-Added Networks (VANs) are, first and foremost, communications systems that exist primarily to deliver EDI messages; they perform an important role in making EDI easy and cost-effective to implement and operate. In almost all cases, the use of a VAN reduces EDI start-up costs and creates a more favourable environment in which to establish trading partnerships.

3.2 What Services Do VANs Provide?

When explaining VANs, it is useful to compare EDIs that operate both with and without a VAN. EDI without a VAN is normally called *direct connect* or *point-to-point*. Within such a system, direct communication connections are required between all trading partners (**Figure 2**). To send a series of EDI messages, the following communications would occur:

1. Trading Partner A's computer prepares many EDI messages destined for Trading Partners B and C.

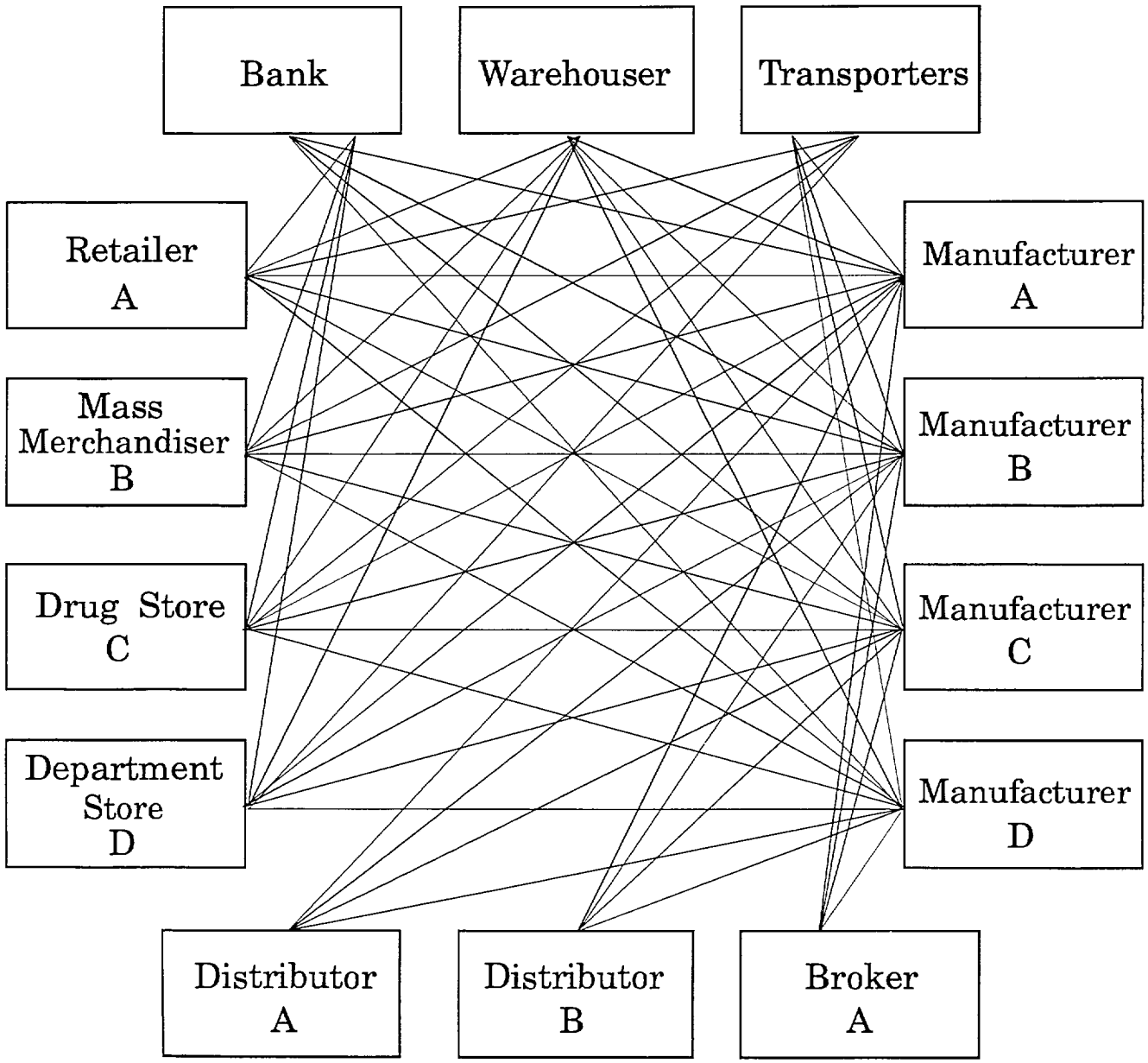
2. A's computer then calls Trading Partner B's computer, using the public long distance telephone or common carrier network, and transmits the EDI messages destined for B's computer, which must be available to receive incoming calls. Moreover, the computer communication systems of A and B must be compatible.

3. A's computer then calls Trading Partner C's computer, using the public long distance telephone network and transmits the EDI messages destined for C's computer, which must be available to receive incoming calls. Again, the computer communication systems of A and C must be compatible.

4. The entire process works in reverse when either B or C send messages to A.

FIGURE 2

NO VAN
POINT TO POINT METHOD



By contrast, when EDI works in conjunction with a VAN only one communication connection is necessary (**Figure 3**). To send the same series of EDI messages the following communications would occur:

1. Trading Partner A's computer prepares many EDI messages destined for Trading Partners B and C.

2. A's computer makes just one call to the VAN's local or toll-free number and transmits all the EDI messages destined for both trading partners. The VAN then *sorts* the EDI messages and *posts* them into the correct electronic mailboxes of trading partners B and C. EDI operating with a VAN is compatible with virtually all computer communication systems, including A's.

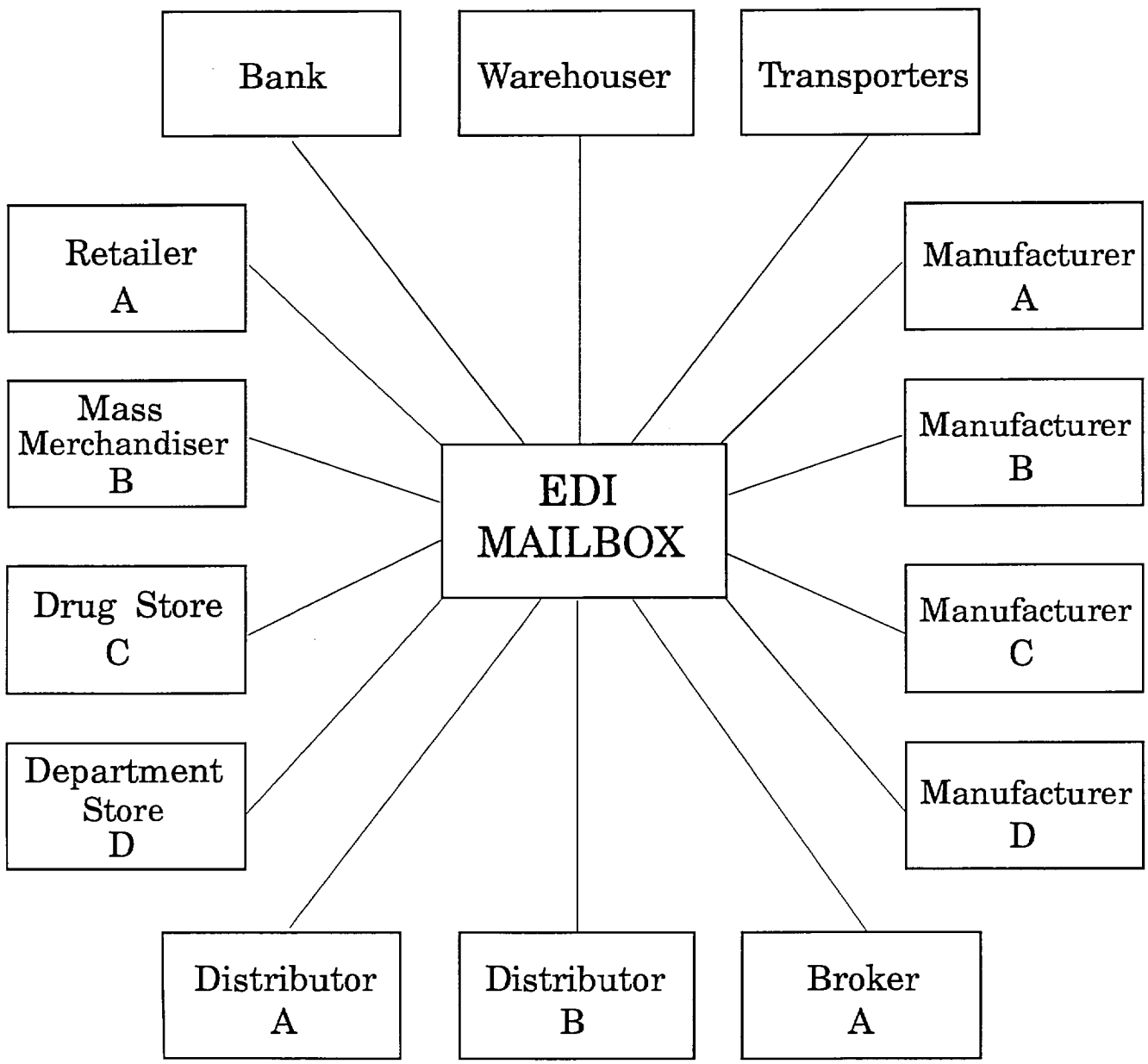
3. When Trading Partner B's computer is scheduled to process messages, it calls the VAN's local or toll-free number and removes any waiting EDI messages from B's mailbox. The EDI VAN is compatible with B's computer communication system.

4. When Trading Partner C's computer is scheduled to process messages, it calls the VAN's local or toll-free number and removes any waiting EDI messages from C's electronic mailbox. The EDI VAN is compatible with C's computer communication system.

5. The entire process works in reverse when either B or C wants to send messages to A.

FIGURE 3

THIRD PARTY MAILBOX WITH VAN



The key differences between these two alternatives are:

(1) Without a VAN, a company wishing to communicate by means of EDI with a number of different trading partners must establish a complex and sophisticated communication subsystem with skilled personnel to manage the environment.

(2) Without a VAN, the computers of all trading partners are more exposed to external access and possible tampering. Since VANs are, by definition, communications networks, they alleviate the need for individual companies to create their own communications subsystems. Moreover, they provide a much more restricted and secure network. Over and above these considerations, VAN subscribers also benefit from lower overall communication costs; better audit control and traffic monitoring; and access to expert EDI support, assistance and education.

VANs are in the EDI business because they offer a service superior to direct connect and permit their subscribers to concentrate on their own business while the VAN provides the connectivity to the rest of the world.

