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Electronic Commerce On The Internet

by *Kenneth D. Askelson, CPA, CIA*

Ken, based in Buena Park, CA serves as Area Audit Manager for J.C. Penney Company and is responsible for the company's audit activities in the Western United States. In addition, Ken currently serves on the AICPA Information Technology Practices Subcommittee. In this article, Ken discusses the issues to consider both when establishing a presence on the Internet and when giving employees access to the Internet.

"Setting up shop" as we approach the third millennium presents many new concerns, especially if establishing your business on the Internet is a priority. What does it take to set up a business on the Internet? Even if you, as a CPA, are not starting your own business on the Internet, you need to be aware of the type of business practices specific to clients who work on the Internet. Each of the following sections helps you systematically go through the appropriate considerations.

Is the Internet the Right Medium for Your Company?

Consider your customers and prospective customers. Who are they and where are they geographically? How do they buy? What kinds of products and services does your company offer? Are they the type of products sought by Internet customers? Will your competitors beat you to the punch if you don't get on-line to stay in the market? Can you afford the expense and the work—perhaps looking to the Internet to improve your operations or cut costs? You, too, can join the several thousand companies that have opened virtual storefronts in the past few years.

A survey focusing on Internet buying habits conducted by the University of Michigan Business School found that respondents used the Internet to find information about prospective purchases more often than they actually purchased on-line. However, businesses are currently making money on the Internet in areas such as direct selling and marketing of a company's products or services, selling advertising space, charging fees for content accessible on a Web site, as well as for on-line transactions. Although Internet sales have not reached significant levels compared to total revenue for large companies, smaller companies are find-

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ing the Internet is transforming them into global competitors while adding a greater percentage of total revenues. Major retailers such as JCPenney (<http://www.jcpenney.com>) and Wal-Mart (<http://www.wal-mart.com>) have presence on the Internet along with smaller organizations like Virtual Vineyards (<http://www.virtualvin.com>) and Hot Hot Hot (<http://www.hot.presence.com>). Many companies are also generating revenues from the Internet by offering advertising services. Examples include Career Mosaic (<http://www.careermosaic.com>) and DealerNet (<http://www.dealemet.com>) who run on-line classified ads and job databases, as well as advertising for car dealerships, respectively.

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It is important to understand the features of the Internet in order to take stock of the benefits and determine the costs. The main features of the Internet include electronic mail (e-mail), World Wide Web (WWW), file transfer protocol (FTP), mailing lists, and newsgroups. E-mail is becoming the dominant way businesses communicate because it makes it easier, faster, and cheaper to send a message than it would be to phone, fax, or mail it.

Business usage on the Internet exploded with the growth of the WWW. The Web is a graphical interface for the Internet and incorporates the advantages of cross-referencing hypertext, video, sound, and graphics to allow your customer to easily find his/her way through the maze of your business, regardless of the type of computer used. The WWW operates using client/server technology and supports Internet transactions in three areas. Simply stated, the client asks for information, the server provides the information, and the Internet passes the client's request to the server and delivers the requested information to the client. Some of the more popular Internet services include FTP servers that allow customers to download files; gophers that allow customers to find your business by subject or keyword (product); mailing lists that permit you to make on-line contact with customers or employees; and newsgroups, such as Usenet.

Factoring in the Cost of Hardware and Software

Now, let's review some of the costs incurred when going on the Internet. Apparent costs include hardware and software. Other cost considerations include payment for telephone lines to connect to the Internet, payment for Internet access (most often provided by

Internet service providers), and training and security. The five areas that have the greatest bearing on Internet costs include the following: How many people will use the Internet in your organization, how many Internet services you require, what type of computer and operating system you will use, what speed of connection you desire, and how much work you will do in-house.