All EDI VANs provide two basic services:

i) **Electronic Mailboxing**

The electronic mailbox simply allows one company to send batches of EDI messages to the VAN, which then sorts and stores the EDI messages in the correct mailboxes until the recipient calls in and retrieves them.

ii) **Communication Access**

All EDI VANs provide some level of local or toll-free access to their mailbox as part of their service. Typically, VANs support a wide range of communication speeds and communication methods or *protocols* associated with personal computers, mini-computers, and mainframe computers.

These two basic services simplify the communications set-up and the daily operation of an EDI system.

Beyond these basic services EDI VANs may provide the following additional services:

i) **Reporting/Controls**

Reporting and control mechanisms provided by EDI VANs are important in managing the use of EDI. These reports help users monitor EDI traffic, highlight problems and assist in their resolution. The quality, timeliness and ease of using VAN control information in an automated fashion is essential.

ii) **Integrated Translation and Communications Software**

Some VANs offer EDI translation and communications software that is ready to use with their network.

Translation Software

For a company intending to use personal computer-based EDI translation software, networks offer inexpensive translation/communications products to be used with their network. Acquiring this software from the VAN supplying the network service is a reasonable approach. However, because if may be necessary to use more than one VAN at some point in the future, one should make certain that the translation software can be used with other networks as well and is not exclusive in its application. For mid-range and mainframe computers there is no actual value in selecting a software/VAN solution versus making separate software and VAN decisions. (See reference at In-network Translation, page 18)

Communications Software

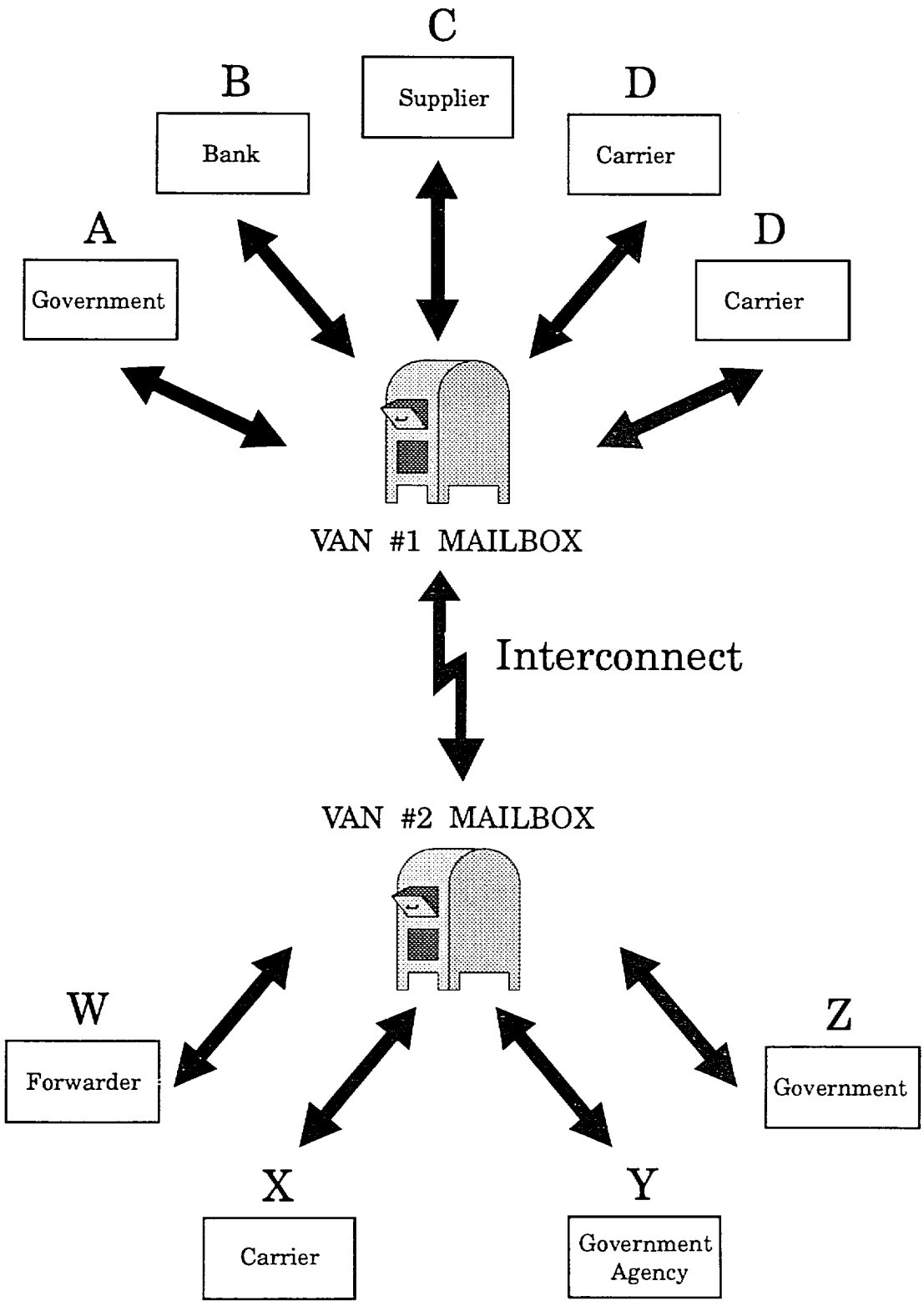
Typically, inexpensive or even free software is available from a VAN which can only be used to communicate with that VAN. If the only communications being done is with this VAN, it is the best way to go. Bear in mind, however, that if multiple networks or direct connects are required, additional software will have to be acquired and installed.

iii) **VAN Interconnection**

This important service allows EDI messages to be exchanged between trading partners who subscribe to different VANs (see **Figure 4**). Interconnection expands the number of potential EDI trading partnerships without requiring all partners to be on the same VAN, or having to subscribe to a multitude of VANs.

FIGURE 4

THIRD PARTY MAILBOX



Interconnection between VANs in North America has improved significantly, but only after years of customer demands. VANs offering interconnect provide a greater range of services but apply a surcharge when interconnect is used. Nevertheless, interconnect may be useful if a company does not want to bother with using multiple networks. There are several hundred companies in Canada using interconnect facilities provided by the VANs surveyed in this report.

There are four main methods that VANs use to interconnect and the method used is important to customers. Each is described:

No Logon

The earliest and most common method of interconnect is also the least desirable. Lacking proper audit and controls, the No Logon method all too frequently results in lost EDI messages between VANs. Interconnect via this method should be avoided.

X.400

This is an international communications standard for interconnecting electronic mail networks. Few interconnects have been implemented using X.400 due to its cost, complexity and the extremely slow development of the X.400 standard. Common carriers, such as Bell Canada and foreign post, telegraph and telephone administrations (PTTs) are the developers of the standard and its major proponents. For most EDI purposes, it is still too early to make widespread use of X.400.

X12 Mailbag

The newest method is an X12 standard that was completed in 1991 for VAN-to-VAN interconnection called the X12 Mailbag. It provides for the controlled exchange of EDI messages between VANs and has many of the basic and advanced audit and control concepts of X.400. It is simple and, compared to X.400, inexpensive for VANs to implement. It is expected to be the most popular method of interconnect in North America by the end of 1992.

Proprietary

Some networks have attempted to provide interconnection using their own methods. As most of these suffer from poor reliability, it is expected that most will be converted to X12 Mailbag.

iv) **EDI Implementation Assistance**

There are four ways VANs typically provide assistance to companies implementing EDI:

a) They have EDI-knowledgeable sales staff who can assist in the initial decision-making process.

b) They may provide telephone assistance during network installation.

c) They may offer assistance in attracting large numbers of trading partners for a customer by soliciting potential trading partners to do EDI.

d) They may provide on-site or off-site education and training for customer personnel.

v) **Out-Dial Capability**

This refers to the VAN's ability to dial out to private mailbox systems to deliver EDI messages on a subscriber's behalf. This is useful when one trading partner does not use a VAN and the other uses VANs exclusively and does not direct connect. Since the trading partner who does not subscribe to a VAN dictates that his partners must dial into his private mailbox system to send messages, the VAN will undertake to do this for its subscribers.

vi) **In-Network Translation**

Some VANs offer a translation service within their network, which is performed by the VAN on their own computer, thus obviating the need for subscribers to acquire their own translation software. Unfortunately, this is not often as attractive as it sounds.

In the vast majority of situations, in-network translation should be avoided. Commercially available EDI translation software affords greater flexibility which will, inevitably, be needed. It also provides much better control and ability to respond to new EDI opportunities. It is, in most cases, inexpensive when compared to processing and customization fees for In-Network Translation. In

addition, user costs to develop application interfaces to in-network translation are typically higher than with on-site EDI translation software. Using in-network translation also precludes effective application integration of EDI and the substantial benefits that can accrue from this. As well, it is still necessary for businesses to have their own communications system to transmit messages to the VAN.

vii) **EDI-to-Paper Conversion**

Some networks offer services to convert EDI messages to paper documents and either FAX or mail these documents to the recipient. These services do not provide EDI benefits of application-to-application integration, nor do they encourage trading partners to become knowledgeable or proficient in EDI. As stop gap measures to alleviate an acute problem they are useful. They may also be the only way to interface a company's EDI system with an important, very small trading partner or group of small trading partners who have no EDI capability and who will not acquire it.

4. How to Select a Value-Added Network

Freight forwarders and their trading partners depend on sending and receiving messages on a timely and dependable basis. They may be located across the street, across town, across Canada, and in many foreign countries; they may be importers and exporters in many different industries; as well, they may be air, ocean, rail and motor carriers, brokers, customs agencies, warehouses, ports and banks. Quite simply, the freight forwarder's world spans many industries, many time zones and many countries.

To select an EDI VAN, a freight forwarder must first determine what features are important to it as a trading entity. This involves a review of requirements and a comparison of the features provided by VANs that compete for their business.

Not all value-added networks are the same. Certainly the ones we have surveyed have many similarities, but there are also significant differences which may be important to any freight forwarder contemplating becoming an EDI customer. Careful selection of the right EDI VAN is an important part of a company's initial EDI implementation and its ultimate success. The right VAN will be cost-effective, responsive, experienced, and able to attract initial trading partners already active in EDI. The wrong VAN will falter, waste time, and worse, cost business. Obviously, the decision as to which VAN to choose is an important one. In this section, we review the key elements to be considered when selecting a VAN. Later, we will apply these criteria to the VANs surveyed and readers will have an opportunity to determine for themselves which VANs are best suited to meet their respective needs.

4.1 How to prepare for EDI

1. Create a company profile, a stock-taking of the company's current status vis-a-vis application, communications and translation software, computer hardware, transaction or document types, projected messaging volumes, trading partners, and standards that are expected to be adopted.

2. Select preferred translation software.

3. Become knowledgeable about the compulsory and optional services offered by each VAN.

4. Compare VAN offerings.

5. Decide which selection criteria are most important.

6. Select the most appropriate VAN.

4.2 Recommended Network Characteristics and Services

I Industry Knowledge

When we speak of the right VAN we mean the VAN that has the most appropriate products, services and support for a particular corporate and computing environment, as well as for the industry at large. Industry experience can be very important in choosing a VAN. While all VANs can sign subscribers up and connect them to their network operations, some may already have many current customers active in the same industry sector. This means they can put new subscribers in touch with similar companies who use their services, and who are quite eager to help and give friendly advice -- even to competitors. Occasionally, VANs have an official user group whose meetings will attract companies with similar interests and concerns.

VANs that have emphasized a particular vertical market for their EDI services may also offer their clients access to other industry-related products or services, such as databases or catalogues, that would be of great interest. In addition, their knowledge of the industry makes them more sensitive to the needs of companies in that industry and more responsive to those needs.

II Communications Capability

Local or toll-free access becomes increasingly important as transactional volumes through the network increase. New subscribers should make certain that the actual hook-up to the VAN incurs no volume-related charges or connect charge. They must also decide on the preferred communications method (i.e. protocol, line speed) that will be used (part of the company profile exercise discussed in "How to Prepare for EDI" above), and which VAN is best equipped to handle their needs.

Note: Subscribers should choose the EDI communications solution that best meets their particular EDI needs, not those of other businesses.

Part of this process is also a decision on what communications software to install. New subscribers who already have such a package need to find out if it is also suitable for your EDI traffic. If not, they will need to examine other alternatives. As was mentioned before, some VANs offer inexpensive, if somewhat limited, communications software. Also, some EDI translation packages come with built-in or add-on communications capability. If this is available, it may be the easiest approach.

Readers are advised that some VANs require proprietary communications software to access their network. They should ask about this!

III Reporting

It is essential to keep careful track of all EDI traffic between trading partners. From time-to-time, queries arise regarding certain messages that were sent or received, or that someone *thinks* were sent or received. It may be of critical importance to know exactly what messages were exchanged, and when. Subscribers should expect this to happen quite often, especially when they first start communicating through EDI, and later when the volume of transactions increases and the number of trading partners grows. There may even be the issue of liability to consider.

Therefore, an excellent, accurate and timely reporting system is extremely important. The information is kept by most VANs and made available to their clients. The key is that this data should be readily available, both on a regular and on an ad hoc basis. On-line, real-time accessibility of reports may also be very desirable.

An added reporting feature that may be of interest is the availability of the reporting data in *machine-readable* form. This means data can be brought into a subscriber's system from the network and processed by its own information system automatically for its own purposes. As subscribers become more sophisticated EDI users they may want to be able to do this.

IV Service and Support

There are many aspects to good service that must be considered, and they include:

(a) Locality: Does the VAN offer enough points of service for subscribers to access from where they do business? If, for example, a company's Head Office and EDI staff is in Edmonton, what is the nearest site of support for EDI? The most important part of this question is *EDI support*. Many large VANs may offer local support in most major cities throughout the country, but these local support people may know little or nothing about EDI. They will be of little use in solving problems or providing subscribers with assistance in setting up and running their networks. While some subscribers may not need much help, it is reassuring to know that it is not far away when the time comes. Failing proximity, will the VAN provide on-site support when it is really needed, and at what charge?

Subscribers need to make certain that in the initial stages they can either obtain local support easily or go to a convenient support centre for

education and training.

(b) Knowledge: The VAN support personnel subscribers will rely on must have substantial EDI experience. This includes expertise with the EDI standards, knowledge of communications systems, the EDI implementation process, application interface issues and knowledge of their subscribers' initial trading partners.

(c) Hours of Operation: Is the VAN support centre open for calls from subscribers 24 hours a day, 365 days a year? What kind of support is available, during which hours. Some companies require that some problems of an urgent nature be resolved as soon as possible, while for others it is acceptable to wait until the next day to address any problem.

(d) Toll-free Hotline: Is the support centre available by a toll-free call and do the people actually answering the telephone have the knowledge to help? Is there a queuing system to take calls? The answers to these questions are supplied by the VAN sales representative. The degree of importance placed on them by each subscriber will vary.

V Regions of Business Operation

Some VANs boast truly worldwide EDI operations with direct sales and subscriber support staff in many foreign countries and affiliate organizations in numerous others. Other VANs offer very limited direct sales and support, perhaps only North America. These usually provide network service to other countries via agreements with foreign VANs. This, in itself, can be a useful criterion in VAN selection. There is a clear advantage to the organization that can offer *end-to-end* service around the globe. Subscribers who use only one company to send and receive all their messages greatly simplify matters when queries have to be made.

The interests of trading partners must also be considered. Those who subscribe to the same VAN have a common bond that greatly enhances the likelihood of achieving EDI success. After all, foreign EDI users go through the same VAN selection process and implementation domestic users do.

VI Total Number of EDI Clients

Many VANs have thousands of network clients, but it may turn out that very few of these clients utilize EDI. They may be e-mail customers or database users. The viability of a VAN in the EDI market depends on the number of EDI subscribers it has. A company that may be an outstanding carrier of wire transfers or voice transmission or electronic mail may offer EDI service but not

have enough EDI expertise to help subscribers when they need it. There is much more to EDI then providing a "pipe" to transmit messages.

It is desirable for companies to subscribe to the same VAN that their first few trading partners use. This should simplify their initial foray into EDI and make it somewhat easier. However, this is not essential. If a would-be EDI subscriber's plans and selection criteria do not dovetail with those of their first few intended trading partners, they can communicate via interconnect. Perhaps the best tack for a company to take would be to negotiate new trading partnerships with those already subscribing to the VAN of their choice with a view to hooking up with initial trading partners at some point in the future.

4.3 What Elements are Important?

Keep it simple! Oft heard but seldom heeded advice. After going through the process of analyzing what various VANs have to offer, would-be subscribers should consider beginning with an experienced trading partner who is also in the same city -- even if it is not the most important trading partner in the scheme of things -- and a VAN that has knowledgeable local support. They should start with one transaction type to gain confidence and skill with EDI -- a process that can take up to a year. At that point, subscribers are often ready to go on to more complex implementation involving multiple transactions, standards, partners and networks.

4.4 Direct Trading Versus Using a Value-Added Network

In Chapter 3.2 we discussed the difference between direct, point-to-point EDI and the use of a value-added network. The case we made for preferring to use a VAN over direct connect included security and ease of use. And in most cases, the use of a VAN is justifiable and the most recommended path to follow. However, there is one exception worth noting at this point. This is the case of the large corporation that has decided not to use VANs because they have a fully-implemented EDI system run by an experienced staff; they have set up their own mailbox, multiple communications links and support structure.

In this situation, others probably will have to accede to their requirements, if they wish to communicate by EDI with them -- even though this will likely mean added overhead.

The only possible way for a company to avoid this cost is to use a VAN as it would be used for other trading partners and have the VAN direct connect on their behalf (see Chapter 3.2 section v). This should be acceptable to all parties and solve the

communications problem.

Readers should be aware, though, that many companies that try to be their own VAN underestimate:

- the cost of supporting direct partners
- the difficulty in mandating direct connect
- the costs that partners incur accommodating them
- the delay to their EDI program waiting for partners

The point is that while companies may do everything they can to go along with this type of trading partner, there may still be problems that impact on their ability to have a smooth EDI relationship with them.

4.5 Multiple VANs Versus Interconnect

In Chapter 3.2 section iii we reviewed the idea of VAN interconnection and what it involved. **Table 1** compares the two alternatives to determine when one is preferred over the other. Of course, the only reason a company would ever need either service is if they have a trading partner on a VAN different form the one they have chosen to use.

TABLE 1

MULTIPLE VALUE-ADDED NETWORKS

Advantages:

+ No operational control issues (contrast with interconnect)
+ Better service from individual networks
+ Trading partners have no choice of networks. They can choose the one that best meets their needs without being concerned about interconnect issues.

Disadvantages:

- Cost of additional mailboxes
- Operation time to send and pick up messages from additional network
- Software (translation/communication) must be able to handle multiple networks

INTERCONNECT

Advantages:

+ Only one network/communications interface to support
+ Can make use of inexpensive VAN-provided PC software

Disadvantages:

- Interconnect surcharges
- Loss of operational controls (potential for "finger-pointing" if documents go missing)

There are three recommendations for companies to consider:

First, they should be prepared to use either interconnect services or multiple VANs, or even both over time because, if they have a large number of varied trading partners in different geographic locations, they may need to accommodate their needs to be successful.

Second, they should start with one network and no interconnects while they learn to use EDI.

Third, they should make every effort to avoid poor quality interconnects and insist on X12 mailbag or X.400 methods (see Chapter 3.2 section iii).

5. Survey of Value-Added Networks

5.1 Introduction

This survey is intended to provide companies with an objective comparison of EDI VANs. It focuses on the functions and features of interest to most EDI users and comments on how the VANs differ and how they may appeal to different needs.

The survey was designed to provide accurate and informative results. Although EDI VANs provide conceptually similar services, developing comparisons is difficult due to the differences in those services and the way in which VANs market them. In preparing this survey the following steps were taken:

1. A detailed questionnaire of VAN services was created (see Appendix C). The questionnaire asked for specific information on the vendors' domestic and international capabilities and prices.

2. A list of EDI VANs known to be actively conducting business in Canada was developed. One further VAN (**SITA**) expressed an intent to begin business and was included. The following vendors were invited to respond to the questionnaire:

   AT&T

   Canac Telecom

   General Electric Information Services

   IBM Information Network

   Immedia Infomatic

   Kleinschmidt

   Societe Internationale Telecommunications Aeronautiques (SITA)

   Sterling Software/Ordernet

   Telecom Canada

   TDNI Transport Data Network International

   Two of the vendors, **Canac Telecom** and **Telecom Canada,** did not respond.

3. Each returned questionnaire was reviewed and compared to the other responses. Where necessary, clarification was requested from the VANs to ensure that all VANs had answered the questions using the same assumptions.

4. The features and functions of VAN services were then categorized according to the user needs they fulfilled.

5. The detailed VAN responses were then evaluated according to those categories.

Introduction of the VANs

While all ten VANs that were surveyed are EDI VANs, they vary greatly in their capability to help a customer implement EDI. As we introduce the VANs, readers ought to keep in mind that each VAN's overall size, capabilities and other lines of business may or may not be relevant to their particular EDI needs. Almost all the VANs originated from some other line of business. The majority started their EDI business either as a computer timesharing provider with experience in network-based applications, or as a telecommunications provider.

Here is a brief description of each Value-Added Network:

AT&T

AT&T is best known as a U.S. long distance telephone company today. AT&T's products and services include voice, data and image telecommunications services; information services; telephone products; computers and other high technology products.