To provide information through a World Wide Web page on the Internet you obviously require a computer to act as a Web server. If you want your employees to have access to the Internet, you will need a gateway server that provides a central point of control for your company's inflow and outflow of information. Depending upon the type of network you have internally, you may need a router. A router is equipment that takes Internet signals and moves them back and forth to your LAN. If you have high-speed access lines to the Internet, you may also need a DSU/CSU (Digital Services Unit/Channel Services Unit) device that converts the signal from leased lines so the router can read the signal. Other hardware considerations include firewalls and cables to provide security for your system.

The size and speed of your server computer depends on the number of Internet services that you desire. Using WWW requires a fast server; conversely, an e-mail server or FTP (File Transfer Protocol) server can be slower. Generally, it is not the computer that slows down the transmission of data but the connection between a company and the Internet access provider. There is no single solution to what kind of computer you need for doing business on the Internet. The computer that handles your WWW site should be fast and able to multi-task in

order to perform several jobs at once.

Software needs include TCP/IP (Transmission Control Protocol/Internet Protocol) software that is now usually bundled with operating system software. TCP/IP is the network protocol of the Internet that ensures messages are getting from one PC to another. You will also need e-mail software to move messages back and forth: That includes selecting either UUCP (Unix to Unix Copy Protocol) or SMTP (Simple Mail Transfer Protocol) server software. UUCP software allows you to use Internet e-mail, but does not require your computer to be connected to the Internet 24 hours a day. On the other hand, SMTP software requires your e-mail computer to be running on the Internet continuously. Web software provides information on computer screens in the form of text, pictures, and sound. To find information on the Web, a computer needs Web browser software such as Mosaic or Netscape. Other software to consider for conducting business on the Internet includes Domain Name System (DNS), which allows Internet computers to locate one another; Telnet software, which allows a user to remotely access another computer and run programs on it; Wide Area Information Server (WAIS), which allows a business to provide a large amount of data that users can easily locate; and Internet Relay Chat (IRC), which permits users on the Internet to have typed real-time conversations. These packages supplement the previously mentioned software needed for the WWW, FTP, gopher, mailing lists, and newsgroups. Again, when choosing software you will need to plan for initial up-front costs, support costs, upgrade fees, and training.

To connect to the Internet or an

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access provider, you need either a fast modem, an ISDN (Integrated Services Digital Network) connection, or a leased line. You really don't want to do business on the Internet with anything slower than a 28.8 Kbps modem. Even that speed would only support a no-frills, low-use Web site. If you have a WWW site on a server computer, you would want at least an ISDN connection that provides 56 Kbps to 128 Kbps data transfer rates.

To get connected to the Internet, you have several options. Commercial on-line services include America Online, Prodigy, CompuServe, Microsoft Network, Delphi and others. These on-line services provide additional support and make it easier to set up your business on the Internet. However, commercial on-line services can cost a lot more than having an Internet service provider help set you up or simply by doing it on your own. For example, to put your storefront on CompuServe's Electronic Mall can cost you from \$15,000 to \$20,000, plus two percent of sales and advertising fees.

A popular way for small businesses to connect to the Internet is to use a modem and establish a SLIP, CSLIP, or PPP account. SLIP (Serial Line Internet Protocol) is a communications package that allows your computer to connect to an Internet service provider using telephone lines. CSLIP (Compressed SLIP) offers greater speed. PPP (Point to Point Protocol) provides advantages of speed and accuracy over the other two. Again, with a modem connection, you are limited to 28.8 Kbps of data transfer rate—hardly enough speed to run a WWW server that would need at least a 50 Kbps connection. Paying for these connections is based on number of link hours with the Internet. The more connect time, the more you can expect to pay your access provider. One option to consider would be to have your WWW site on your access provider's computer, in order to take advantage of the faster connection speeds your provider has to the Internet.