General Electric Information Services

General Electric Information Services (GEIS) is a subsidiary of General Electric Company. GEIS provides a variety of computer network services, industry databases and applications, and professional system integration services.

IBM Information Network

The IBM Information Network is part of the well-known computer company. IBM's products and services include a wide range of computer hardware and software. The Information Network provides a variety of computer network services, and industry databases and applications.

Immedia Infomatic

Immedia Infomatic is a Quebec-based company that specializes in electronic messaging services. Immedia provides electronic mail services to the Quebec government and several agencies.

Kleinschmidt

Kleinschmidt is a privately-held company that specializes in EDI services and network-based databases and applications, predominantly for the rail transportation community.

SITA

SITA (Societe Internationale Telecommunications Aeronautiques) is a co-operative of airline carriers around the world. SITA provides telecommunications and network-based databases and applications to its members and their partners. SITA is the network that carries EDI messages for FEDIS (FIATA EDI Services). FEDIS is a cooperative society controlled by FIATA that enables freight forwarders to become full subscribers to the SITA network. CIFFA is a member of FEDIS and has undertaken to promote the use of FEDIS.

Sterling Software/Ordernet Services

Sterling Software provides software, network services and professional services. The Ordernet division provides EDI network services and network-based databases.

TDNI Transport Data Network International

TDNI is a Canadian company that provides EDI services and network-based databases and applications for the trade community. TDNI originated with the CANSIF project and is owned by a collection of companies in the trade and transportation industry.

5.2 Business Issues

In selecting an EDI VAN, there are four key business features that are important to a freight forwarder and its partners:

i) Does the VAN operate in the freight forwarder's geographic area?
ii) How many trade partners can be reached directly via the VAN?
iii) Does the service and support provided address that particular freight forwarder's communications requirements?
iv) How many trading partners can be reached indirectly via the VAN?

Earlier sections of this publication, notably Chapter 4.2 sections IV and V, explain why these questions are important. The survey showed a significant difference in the VANs' domestic, U.S. and overseas capabilities in each of the above four areas. Therefore, the domestic, U.S., and international capabilities are reviewed separately below.

Domestic

i) Area of Operation

Most of the VANs operate in Canada, although some are more focused and thus are less widely visible. All but two of the VANs maintain EDI sales and support offices in Canada. **Kleinschmidt** services Canada entirely from the U.S. and **SITA** plans to develop domestic EDI capability.

In general, access to local sales representation and support is important to companies new to EDI; it becomes a major factor in determining how many local trading partners the VAN has. But it can be less important to experienced users with specific needs.

ii) Trading Partners (Customer Base)

The size and make-up of the VANs' customer base varies greatly. Of course, this will influence a company's choice of which VAN to use; one that is already subscribed to, or likely will be subscribed to, by many of that company's trading partners is probably the best choice.

In the survey, the majority of VANs either declined to answer questions on the size of their customer base, or chose to answer those questions in a fashion that made industry-wide comparisons difficult. Nevertheless, the important thing to remember is the number of customers using the VAN for public EDI (X12, EDIFACT, etc.) The number of customers using E-mail or other proprietary services is irrelevant to the successful implementation of EDI. We believe we have overcome the problem of insufficient data by using the survey results to estimate the size of some of the VANs' customer bases.

GEIS has the largest number of EDI customers in Canada, followed by **Sterling Ordernet**. We estimate that **A.T.&T., Immedia, Kleinschmidt,** and **TDNI** all have relatively fewer.

Due to the influence of large customers on their suppliers and the marketing strategies of VANs, existing EDI users in different industries tend to be clustered on different VANs as follows:

Automotive	GEIS, Sterling
Banking	IBM
Grocery	GEIS
Insurance	IBM
Petroleum	GEIS
Publishing	GEIS
Rail	Kleinschmidt
Retail	Sterling, IBM, GEIS

Across other industries, there is no clear choice of VAN.

In responding to the survey, most of the VANs indicated what industries their Canadian EDI customers were in and some provided the names of customers in the transportation area. **Table 2** lists some VAN customers:

TABLE 2

INDUSTRIES AND TRANSPORTATION AREAS OF EDI CUSTOMERS

VANs	INDUSTRIES	TRANSPORTATION CUSTOMERS
AT&T	No information provided	
GEIS	Grocery Petroleum Retail Government Publishing	Canadian Maritime Agencies Canadian National Railway Canadian Pacific Cast North America Port of Halifax
IBM	Retail Finance Insurance	Canada Customs Cottrell JE Transport Kingsway
Immedia	No information provided	
Kleinschmidt Industries	Transportation Major and Short Line Railroads Chemical and Manu. Lumber	Canadian National Railway Canadian Pacific
SITA	No EDI customers yet	
Sterling	Retail Transportation	K & N Distribution Livingston Distribution TNT Canada Inc.
TDNI	Transportation Community	No information provided

iii) Service and Support

All of the VANs, with the exception of **Kleinschmidt** and **SITA,** have EDI service and support in Canada. While all of the VANs claim to have knowledgable EDI support, we believe there are some differences. Accordingly, we provide some recommendations for additional investigation for companies that are new to EDI and are in the process of selecting their initial VAN.

In general, VANs have two tiers of support:

a) implementation support provided in Canada that is available during business hours, and

b) network operational support provided from their processing centre that is available 24 hours a day.

Where service and support is located is not as important as the *kind* of support available. Since the majority of service and support is performed over the telephone, location is not an issue. However, the specific knowledge of EDI available over the telephone can significantly affect the ease of implementation and ongoing operations. Having Canadian-based implementation support can be a very helpful and time-saving consideration. The source of network operational support is not critical and is available 24 hours a day from all VANs.

Within the survey, we did not seek testimonials from customers. We recommend, therefore, that the investigation and pre-selection stage includes at least three telephone calls to subscribers of a company's short list of potential VANs.

iv) Interconnects

All of the VANs, except **Immedia** and **SITA,** actively interconnect with other VANs. However, only **GEIS** and **Sterling Ordernet** reported activity levels. Based on the information provided, it is estimated that 20% of Canadian EDI customers use interconnect to reach one or more networks other than the one they subscribe to. **Table 3** lists current VAN interconnections:

TABLE 3
CURRENT VAN INTERCONNECTIONS

VANs	INTERCONNECTION
AT&T	BT, GEIS, Harbinger, IBM, Kleinschmidt, Sears, Sterling, Telecom Canada, Transettlements, Union Pacific, US Sprint
GEIS	Agridata, AT&T, Harbinger, IBM, Kleinschmidt, Railinc, Sears, Sterling, Telecom Canada, Transettlements, Union Pacific, INS (U.K.)
IBM	Agridata, AT&T, BT, GEIS, Harbinger, Sears, Sterling, Telecom Canada, Transettlements
Kleinschmidt Industries	AT&T, BT, GEIS, Harbinger, IBM, Infornet, Railinc, Sears, Shipnet, Sterling, Telecom Canada, Transettlements
Sterling	Agridata, AT&T, BT, Compuserve,GEIS, Global VAN, Japan, Harbinger, Infonet, IBM, Kleinschmidt, Sears, Telenet, Transettlements, Transnet, Telecom Canada, Western Union
TDNI	BT, GEIS, Sears, Transettlements

U.S.A.

i) Area of Operation

All VANs surveyed can operate in the U.S.. With the exception of **Immedia, SITA** and **TDNI,** all are based in the U.S. and have numerous sales and support offices.

Trading partners of Canadian VAN subscribers, who are based in the U.S., will also want to deal with a VAN with a local/regional presence.

ii) Trading Partner (Customer Base)

As in Canada, there is a considerable difference across the U.S. VANs in terms of the size and make-up of their EDI customer base and hence the number of trading partners who may already be on the VAN, or the desirability of their selecting that VAN.

GEIS has the largest number of EDI customers in the U.S., followed by **Sterling Ordernet.** We estimate that **Immedia** and **TDNI** have considerably fewer customers.

As in Canada, EDI users in different U.S. industries tend to be clustered on certain VANs as follows:

Automotive	GEIS, Sterling
Grocery	BT,GEIS
Insurance	IBM
Pharmaceutical	Sterling
Petroleum	GEIS
Publishing	GEIS
Rail	Kleinschmidt
Retail	GEIS, Sterling, IBM
Transportation	GEIS, Sterling, IBM

Across other industries, there is no clear choice of VAN.

In responding to the survey, most of the VANs indicated what industries their U.S. EDI customers were in and some provided the names of customers in the transportation area. **Table 4** lists some VAN customers:

TABLE 4

TRANSPORTATION AREA OF U.S. EDI CUSTOMERS

VANs	INDUSTRIES	CUSTOMERS
AT&T	No information provided	
GEIS	Retail Petroleum Publishing	Port of New Jersey Port of New York
IBM	No information provided	
Immedia	No information provided	
Kleinschmidt Industries	Transportation Major and Short Line Railroads Intermodal	
SITA	No information provided	
Sterling	Retail Transportation Grocery Pharmaceutical	Port of Baltimore Port of Portland Port of Settle
TDNI	Transportation Community	

iii) Interconnect

This information is the same as covered above in the domestic section.

iv) Service and Support

All of the VANs, with the exception of **Immedia** and **SITA**, have EDI service and support in the U.S.

International

i) Area of Operation

While most VANs can deliver EDI messages internationally, only a few actually operate in foreign countries. Just as Canadian freight forwarders prefer to do business with a VAN operating in Canada, trading partners in foreign countries will likely prefer to do business with a VAN in their countries.

Only **AT&T**, **GEIS** and **IBM** have EDI sales, support and operations in multiple foreign countries (SITA when operational, will be in this group). **Sterling Ordernet** provides overseas access and has a distributor in Japan. **Immedia** and **TDNI** just provide overseas access but no direct service.

ii) Trading Partner (Customer Base)

Again, there is considerable difference across the VANs in terms of the size and make-up of their EDI customer bases and hence the number of trading partners who may already be on the VAN (or the desirability of their selecting that VAN).

GEIS has the largest number of EDI customers outside of North America (4000), followed by **IBM**. We estimate that the rest of the VANs have a negligible number of customers outside North America.

Virtually no information was provided on VAN industry positions in foreign countries.

iii) Service and Support

Only **AT&T**, **GEIS** and **IBM** have EDI sales, support and operations in multiple foreign countries (**SITA** when operational will be in this group). For foreign partners, having service and support in their language and time zone will be very important.

iv) Interconnects

While the majority of VANs interconnect, it was disappointing that only one overseas interconnect was reported in the survey (**GEIS** and the U.K. INS network). It is likely that overseas interconnects will take years to develop, as they did in North America.

Forwarders in foreign countries may find that their customers are on a domestic (national) VAN. In this case, they will need to add one of the VANs above that has international capability.

5.3 Functional Issues

Mailbox Features and Processing

While all of the VANs provide basic store-and-retrieve mailboxing of EDI messages, there are three different kinds of functionality, namely:

i) **Generic Mailboxing**

Generic mailboxing allows all types of messages -- E-mail, EDI, Binary Files, etc. -- to be stored and retrieved. With generic mailboxing, EDI messages are placed in vendor-specific envelopes for transmission to and from the VAN.

The advantage of a generic mailbox is that one mailbox can be used for many different types of messages (which is of most benefit to the VAN). But there are two main disadvantages: special vendor-specific software must be run on the customer's computer to envelope/de-envelope the EDI messages, and the VAN does not perform any validation or processing on the EDI content.

Immedia is best classified as a generic mailbox.

ii) **EDI-Specific Mailboxing**

As its name suggests, this mailbox is tailored for EDI. The mailbox makes use of the envelopes that are part of the EDI standard message rather than requiring any additional enveloping. EDI-specific mailboxes are not limited to EDI messages; vendor-specific envelopes can be used to move any type of message.

The major advantage of EDI mailboxing is that EDI-specific processing can be performed by the VAN.

Key features are as follows:

1. EDI messages can be exchanged directly between the VAN and its customers' EDI translation software without special vendor-envelope processing.

2. Validation and integrity checking of the EDI envelopes is always performed by the mailbox.

3. Additional (optional) EDI-specific services are available, such as conversion of EDI delimiters between async (asynchronous transmission of a relatively low volume of messages over phone lines) and bisync (bisynchronous transmission of a relatively high volume of electronically-generated messages) preferred characters, EDI envelope conversion and EDI transaction-type sensitive services.

GEIS, **Kleinschmidt**, **Sterling** and **TDNI** are classified as EDI-specific mailboxes.

iii) **Generic Mailboxing with Network EDI Processing**

This kind of mailbox is, essentially, a generic mailbox with the VAN providing an optional vendor-specific enveloping/de-enveloping service within the network.

This mailbox architecture has the advantage of supporting any type of messages, when vendor enveloping/de-enveloping is performed by the customer, or not requiring special vendor enveloping software, when vendor enveloping/de-enveloping is performed by the VAN.

The VANs discourage the use of enveloping within the network; AT&T surcharges for the service, and IBM promotes the use of its own enveloping/communications software.

AT&T, **IBM** and **SITA** are classified as this type of mailbox.

Network Facilities and Access Options

All of the VANs use a variety of good and sound methods to provide dial-up access to their network. Three main protocols, Async, Bisync and SNA, are supported at an appropriate range of line speeds that ensure most users' needs and preferences are be accommodated.

Async

All of the VANs have asynchronous access throughout Canada, however some VANs are not toll-free and different error-checking protocols are used. Two of the VANs, Kleinschmidt and SITA, do not have toll-free access, hence long distance costs, in addition to VAN charges, will be incurred. As for error-checking protocols, compatibility with user communication software and modems is key. The VANs use a combination of local dial-up communication modes in major cities, 1-800 numbers and the Public Packet Data Network DATAPAC. All methods are equally as good.

The VANs provided the information shown in **Table 5**. In each case, the first line indicates the type of access and the second line indicates the error-checking protocol. While this information is somewhat technical, suffice it to say there is no important difference among the VANs.

TABLE 5
ACCESS AND ERROR CHECKING PROTOCOL

VANs	TYPE OF ACCESS	ERROR-CHECKING PROTOCOL
AT&T	Toronto Datapac	Xmodem Ymodem
GEIS	Local nodes 1-800 Datapac	MNP Xmodem XPC
IBM	Local nodes (IBM protocol) Datapac (surcharged)	MNP
Immedia	Datapac Tymnet	MNP
Kleinschmidt Industries	Datapac (user pays)	
SITA	Montreal (user pays)	
Sterling	1-800	MNP ANSI Clear
TDNI	1-800	Xmodem

Bisync

Most of the VANs provide toll-free bisync access throughout Canada. Kleinschmidt requires a long distance call to Chicago and SITA does not provide bisync service. See **Table 6.**

TABLE 6
BISYNC ACCESS THROUGHOUT CANADA

VANs	ACCESS
AT&T	Toronto
GEIS	Local nodes AND 1-800
IBM	Local nodes
Immedia	Datapac 3305
Kleinschmidt Industries	Deerfield, Illinois
SITA	None
Sterling	1-800
TDNI	1-800

SNA

As can be seen in Table 7, for VANs using SNA communications, there is a large difference in VAN geographic capabilities. **IBM's** SNA service provides local dial-up access in major cities. Sterling provides 1-800 access to their SNA network. However, **GEIS** and **Kleinschmidt** both require long distance calls to their SNA nodes.

TABLE 7
SNA ACCESS THROUGHOUT CANADA

VANs	ACCESS
AT&T	Toronto
GEIS	Toronto
IBM	Local nodes
Immedia	None
Kleinschmidt Industries	Deerfield, Illinois
SITA	No dialup. Leased line or X.28 service to Toronto, Montreal, Vancouver
Sterling	1-800
TDNI	None

Communication Software Options and Requirements

Several VANs have specific requirements for the communication software or enveloping that subscribers must run on their computer when using their network. These requirements may be that either the VAN's proprietary software must be used or that the commercial communication software has to be "certified" (approved) by the VAN. Other VANs are less stringent in their requirements, having already certified most communication software. They may also sell inexpensive communication software that is limited to their network.

Below is an analysis of the communication software options and requirements by VAN:

AT&T

With AT&T's network, a customer either uses AT&T's enveloping software or makes use of their in-network enveloping option. AT&T sells enveloping software to be used with its network. This software is available for UNIX and MVS computers and has been integrated into several PC translation packages.

GEIS

GEIS has no enveloping requirements and there is no concern about certification of communication software. Due to the size of its customer base, **GEIS** has most commercial communication software packages already accessing the network.

GEIS also provides inexpensive communication software for PC, VSE and MVS computers.

IBM

IBM's network allows either IBM communication or enveloping software or open communications via their in-network enveloping option. The communication or enveloping software is available for PC, AS400, VSE and MVS computers.

Immedia

Immedia requires their communication/enveloping software to be used. The software is available for PC, Mac and LAN-based computers.

Kleinschmidt

Kleinschmidt has no enveloping requirements and there is no concern about certification of communication software. Due to the size of its customer base, **Kleinschmidt** has most commercial communication software packages already accessing the network.

SITA

SITA intends to provide PC software. Further information was not provided.

Sterling

Sterling has no enveloping requirements and there is no concern about certification of communication software. Due to the size of its customer base, **Sterling Ordernet** has most commercial communication software packages already accessing the network. Sterling also provides inexpensive communication software for PC, VSE and MVS computers.

TDNI

TDNI has no enveloping requirements, however it does have a charge ($1500.00) for certifying communication software not yet in use by the network. Our recommendation is that customers request this charge be waived.

Mailbox Administration

The ongoing administration of mailboxes typically involves setting-up and maintaining information about trading partners and the network cost-sharing arrangements with them.

Mailboxes on the VAN are maintained:

1. Online — The customer signs on to the VAN's online system to perform maintenance. The customer enjoys the convenience of an online system but may have to install a separate communication interface with the VAN.

2. Batch — The customer performs maintenance by sending batch transactions to the VAN. These transactions use the same communication interface as EDI messages.

3. Telephone — The customer calls the VAN and a support person performs the maintenance.

4. Forms — Either paper or electronic change forms are completed and sent to the VAN.

Of the four methods, the online approach is most convenient for experienced large users. The batch approach is useful for experienced users and avoids the potential need to maintain a second communications link with the VAN. Being able to telephone changes is convenient for new EDI users because the VAN takes care of the details. Finally, the use of forms is the least convenient, due to delays in processing the forms and the lack of immediate confirmation of changes.

Table 8 reveals responses to VAN mailbox preferences:

TABLE 8
SURVEY OF VAN MAILBOX PREFERENCE

VANs	PREFERENCE
AT&T	Online maintenance
GEIS	Online and batch maintenance Telephone maintenance at $30/request
IBM	Online maintenance
Immedia	Complete form
Kleinschmidt Industries	Telephone maintenance
SITA	Complete electronic form
Sterling	Batch and telephone maintenance
TDNI	Not specified

Audit and Control Reporting

Reporting on the flow of EDI messages through the VAN is an important element of managing the integrity of an EDI system. The ability to ensure that EDI messages are successfully delivered, and to investigate and resolve those EDI messages that are not delivered, is important.

For low volume EDI users, daily reports are adequate, while for large users, automated or machine-readable reports are important.

All of the VANs responded with a variety of functionality as shown in **Table 9**. From the user documentation provided, we believe that **GEIS**, **Sterling Ordernet** and **IBM** have the most developed audit and control reporting for EDI users.

TABLE 9
AUDIT AND CONTROL REPORTING

VANs	PREFERENCE
AT&T	Daily reports, online queries, printed report or machine readable, Notification of Non-delivery is by E-mail
GEIS	Transmission report (returned within same session), online reports, printed report or machine-readable
IBM	Online reports, printed report or machine readable
Immedia	Delivery and non-delivery notices, monthly statistics report
Kleinschmidt Industries	Customized and online reports
SITA	No informatiom provided
Sterling	Transmission report, daily summary, on-demand reports, printed report or machine-readable
TDNI	Receipt acknowledgement, machine readable

Billing Options

All of the VANs provide billing options that allow the cost of an EDI message to be split between the sender and receiver (i.e. sender pays, receiver pays, or both pay). What varies across the VANs is how the charges can be split with the billing option. For example, mailbox fees can always be split, but access time charges can not be split on some networks.

Interconnect

As shown earlier, all of the VANs, except **Immedia** and **SITA,** interconnect with other VANs. The majority of these interconnects use the No Logon method (see Chapter 3.2), which is not robust. Two VANs, **GEIS** and **Sterling Ordernet,** indicated plans to switch to the X12 Mailbag method during 1992.

Freight forwarders can protect themselves by:

i) Insisting their VAN use X12 Mailbag or X.400 for interconnect.

ii) Making stringent use of X12 Functional Acknowledgements (or TDCC Acknowledgement) if "No Logon" interconnects can not be avoided.

iii) Avoiding the use of EDIFACT over "No Logon" interconnects as the EDIFACT acknowledgement has yet to be approved.

Availability

All of the VANs indicated round-the-clock, year-round operation. Some of the VANs indicated scheduled maintenance times as follows:

Immedia	Sunday morning
Sterling	Sunday morning

We recommend that each company using EDI decide what is critical for its own purposes, then ask the VAN whether their particular availability needs will be met.

Network-Based Services

There is a wide variety of network-based services provided by the VANs surveyed. However, all of the services are only of value to a freight forwarder if there is a specific need.