If you want greater speed than the

modem connection affords, the next step up would be an ISDN connection. This connection provides up to 64 Kbps and is becoming popular with most businesses. It uses standard telephone lines but incorporates digital transmission through improved line-

Starting Off on the Right Foot and Avoiding Blunders

Some of the common blunders to try and avoid when establishing a Web site on the Internet (as adapted from *Interactive Age*, May 22, 1995) include the following:

- Rushing in without a master plan
- Appointing the wrong person to the task
- Failing to research the competition
- Not appreciating the interactive aspect of the medium
- Being too commercial
- Being disorganized
- Using unnecessarily large graphics
- Providing insufficient reason for customers to return to your site
- Forgetting to promote your Web site, on and off the Internet
- Overlooking the fact that it's a global medium

switching equipment. ISDN requires your local phone company to have these switching facilities before it can be utilized. It provides the advantages of speed and the ability to send and receive data and voice transmissions simultaneously. The faster digital connections such as Frame Relay, T1, T3, and ATM (Asynchronous Transfer Mode) require dedicated lines to achieve the speeds they are capable of reaching. These connections are mainly used by large businesses with LANs and wide area networks or Internet access providers. These are significantly more expensive than your basic modem connections and ISDN lines.

Another strategic decision that needs to be made is selecting an Internet

access provider. There are many to choose from, most of which offer a variety of services. You can select either a local, regional, or national provider. Access providers come in different shapes and sizes, and all offer dedicated Internet connections. Examples of regional providers include BBN Planet Corp., Global Enterprise Services, Inc., US West Enterprise, and Pacific Bell Internet Services. National providers include CompuServe Inc., IBM Global Network, MCI, AT&T, Netcom On-line Communication Services, Inc., and Sprint.

Consider the technical capabilities of potential providers. Will they provide training and consulting services to help you get started? What percentage of their customers are businesses? Where is the provider's closest Point of Presence (POP)? What security measures are used? Choose your Internet access provider carefully. For most business purposes, a local or regional provider offers more advantages. A listing of providers is available on the Internet at (<http://www.primus.com/providers/>). Other ways to find a local provider include referrals from business associates, local chambers of commerce, and professional organizations and user groups. Companies that want to use the Internet for business with an electronic storefront may want to consider leasing a computer server from a provider. This probably means using a regional or national provider. Companies that have offices throughout the U.S. will probably do better with a national provider while centralized companies will probably do better with regional providers. Call potential Internet access providers only after you're relatively sure about the types and levels of services your business will need.

Marketing Considerations Specific to the Internet

How do your company's marketing strategies change on the Internet? Marketing activities include advertising, public relations, corporate image, sales support, and marketing research.

Features of the Internet can be used as marketing tools. For example, your Web site may contain sales literature, news releases, and product displays. E-

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mail is another excellent marketing tool that permits you to respond to sales inquiries and customer correspondence. The Federal Express Corporation's Web site has become very successful for customer service by allowing customers the ability to track their own packages rather than by contacting Federal Express. Not a bad cost-savings idea either! Lastly, your company can gain additional publicity by monitoring and joining a related newsgroup and providing meaningful input and responses to discussion group topics.

Here is one caveat to CPAs in public practice: When setting up a home page, do not forget the Code of Professional Conduct, section 502, that addresses advertising and other solicitation. A home page or web site enables a practitioner to hold out (even though in cyberspace), and accordingly, the material presented must not be false, misleading or deceptive.

Implementing Security Measures

Without good security practices in place, business on the Internet can be vulnerable. The Internet and any network connected to the Internet is not

The following is a ten step plan to help implement a successful Internet marketing program:

- Investigate the Internet as a marketing medium.
- Define your Internet objectives to fit with other marketing efforts.
- Determine how you want your customer to respond.
- Identify what your competitive advantage is.
- Identify the advantages of your product or service to convey your competitive advantage.
- Outline how you will communicate those advantages.
- Determine what information you need to present.
- Convert information into digital format.
- Put your information on the Internet
- Promote your Internet site.