These services can be categorized as follows:

In-Network Translation

This option allows translation to be performed by the VAN thus avoiding the need for subscribers to install translation software on their computers. Nevertheless, for the majority of situations, a company is wise to purchase its own translation software. (See Chapter 3.2)

There are two common forms of in-network translation: off-the-shelf and custom. Off-the-self translations are normally between a public standard and an older proprietary standard. The difficulty with most off-the-self translations is that they are not an exact fit and often custom programming is required Custom translations, on the other hand, may address individual needs, but at the price of VAN fees for programming your requirements.

EDI-to-Fax, EDI-to-Report

These options allow EDI messages to be converted to human-readable messages. For most situations, these options provide little value.

Applications

Some VANs offer application functions: either access to shared applications or databases, or custom applications that make use of the EDI messages going through the mailbox.

Table 10 reveals each VAN's network-based services:

TABLE 10
NETWORK-BASED SERVICES

VANs	NETWORK
AT&T	EDI-to-report
GEIS	In-network translation EDI-to-Fax, EDI-to-report
IBM	None
Immedia	None
Kleinschmidt Industries	In-network custom translation EDI-to-Fax, EDI-to-report Creation of notification messages from bills of lading
SITA	X12/Spec2000 In-network translation Cargo fare and flight database US Customs clearance
Sterling	In-network custom translation EDI-to-Fax
TDNI	In-network translation EDI-to-Fax

Other Services

Integrated Solutions

Many of the VANs have assembled translation and communications software that works off-the-shelf with their network. These integrated solutions are aimed primarily at PC users who are looking for simple, easy-to-use solutions. For mid-range and mainframe systems, they are of lesser value; buying the best software for use with multiple networks is a better purchasing decision.

The majority of VANs offer integrated off-the-shelf PC software.

5.4 Pricing Information

The methods used by some of the EDI VANs for pricing their services is complex and variable. This makes it difficult to develop a quick comparison of VAN prices. It also perplexing to users who are new to EDI VANs. In analyzing the pricing information provided by these vendors, we classified the charges by type (see Section 5.4.1), then commented on the clarity of the information (see Section 5.4.2), and then built two pricing models to demonstrate *apples-to-apples* comparative pricing (see Section 5.4.3). Section 5.4.4 provides the results of the domestic and international pricing comparisons separately.

5.4.1 Pricing Concepts

Across the VANs there are similar charging concepts and categories of charges. All VANs charge for services based on the types and amounts of services used; they then apply either minima, maxima or volume discounts, depending on what agreements are in place. The typical classes of service charges are as follows:

Set-Up Fees	Most VANs have set-up or initiation fees. These will typically vary by the type of access used and what the customer receives in return for the fee (i.e. network manuals, training, etc.). A few VANs have annual fees.
Mailbox Processing	A charge based on the size of the message (usually thousands of characters or "KCs") which is charged when the EDI message is sent to the mailbox and when the EDI message is retrieved from the mailbox.

Access or Connect	A charge based on the message size or the time spent connected to the network, as well as the line speed, protocol, and number of sessions. Access charges are levied both when sending and receiving. Some VANs don't have separate access charges, but have incorporated the cost into their mailbox charges.
Service Level	Many VANs have different prices for mailbox processing and access charges, depending on when service is requested (e.g. prime - day time, or non-prime - night time), and what urgency is requested (e.g. standard or express).
Interconnect	Interconnect charges may take three forms. First, most VANs charge by message size for each message sent to another network. Second, some VANs charge their customer both the send and receive portion (i.e. double the normal charge plus the interconnect surcharge). Third, some VANs surcharge for express interconnect service. Additionally, some VANs have set-up fees and monthly fixed charges for maintaining the interconnections.
International	Most VANs have surcharges for use of their services outside of North America. In addition, some VANs may charge different prices and use different currencies by country.
Mailbox Storage	A charge based on the size of the message stored in the mailbox that is levied after an initial grace period of a few days.
Administration/Reporting	Most VANs have charges for use of administration systems and reporting facilities. Typically, VANs will have special charges for these services and/or will levy access/connect time charges.

Other Services	Other services, such as in-network translation, EDI-to-Fax, etc. have set-up, usage, and often customization charges.
Monthly Charges	Most VANs have monthly charges and minimum charges on different parts of their services.
Volume Discounts	Most VANs have published and privately-negotiated volume discounts. These discounts vary in terms of percentages and monthly dollar levels, as well as in what types of charges are discounted.
Promotional Pricing	Some VANs target certain markets and offer special prices to certain areas or industries.
Pricing Packages	Some VANs have attempted to simplify pricing by offering fixed prices.
Negotiated Prices	Finally, to some degree, all VANs will negotiate prices on an individual basis.

5.4.2 Pricing Ease/Difficulty of Use

The majority of EDI VAN pricing is complex particularly when interconnect pricing is involved. Generally speaking, there are many pricing elements, each of which require explanation as to what the charges include and how they apply. Only half of the VANs provided published price sheets; the rest provided summary information or custom pricing information. Nevertheless, careful comparison shopping will reward the patient would-be EDI VAN subscriber.

Pricing from **GEIS** and **Sterling Ordernet** is the easiest to understand. The **GEIS** pricing brochure explains prices and when charges would apply, while **Sterling Ordernet** provides simplified pricing which, for low volume users, is on a fixed-price basis.

Interconnect pricing was difficult to understand due to the different approaches used by the VANs and the lack of explanations. In particular, interconnect pricing may entail a customer paying both the sender and receiver charges and out-dial (see Chapter 3.2) fees to actively "ship" the messages from your VAN to the interconnected VAN.

International service provides added difficulty. For the VANs with no foreign sales offices, pricing for foreign users was the same as for a domestic user, including being

in Canadian or US currency. For VANs with foreign sales offices, pricing of a company's foreign trading partner's portion of the cost will likely involve a different price sheet and currency.

Comments on the pricing information provided by the VANs follows:

AT&T	AT&T's pricing information was brief, but requires more explanation. AT&T has many components in its pricing. Interconnect pricing was not easy to understand and international pricing was not provided.
GEIS	GEIS' foldout pricing brochure provided prices and explanations of when charges would apply. Pricing factors for foreign countries were provided in a separate sheet.
IBM	IBM's pricing information was reasonably complete, but requires more explanation. Some foreign pricing was provided.
Immedia	Immedia's two-page price sheet was easy to understand and included international pricing.
Kleinschmidt	The information included long explanations. Interconnect pricing was difficult to understand.
SITA	No pricing was provided.
Sterling	Sterling Ordernet's one page Price Sheet was simple but lacked explanations. International pricing was provided separately.
TDNI	TDNI's one page price sheet provided explanations but did not cover international or interconnect. TDNI quotes prices on a sender-pays basis, which is different from the sender/receiver-pay method used by other VANs. In the first case, the cost of sending and receiving a transmission is borne by the sender. In the second case, the cost is shared between the sender and the receiver.

5.4.3 Pricing Model

As part of the survey, a pricing model was developed to assist in a price comparison. The model detailed EDI message volumes for domestic and international EDI exchange. It set forth the EDI character volume, the number of EDI messages, the number of sessions and the locations of the sending and receiving partners. Further, the model specified that async access would be used and that all activity would occur in prime-time.

The model asked the VANs to provide costs for the following:

i)	Fifty X12 Invoices sent and received within Canada	
ii)	One Hundred EDIFACT messages	- Toronto to London U.K.
iii)	" " "	- Toronto to Zurich, Switzerland
iv)	" " "	- Toronto to Tokyo, Japan
v)	" " "	- London to Toronto
vi)	" " "	- Zurich to Toronto
vii)	" " "	- Tokyo to Toronto

Even with this pricing model, it is not possible to develop a simple table of VAN prices without performing a detailed analysis of what each VAN is providing, and how different user needs and assumptions could affect the costs.

5.4.4 Pricing Model Results

The VANs responses to the survey pricing model required careful analysis of how the VAN quoted charges, what services were included and how variations in the pricing model would affect costs.

In reviewing the responses, there were several factors that confounded a direct price comparison:

i) Monthly charges, monthly minima, and annual fees would affect the user's and trading partners' costs.

ii) The allocation of charges between sender and receiver varied between VANs.

iii) Different assumptions had been used in the VANs' preparation of their responses.

iv) VANs' prices varied between domestic and international usage.

v) Volume discounts provided by many VANs would change unit-costs based on the assumed volumes.

vi) **Kleinschmidt** and **SITA** quoted prices in US currency.

vii) **Kleinschmidt** users pay their own long distance charges to reach the mailbox.

To eliminate these factors, the following adjustments were made:

i) Two new pricing models were created that reflected *annual* costs for domestic and international usage. Three volume levels were used to understand how volume discounts would affect costs. A *uniform set of assumptions* was used across all VANs. The new models focused on the freight forwarder's charges but ensured that all charges were equally shared between the freight forwarder and its partners.

ii) All US prices were converted to Canadian currency at the rate of $1.18.

iii) A cost of $0.05 per thousand characters was added to Kleinschmidt charges to account for long distance or Datapac charges for Canadian users accessing **Kleinschmidt**. A cost of $0.20 per thousand characters was added for international users.

Domestic Pricing Model

The domestic pricing model calculated overall annual costs for a Canadian freight forwarder's domestic EDI usage for the initial three years of operation. The following volume assumptions were used:

1st year	Send 50 Documents per month
2nd year	Send 300 Documents per month
3rd year	Send 900 Documents per month

The average monthly costs per year ranged as follows:

1st year	$40.00 - $440.00 with an average of $139.00
2nd year	$82.00 - $606.00 with an average of $219.00
3rd year	$154.00 - $994.00 with an average of $480.00

With this model **AT&T**, **Immedia** and **SterlingOrdernet's** prices were at the low end of the range. In the middle range were **GEIS**, **IBM** and **TDNI**. **Kleinschmidt** was at the upper end of the range.

International Pricing Model

The international pricing model calculated overall annual costs for a Canadian freight forwarder's EDI usage with foreign trading partners, for the initial three years of operation. The following volume assumptions were used:

1st year	Send 100 Documents per month
2nd year	Send 600 Documents per month
3rd year	Send 1200 Documents per month

The average monthly costs per year ranged as follows:

1st year	$80.00	$565.00 with an average of $196.00
2nd year	$280.00	$1329.00 with an average of $643.00
3rd year	$748.00	$1894.00 with an average of $1568.00

With this model, **AT&T**, and **Sterling Ordernet's** prices were at the low end of the range. In the middle range were **GEIS, IBM** and **TDNI. Kleinschmidt** was at the upper end of the range.