100 percent secure. Implementing the necessary security measures will help ensure data integrity, confidentiality of information, and authenticity of messages received via the Internet. Good security measures might include such courses of action as developing a process for verifying the identity of anyone wanting to access your network. At a minimum, this would include user IDs and passwords. Other considerations might include dialback capabilities for employees attempting remote access to the network.

To provide reasonable protection for your network, your business should install a firewall system. A combination of hardware and software, firewalls are designed to permit the flow of information while protecting designated resources. The firewall should be installed on a dedicated network workstation that is located outside the LAN but inside the router link to the Internet. Firewalls use three techniques for protecting your network from the Internet: packet filters, application gateways, and circuit gateways. Packet filters look at the Internet Protocol (IP) destination address to determine whether the message should be allowed through. This is usually the first line of defense between your network and the Internet. Application and circuit gateways apply additional security filters to messages to ensure only authorized messages get through.

A practical way to protect your sensitive information, such as credit card numbers, is through encryption. Encryption transforms your data into unreadable information. Different encryption systems include the use of a secret key that uses the same key to encrypt and decrypt messages; a public key system that uses a public key and private key; and a key escrow where encryption keys are stored. Examples of encryption providers are Data Encryption Standard (DES), International Data Encryption (IDEA), RSA (Rivest, Shamir, Adelman) Data Security, Privacy-Enhanced Mail (PEM), Pretty Good Privacy (PGP), Secure Sockets Layer (SSL), and Digital Signature Standard (DSS).

A well-planned security program that includes Internet security policies can help you maintain the necessary security over important business information and still promote business expansion with the Internet. A good technical resource for additional information on Internet security is *Firewalls and Internet Security: Repelling the Wily Hacker* by William Cheswick and Steven Bellovin.

Resources Available on the Internet

Historically, the Internet was used primarily for research and has continued to develop massive amounts of information for businesses. Informational areas include government rules and regulations, small business start-up information, financial and accounting resources, investment information, categorized lists of vendors and suppliers, demographic information, information about doing business on-line, and news and updates for hundreds of products, just to name a few. Examples of specific Web sites include:

U.S. Small Business Administration

(<http://www.sbaonlin.sba.gov>),

Yahoo Business Directory

(<http://www.yahoo.com/Business>),

International Accounting Network

(<http://anet.scu.edu.au/ANetHomePage.htm>),

MouseTracks

(<http://nns.com:80/mousetracks>),

Internet Marketing Archives

(<http://galaxy.einet.net/hypermail/inet-marketing>), and

IndustryNET

(<http://www.industry.net>).

These are only a few of the thousands of sites available that provide information helpful in running and managing your business.

Conclusion

There will be winners and losers in the field of electronic commerce on the Internet as there are in the non-Internet business environment. Whether your company chooses to participate in this new business medium or not, current trends indicate that commerce on the Internet will only increase. **IT**

Electronic Commerce—Just Exactly What Is It?

By J. Christopher Reimel, Jr.,
CPA

Chris is chief of Information Systems Audit with the New Jersey Department of Labor. He is also a member of the AICPA Information Technology Practices Subcommittee. This article is intended to serve as a primer on electronic commerce for CPAs. It defines some regularly used terminology and discusses some of the benefits of utilizing this technology.

Imagine a world without geographical or time boundaries. You can buy from or sell to anyone anywhere in the world at any time, day or night. You are never closed for business. How would you do it? What might it be like? Would you, your company or your clients be able to compete? What are the problems that you would encounter? What are the opportunities that might be available to you?

Welcome to Electronic Commerce

"But just what exactly is electronic commerce?," some of your clients/colleagues might ask. Simply stated, electronic commerce is buying and selling between businesses using electronic equipment rather than paper. Or even more simply, it is the ability to conduct business without paper. From a business standpoint, electronic commerce is the use of technology to connect and integrate business processes, both within an organization and among different organizations. Electronic commerce can include any of the following technologies:

- Electronic Data Interchange (EDI)
- Electronic Funds Transfer (EFT)
- Electronic Mail (E-mail)
- Electronic Forms (E-forms)
- Groupware

- Workflow Automation
- Electronic Publishing
- Product Data Exchange
- Image Processing
- Community Messaging

Definitions and Examples

Some of the technologies listed above may not be familiar to the reader, so some definitions and examples might be helpful. See Exhibit 1.

Participants in electronic commerce are sometimes referred to as trading partners. Some see electronic commerce as defined by its interorganizational capacities; for example, EDI. Others see it more for its intraorganizational capacities; for example, electronic mail.

An Example of Electronic Commerce

Consider the following scenario. A company advertises products on a home page on the World Wide Web part of the Internet. A customer views the advertisement on the Web and sends the company electronic mail (e-mail) via the Internet requesting certain terms and conditions for 30,000 units of product for the next calendar year. The company replies using e-mail through the Internet. The customer then sends the company a contract using e-mail and the company accepts the agreement using e-mail. The two parties also agree to use the EDI software that the customer is currently using. The company begins shipping the product and the customer makes payments using EFT.

Notice that no paper has entered into the process. When information about the business arrangement is needed by someone within the organization, he or she is contacted through e-mail or groupware. When information is needed from a customer, he or she is contacted via e-mail using the Internet. The key concept is that paper is not involved. All trading and communi-

cation takes place electronically.

Why Use Electronic Commerce?

In one word, speed. In two words, speed and cost. It is more efficient and less costly to perform transactions electronically than manually. This first became clear a number of years ago, when computers began performing manual repetitive operations like payroll and billing. Ordering and reordering products is similar to payroll and billing in its degree of repetitiveness.

Accounting Implications

Some of the accounting implications of electronic commerce include:

- Documentation
- Security
- Timing
- Taxation

Documentation

Perhaps the biggest challenge for the accountant in the future will be the lack of paper documentation for business transactions. The documentation will be in electronic or magnetic media form. The paper trail will no longer exist or will exist in a greatly reduced form. Finding a transaction or a group of transactions will require the use of a structured query language (SQL) or fourth generation language (4GL), the use of the drill-down technique in an Enterprise Information System, or the use of an online conversation.

Security Issues

The information that you place in your home page on the World Wide Web should be the same information that you would place in any advertisement. It should detail the benefits that your product or service would offer to your customers. It should not contain any proprietary information, since the Web is available to everyone, including your competitors.

There are a number of ways to

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Exhibit 1-Electronic Commerce Definitions and Examples

COMMUNITY MESSAGING

Community messaging allows a user to leave a message in someone's voice mailbox without having to carry on a conversation with that person. To reply, the recipient touches a single key to access the caller's voice mailbox. Community messaging also allows the creation of a distribution list whereby a single message can be routed simultaneously to every person on the list, making phone chains redundant. For example, a company can use community messaging to inform workers that their office will delay the start of the business day due to adverse weather conditions.

ELECTRONIC DATA INTERCHANGE

Electronic Data Interchange is the automatic paperless execution of routine purchase and sale transactions between a buyer and a seller using a standard format. One company that uses EDI is the discount chain Wal-Mart. Wal-Mart requires that its suppliers use EDI when shipping goods to the various Wal-Mart retail locations throughout the country. An example of inexpensive EDI software is Trading Partner PC (TSI Int'l).

ELECTRONIC FORMS

Electronic forms are created by scanning in paper forms and then using a standard template that enters the appropriate information into each field. A person working in a remote location may send an electronic form to their purchasing department instead of the traditional paper purchase order.

ELECTRONIC FUNDS TRANSFER

Electronic Funds Transfer is the automatic paperless payment of an invoice using a standard format. An example of EFT is Wal-Mart paying an invoice from a supplier. Funds are transferred electronically from Wal-Mart's bank to the supplier's bank.