FIGURE 5

DOMESTIC PRICING MODEL

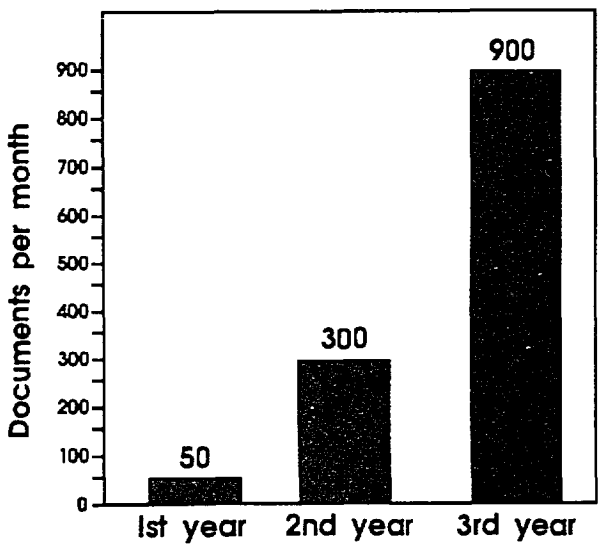
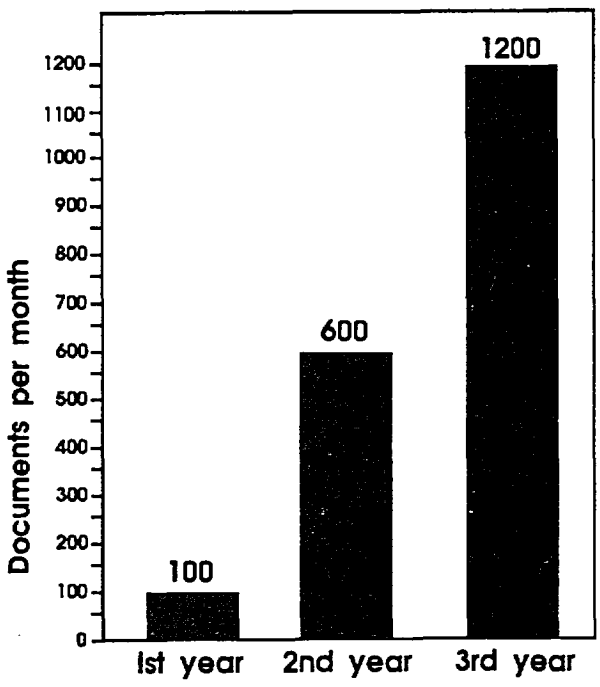


FIGURE 6

INTERNATIONAL PRICING MODEL



Appendix A

GLOSSARY

ANSI American National Standards Institute. The organization that oversees he X12 EDI standard in the United States.

APPLICATION INTERFACE The computer program that enables an application such as invoicing to interact with an EDI system.

ASCII American Standard Code for Information Interchange. A technical standard for encoding data for computer use.

ASYNC Asynchronous transmission. A very common means for transmitting files over telephone facilities. It is relatively slow and generally used for low volume transmission requirements.

BISYNC Bisynchronous transmission. A somewhat more sophisticated way to send EDI documents than Async. It uses a protocol (q.v.) to handle the communication between sender and receiver computers. It also handles larger volumes of data more easily than Async.

COMMON CARRIER Generally used to indicate the telephone company that handles the actual movement of data from point A to point B.

DELIMITERS Special characters used in an EDI standard document that indicate when one field or record of a document ends and the next begins.

EDIFACT EDI For Administration, Commerce and Transport. As with ANSI X12, EDIFACT is a set of agreed to standard and guidelines for the electronic interchange of structured data among independent computerized information systems. Its development is sponsored by the UN and many other interested parties internationally. It is primarily used in Europe but has spread to North America and its use is growing.

INTER-CONNECT The connection of one VAN to another VAN for the purpose of sending documents to subscribers not using the same VAN.

LINE SPEED The speed with which data is sent along a communication (telephone) line. It is measured in bits per second. Low volume PC-based line speed is often 300 to 2400 bps. Larger computers may use 9600, 14400, or 19200 bps speeds or even much higher to send larger volumes rapidly.

MAILBOX Each VAN stores EDI documents it receives in its computer system. The software it uses is called a "mailbox". It operates in a fashion analogous

to the post office box wherein a letter addressed to the recipient is placed in the box and the recipient later comes in and picks it up. With a VAN the EDI transaction is addressed to the trading partner, stored, and later retrieved by the trading partner when he logs on to the VAN's mailbox system.

MAPPING The process of creating an exact correspondence between the structure of the EDI standard document (eg. waybill) and the electronic file normally prepared by your computer application.

PROTOCOL Communications standards that dictate the form and content of any transmission. Protocols are concerned more with the use of bits and signals in the transmission process than they are with the nature of the data.

PTT Post Telegraph Telephone Administration. These are mostly nationalized organizations in Europe and elsewhere that oversee the public use of communications facilities.

SEGMENTS A group of data elements that comprise some information in an EDI message. The segment corresponds to a record in normal computer applications. EDI messages are made up of segments and the segments are made up of elements.

X12 The abbreviated designation of the work produced by the Accredited Standards Committee X12 of ANSI. The term X12 has come to mean the set of standards documents established by the committee and used extensively by thousands of companies throughout North America to do EDI.

X.400 An ANSI standard for enveloping of transmissions of many types including EDI. It is being used by some VANs for interconnect standardization purposes.

APPENDIX B

SURVEY RESPONDENTS

1. A. T. & T. Easylink Canada
   50 O'Connor Street, Suite 717
   Ottawa, Ontario
   K1P 6L2

   Doug McKinnon
   613-788-5800

2. GE Information Services
   2300 Meadowvale Blvd.
   Mississauga, Ontario
   L5N 5P9

   Jack Brooks
   416-858-5215

3. IBM Canada Limited
   3600 Steeles Avenue East
   Markham, Ontario
   L3R 9Z7

   Bill Carrigan
   416-946-4434

4. Immedia Infomatic Inc.
   1155 Rene-Levesque West, Suite 2250
   Montreal, Quebec
   H3B 4T3

   Robert Habert
   514-398-0741

5. Kleinschmidt Inc.
   450 Lake Cook Road
   Deerfield, Illinois
   60015

   Tim Langner
   708-945-1000

6. SITA
770 Sherbrooke Street West, Suite 1500
Montreal, Quebec
H3A 1G1

N. Powell
514-844-4343

7. Sterling Software International (Canada) Inc.
Ordernet Services Division
716 Gordon Baker Road, Suite 212
Willowdale, Ontario
M2H 3B4

Christopher Smith
416-496-2284

8. TDNI Transport Data Network International Inc.
700-175 Hargrave Street
Winnipeg, Manitoba
R3C 3R8

Jim Sangster
204-947-0169

The following companies were sent a survey but did not respond:

9. Canac Telecom
151 Front Street West, Suite 514
Toronto, Ontario
M5J 2N1

Scott Beaver
416-860-2882

10. Telecom Canada
160 Elgin Street, Room 1950
Ottawa, Ontario
K1G 3J4

Steve Hobart
613-781-7744

APPENDIX C

CANADIAN INTERNATIONAL FREIGHT FORWARDERS ASSOCIATION

EDI Value-Added Networks

Request for Information

The following is the questionnaire that was sent to VANs for their response.

CIFFA
EDI Value Added Networks
Request for Information

I. Company Description
   - A. Contact Information
   - B. Company Information

II. Network Services
   - A. Domestic
     1. Communications Access
     2. Mailbox Support
     3. Standards Support
     4. Access and Envelope Conversion
     5. Service Levels
     6. Audit and Controls
     7. Administration and Billing
     8. Network-Based Translation
     9. Other Network-Based Services
     10. Subscribers
   - B. International
     1. Communication Services
     2. Service Levels
     3. Audit and Controls
     4. Administration and Billing
     5. Other Network-Based Services
     6. Subscribers
   - C. Interconnects
     1. Communications Services
     2. Service Levels
     3. Audit and Controls
     4. Administration and Billing
     5. Subscribers

III Network Support
   - A. Domestic Support
   - B. International Support

IV Education and Training

V Costs
   - A. Domestic
   - B. International
   - C. Interconnect
   - D. Cost Model

VI Contractual

VII Software

App A Cost Model Summary Sheet

I. Company Description

A. Contact Information

1. Vendor Name:

2. Address:

3. City, Prov, Pst Code:

4. Telephone Number:

5. Sales Contact:

6. Technical Contact:

B. Company Information

7. How long has your company been in the EDI VAN business?

8. Name and address of user group chairman:

9. What other types of business is your company in?

II. Network Services

A. Domestic

A.1 Communications Access

10. List the number and locations of points of toll-free Async access to the network. Indicate what error-checking options are available. What communications speeds are available?

11. List the number and locations of points of toll-free Bisync access to the network. What communications speeds are available?

12. List the number and locations of points of toll-free SNA access to the network. What communications speeds are available?

13. List the number and locations of points of toll-free OTHER access to the network (e.g. X.25, X.400).

14. Is access open? Can any commercial communication software be used at the customer's premises or must vendor-supplied communication software be used? If software certification or vendor-supplied software is required, describe what costs are involved. Is there any charge for not using vendor-supplied software?

15. Is pre/post-processing required to add/strip vendor proprietary envelopes? Is there any charge for not using vendor proprietary envelopes?

16. Can documents be sent and received in the same session?

A.2 Mailbox Support

17. How long are documents retained in the mailbox for retrieval?

18. Can documents be re-retrieved from the mailbox?

19. Does the network validate the sender/receiver information contained in the EDI envelopes?

20. Can the same interchange be sent to multiple recipients without sending the same interchange (i.e. distribution list capability)?

A.3 Standards Support

21. List all domestic, international and foreign public EDI standards supported.

22. Do you support multiple versions of all public standards? Do you support all industry implementations? Do you support North American and European implementations of EDIFACT?

23. List any proprietary formats supported.

24. Describe any EDI syntax validation you perform as part of your basic service (i.e. at no additional charge).

25. Describe any optional EDI syntax validation you perform. Indicate what standards and versions are supported.

A.4 Access and Envelope Conversion

26. Do you provide character set conversion ASCII/EBCDIC? Is there any cost?

27. Do you provide delimiter conversion: Separator, Terminator, Other EDIFACT delimiters? Is there any cost?

28. Do you support mixed standards (e.g. X12 envelopes with TDCC transaction set)? Indicate what combinations are supported.

29. Do you provide envelope conversion between ISA/IEA, BG/EG, ICS/ICE?

A.5 Service Levels

30. During what hours is the network available to send or receive data?

31. During what hours is the network available to process data?

32. What are your availability targets? Have you met these targets in the last 12 months?

33. Indicate what delivery service levels are available. What are your delivery targets? (i.e. How soon after a transmission has been received by the network is it available for pick-up by a partner within Canada?). Have you met these targets in the last 12 months?

A.6 Audit and Controls

34. What type of transmission audit reports are provided for transactions sent to the network? Is the report available in machine readable format? How soon is the report available?