ELECTRONIC MAIL

Electronic mail is the sending of messages, memos, or letters from one computer to another. Many CPAs send electronic mail to their tax software vendors and receive replies in this manner. Others use the Internet for their electronic mail. Examples of electronic mail software are PROFS (IBM) and cc:MAIL (Microsoft).

ELECTRONIC PUBLISHING

Electronic publishing is a process that facilitates the creation, editing, and distribution of information. An example of an electronic publishing application is a textbook publisher receiving text from an author electronically. The work is then edited on the computer and packaged to be sold on diskette or sent over the Internet.

GROUPWARE

Groupware is software that enables the sharing of structured and unstructured information among people working on a common task or set of tasks. For example, engineers in various geographical locations can use groupware to work together and design a new product. The new product is online and different engineers are able to work on different components of the project at the same time. Lotus Notes is a well known example of groupware.

IMAGE PROCESSING

Image processing is a method of converting an image on a piece of paper into a binary representation on a computer. An example is the transmission of an accident report containing photographs from a policyholder to an insurance company. The report is scanned and the image is available for people in the home office as well as for the adjuster in the branch office.

PRODUCT DATA EXCHANGE

Product data exchange is the exchange of information, in electronic format, about a product or component of a product. An example of product data exchange is a vendor electronically transmitting product information to a prospective customer.

WORKFLOW AUTOMATION

Workflow automation requires software that facilitates the management of a business process requiring multiple activities from multiple individuals. An example of workflow automation is the underwriting of an insurance policy. A policy application is optically scanned and optically imaged after it is received. The information is then routed through the various stations that have to review and approve it. Since the "document" is online, it cannot be lost on someone's desk. The software shows who has approved and who has not yet approved the policy application.

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secure the connection to the Internet. One method of providing security is through the use of a firewall. Many companies are still struggling with building an adequate firewall for buy and sell transactions on the Internet. Encryption using a public key and a private key are becoming more prevalent as possible ways of combating this worry. However, some companies are still uncomfortable with the adequacy of this technology. CPAs may find that their clients are selling products and services on the Internet without adequate security.

If the only documentation of the transaction that exists is in the form of electronic or magnetic media, the data security and file backups become even more critical. If the only record of the transaction is on this media, then a company can lose all of its records.

The Timing Dilemma

If a customer in Asia purchased your product when it was November 1 in Asia but October 31 in America, when did the sales transaction occur? Confirming receivables or payables may present a cut-off problem. Each computer will electronically date the transaction, however the dates will not be consistent. Transactions between parent and foreign subsidiaries may also present added issues.

Taxation

Another issue to consider would be where the transaction took place. Did it happen in the state or municipality where the buyer is located, where the seller is located, where the seller's computer is located, or where the Value Added Network (VAN) is located? Or did it take place in all of these localities for tax purposes? State and local taxes often become

complex when several jurisdictions become involved. Electronic commerce may add an additional source of complication.

Summary

We have discussed the various technologies that presently comprise what is known as electronic commerce. CPAs should determine which technologies or group of technologies are being referred to when their clients make mention of the term electronic commerce. This will aid in avoiding potential confusion and will put the CPA and the client on common ground. Electronic commerce may offer those CPAs with the potential to develop expertise in these technologies greater opportunities to expand their practices by recommending the use of these technologies and installing the corresponding controls. **IT**

AT&T Universal Card Services: A Document Imaging Success Story

by Roman H. Kepczyk, CPA

Roman is a principal in the Technology Division of Varney, Mills, Rogers, Burnett & Associates, a CPA firm based in Manhattan, KS. He is also a member of the AICPA Information Technology Research Subcommittee.

The Information Technology Research Subcommittee recently visited AT&T Universal Card Services to look at how document imaging has changed their accounts payable operations in Jacksonville, Florida. The division processes roughly 5,000 accounts payable (A/P) requests per month for AT&T. The installation of the imaging system allowed the department to reduce the process time of a check request from

two weeks to same day service and to reduce the size of the department from eight people to four. It has become a hallmark example of document imaging for AT&T internally. John Rezsonya, Senior Manager at AT&T estimates his people are 50% more productive because of the imaging system.

Payable requests are scanned in daily from multiple sites using Fujitsu scanners. The image is reviewed for clarity. Then fields for date, batch number, and general ledger (G/L) account number are entered. An index pointer links the financial transaction to the image permanently. All entries are done in batches of 50 to ease the filing process and minimize the possibility of data loss due to system failure. The image is linked to the actual general ledger

transaction entry so it can be retrieved anytime by clicking on the G/L transaction entry. The image can also be annotated with the equivalent of yellow "post-it" notes or hi-light marks. Most of the staff is thoroughly familiar with the image system and is able to review data instantly on the screen. The original document is rarely required to be retrieved. AT&T is currently evaluating the use of electronic "JetForms" with electronic signature validation. "Jet Forms" is a software application that enables users to electronically route documents with the ability to annotate them, make attachments to them and ultimately attach an electronic signature, all with a security element. Once the form is complete and approved, it can be imported into another system for further pro-

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cessing, thereby eliminating the need to re-enter the data. This will further speed up the overall process.

Many of the benefits AT&T has seen are based upon the filing process. Filing is done in batches of 50—which takes minutes compared with the many hours spent previously filing vouchers by vendor accounts. On-site storage has been reduced to 1/3 of the previous size needed (AT&T still retains original vouchers off-site for seven years for legal reasons). Lost files or vouchers are virtually non-existent, as multiple users have instantaneous access to the original.

AT&T relied on one vendor to manage the entire project, which helped simplify the installation. 170

Systems of Cambridge, Massachusetts installed the two scanning stations, jukebox, and ten retrieval stations over a period of twelve weeks. AT&T estimates they will be able to store five years of transactions on each platter (storage media used in the jukebox).

The costs for this technology are continuously decreasing. As a result, electronic imaging may now prove cost-effective for your business.

Side Note on Technology: AT&T Universal Card Services also employs "quick response" technology to answer customer inquiries. Caller ID is attained from all incoming calls and compared to existing client phone numbers. If the caller's number is one that is currently in the database, the

client's records are automatically spooled to the next available agent—who has all critical data at his or her disposal when picking up the phone. The system also allows you (the customer) to obtain information about your account by using voice recognition techniques. You can vocalize your account number into the phone to access your account and use vocal cues to move through the process. The majority of information is available through this process, but a customer service representative is also available. Quick response and voice recognition technologies save AT&T time and money by making its employees more productive in their dealings with customers. **IT**

Remote Computer Connections: A Primer

by Roman H. Kepczyk, CPA

Roman is a principal in the Technology Division of Varney, Mills, Rogers, Burnett & Associates, a CPA Firm based in Manhattan, KS. He is also a member of the AICPA Information Technology Research Subcommittee. Whether you are a road warrior looking at ways to connect to the office or the business manager looking for ways to link multiple locations, this article will help you understand the technology you need to know.

Transferring data or remote communication to a host site is something all accountants will have to deal with—if they are not doing so already. Electronic transfer of data is becoming a standard business tool in many industries because of its speed, accuracy, and cost savings. Remote computer connections can occur in a variety of ways. Several of these are the following: Individuals can connect to a ser-

vice provider to work directly with a host computer; they can use remote access technologies to copy or update files between the two computers to which a user may have access; remote control utilities can be used to take over the functions of another computer for maintenance, support, or extension of network resources; and remote node connections can be used to link individuals or offices with true network node connections through a cable or phone line. The following headings are intended to serve as a kind of "primer" on the basic concepts for remote computer connections.