35. What type of transmission audit reports are provided for transactions received from the network? Is the report available in machine readable format? How soon is the report available?

36. Is the sender of a document notified when the receiver retrieves the document from their mailbox?

37. Are on-line mailbox reports available?

38. Describe your restart/recovery mechanism for interrupted communications sessions when sending and receiving multiple interchanges. What restart actions must the customer take?

39. How is the customer notified of the non-delivery of a document?

A.7 Administration and Billing

40. Describe the administrative procedures for adding, updating, or removing a trading partner relationship.

41. Can trading relationships be established without calling your organization? What hardware/software is required?

42. How are relationships established and reports requested?

43. How long is usually required to add partners/relationships?

44. What costs are associated with administration?

45. Describe what billing options are available. (i.e. sender pays, cost sharing, etc.)

46. Describe what billing reports are available.

A.8 Network-Based Translation

47. Do you provide network-based document translations? What public and private standards are supported?

48. List current network-based translations.

49. What translation error reporting do you provide?

50. What notification method is used when a translation error is detected?

51. Do you support the conversion of EDI data to a human-readable report?

52. Do you support the conversion of EDI data to human-readable reports and then faxed to the recipient?

53. Do you support the conversion of EDI data to human-readable reports and then delivered via E-mail? What E-mail interfaces do you connect to?

A.9 Other Network-based Services

54. What other network-based services do you provide?

55. What transportation, forwarding or customs related services and features do you provide?

A.10 Subscribers

56. How many public EDI customers do you have in Canada?

57. What three industries are most represented by your customer base? In what numbers?

58. List some of your subscribers in the transportation industry?

B. International

If you are proposing the use of an interconnected carrier/VAN to provide international connectivity, include it in this section.

Please repeat this section and answer separately, if your answers will vary by geographic region (i.e. if the U.K. is handled by your subsidiary, and the Far East is handled by your Japanese affiliate then answer this section once for the U.K. and once for the Far East).

B.1 Communications Services

59. List the countries with which your network can currently exchange EDI documents. Indicate by country whether you connect directly or interface to via an affiliated carrier/VAN. Identify the foreign carrier/VAN used.

60. What public and proprietary standards are supported?

61. What method is used to interface domestic and international service areas? (i.e. No Logon, X.400, Mailbag, etc.).

B.2 Service Levels

62. During what hours (local time) is the international component of the network available to send and receive documents?

63. During what hours (local time) is the international component of the network available to process documents?

64. During what hours (ET) is interface (interconnect) between domestic and international networks available for exchanging documents?

65. Describe what delivery service levels are available. What are your combined (yours and your affiliates) delivery targets by direction? Have they been met in the last 12 months?

B.3 Audit and Controls

66. Is the sender of a document notified when the receiver retrieves the document from their mailbox?

67. Describe how the sender is notified of the non-delivery of a document. What is the delivery target for this non-delivery notification?

68. Describe your restart/recovery mechanism on the inter-network interface (interconnect).

B.4 Administration and Billing

69. Describe the administration procedures for adding, updating, or removing an international trading partner relationship.

70. Can international trading relationships be established without calling your organization?

71. How long is usually required to add partners/relationships?

72. What costs are associated with administration?

73. Describe how charges are handled in the domestic and international portions? Sending and Receiving? What billing options are available? (i.e. sender pays, cost sharing, etc.)

B.5 Other Network-Based Services

74. What other international network-based services are provided?

75. What transportation, forwarding or customs related services and features are provided?

B.6 Subscribers

76. How many public EDI customers are on the international network? Provide details by country or geographic region.

77. What three industries are most represented by your foreign customer base?

78. List some of your foreign subscribers in the transportation industry. Indicate which country.

C. Interconnects

In this section, list any interconnects over and above those identified in the previous International section.

C.1 Communications Services

79. List the networks you currently interconnect with.

80. Do you interconnect with private networks?

81. What public and proprietary standards are supported?

82. What method is used to interface domestic and international service areas? (i.e. No Logon, X.400, Mailbag, etc.).

C.2 Service Levels

83. During what hours (ET) is the interconnect available for exchanging documents?

84. Describe your service levels for interconnect. At what intervals are documents exchanged? Is immediate exchange available?

C.3 Audit and Controls

85. Is the sender of a document notified when the receiver retrieves the document from their mailbox?

86. Describe how the customer is notified of the non-delivery of a document? What is the delivery target for this non-delivery notification?

87. Describe your restart/recovery mechanism on the interconnect.

C.4 Administration and Billing

88. Describe the administration procedures for adding, updating, or removing an interconnect trading partner relationships.

89. Can interconnect trading relationships be established without calling your organization?

90. How long is usually required to add partners/relationships?

91. What costs are associated with the interconnect and with administration?

92. Describe how are charges are handled? Sending and Receiving? What billing options are available? (i.e. sender pays, cost sharing, etc.)

C.5 Subscribers

93. How many customers use the interconnect service. Provide details by carrier/VAN.

III Network Support

A. Domestic Support (for Canadian Customers)

94. What type of network support is available for testing, installation and problem resolution?

95. Is support provided toll-free across Canada?

96. List where network support is located?

97. Is there a separate cost for this network support?

98. How are network support costs assessed?

99. During what hours is network support available?

100. What are your service levels for network support? What are you targets? Have you met them in the last 12 months?

101. Describe what installation support is included.

B. International Support (for Trading Partners in other countries).

102. List the cities/countries where your company and its affiliates have EDI Network sales offices.

103. List where network support is located?

104. During what hours is network support available? At which of these locations?

IV Education and Training

105. Describe how you will train customer staff to use the network?

106. At what locations will training be performed?

107. How often is training offered at these locations?

108. What are the costs?

109. Describe the qualifications of your instructors.

110. Are your instructors inside staff or outside instructors?

V Costs

A. Domestic

111. List the start-up costs for your network:

Initial Subscriber fee:
Mailbox Set-up:
Administration Software:
Network Documentation:
Training:
Other (describe):

112. List the on-going monthly costs associated with your network when Async access is used:

Administrative fees:
Mailbox fee:
Network reports fee:
Trading Partner Maintenance:
Storage Charges:
Special features (describe):
Other (describe):

113. List the on-going monthly costs associated with your network when Bisync access is used:

Administrative fees:
Mailbox fee:
Network reports fee:
Trading Partner Maintenance:
Storage Charges:
Special features (describe):
Other (describe):

114. List the on-going monthly costs associated with your network when SNA access is used:

Administrative fees:
Mailbox fee:
Network reports fee:
Trading Partner Maintenance:
Storage Charges:
Special features (describe): Other (describe)

115. Who pays the charges associated with the transmission of data through the network (sender, receiver, or both)?

116. Who pays the charges for accessing the network (sender, receiver, or both)?

117. Can the entire cost of transmission/access be billed to a trading partner for a particular trading relationship?

118. Are your charges different based on service levels? Describe these service levels and their pricing.

119. Please attach a copy of your current price schedule as an addendum to this document.

120. Please provide detail on all available options and associated costs.

B. International

121. List the on-going monthly costs associated with your network for exchanging documents via your or your affiliates' network with foreign partners:

Administrative fees:
Trading Partner Maintenance:
Other (describe):

122. Describe the charges, if any, for international use over and above domestic use?

123. Who pays the charges associated with the transmission of data through the network (sender, receiver, or both)?

124. Who pays the charges for accessing the network (sender, receiver, or both)?

125. Can the entire cost of transmission/access be billed to a trading partner for a particular trading relationship?

126. Are your charges different based on service levels? Describe these service levels and their pricing.

127. Please attach a copy of your current price schedules as an addendum to this document.

128. Please provide detail on all available options and associated costs.

C. Interconnect

129. List the on-going monthly costs associated with your network for exchanging documents via interconnected carriers/VANs with foreign partners.

    Administrative fees:
    Trading Partner Maintenance:
    Other (describe):

130. Describe the charges, if any, for interconnect use over and above domestic on-network use?

131. Who pays the charges associated with the transmission of data through your network (sender, receiver, or both)?

132. Who pays the charges associated with the transmission of data through the interconnected network (sender, receiver, or both)?

133. Who pays the charges for accessing the networks (sender, receiver, or both)?

134. Can the entire cost of transmission/access be billed to a trading partner for a particular trading relationship?

135. Are your charges different based on service levels? Describe these service levels and their pricing.

136. Please attach a copy of your current price schedules as an addendum to this document.

137. Please provide detail on all available options and associated costs.

D. Cost Model

138. Please calculate the monthly transaction costs (excluding those costs indicated in 111-114 above) for the scenarios below. Show your calculations and summarize them in the table provided at the end of this document.

    i) X12 Invoices delivered from Toronto **TO** fifty trading partners within Canada. A total of fifty Invoices per month are delivered.

    Assumptions: Invoices are sent weekly (four times per month). Each Invoice contains a total of 1000 characters or 40 segments. Dialup Async communications is used and always occurs at peak times. Only Invoices are

transmitted/received during these sessions.

ii) EDIFACT freight messages are delivered from Toronto **TO** a trading partner in London, UK. A total of 100 messages are delivered in the month.

Assumptions: Five EDIFACT messages are delivered on each of the 20 business days in the month. Each EDIFACT message contains a total of 2000 characters or 80 segments. Dialup Async communications is used and always occurs at peak times. Only these EDIFACT messages are transmitted/received during these sessions.

iii) Same as ii) above, except that the trading partner is located in Zurich, Switzerland.

iv) Same as ii) above, except that the trading partner is located in Tokyo, Japan.

v) Same as ii) above, except that the messages are delivered **FROM** a trading partner in London, UK to Toronto.

vi) Same as v) above except that the trading partner is located in Zurich, Switzerland.

vii) Same as v) above except that the trading partner is located in Tokyo, Japan.

VI Contractual

139. Do you use a standard contract? If so please attach.

140. Does the contract provide for a trial period? For international use? Cost?

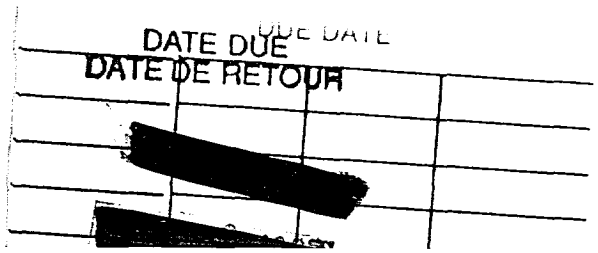
141. What additional contracts are necessary to facilitate international document exchange?

VII Software

142. Do you provide EDI translation/communications software for:

Personal Computers:
UNIX:
AS/400:
System/36:
System/38:
DEC VAX:
IBM Mainframe:
Other (indicate):

143. Please provide a copy of your EDI translation/communication software information and price lists as an addendum to this document.



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