Individual Connecting Through a Service

Many accountants have been involved with the remote computing process without even realizing it. CPAs first gained exposure to remote computing by connecting to service bureaus for remote processing of tax returns, downloading of tax research, or downloading of updated software from a software company bulletin board. To

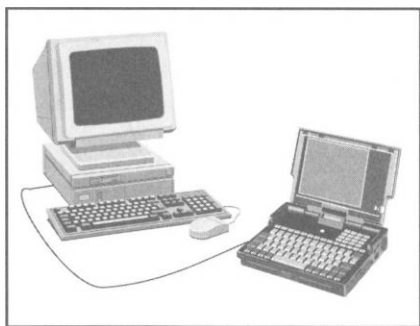
connect to a bulletin board or service, all that is needed is a computer with a modem, a phone line, and the software to communicate with the service. In many instances, the program used is an off-the-shelf communications software package, but it can also be specific to the owner of the bulletin board who may add security and customization options.

The next exposure many CPAs received to remote computing was through connection to the public online services. In most cases, accountants purchasing a computer with a modem received a free trial offer to use one (or all) of the services in the box. The software was very easy to use and install, and the service provided exposure to an incredible variety of resources ranging from data research and retrieval, to E-mail, to current sports and other areas of interest. The costs involved were minimal, usually under \$10 per month, so many accountants signed on.

The current connection that many CPAs are taking advantage of is the

Internet, the world-wide network of computer networks owned and managed by governments, universities and businesses. Using the Internet in the past has been difficult and confusing because of the specific protocols required. The system was unforgiving and required the user to have advanced skills in order to navigate through the "language" of the Internet. This situation has changed dramatically in the past few years, as software has been written making it much easier for novice users to "browse" through the available resources and to use the Internet in a fashion similar to on-line services.

Remote access is a method used to access or transfer files from one computer to another. More traditionally, this is accomplished through a direct cable link between two computers or through dial-in access. If a user has information on one computer and wishes to transfer it to another computer, using floppy disks can take a substantial amount of time. By connecting with a cable and creating a "peer to peer" link, the two computers can access each other's data resources and transfer data quickly. The cables attach to the serial or parallel printer

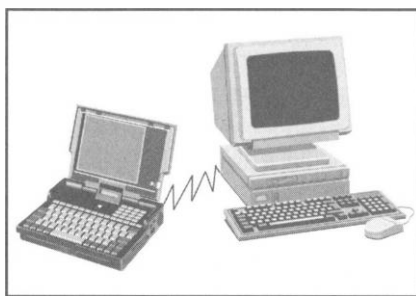


Peer to peer link

port of the computers and can be synchronized to transfer only the most recent files on either machine. This has been a successful method for updating software or loading it onto a new computer. Today, using communication connection technology, remote access can also be achieved through a network connection or dial-in through a

modem. Products to consider include LapLink, Hot Disk and Powersync.

Remote control takes remote access one step further in that it allows users to physically take over all the functions of another computer. This is accomplished by linking two computers, either through the network or dial-up phone lines, and running software at both locations. The remote computer takes control of the "host" computer and sends keyboard and mouse commands over the line. The host computer implements these com-



Remote access

mands and processes them locally, sending back only the changes in the screen to the remote computer. This makes for very fast throughput and is a good tool for software support and maintenance. Other benefits of using remote control are that the data is saved at the host location, the remote user has full access to all the applications on the host machine, and that the applications are running on the host computer which can be a faster, more powerful computer. Remote control software can also be used to take over a group of computers for training purposes.

Remote control is an effective method of accessing a network when the user is off-site from the host computer. The only disadvantage to remote control is that the host computer cannot be used for anything else while it is in alert mode. The host computer must be turned on and be running the required software, or the remote user cannot access it. Software is also available to dial into a "sleeping" computer and turn it on or off from a

remote site. This software is important in case your computer crashes or locks up while you are working: It may save you a late-night trip to the office to reboot your computer. Software can also be used to dial back a remote computer, adding security and password features to the host computer. Dial-back is a feature that allows the remote user to call the host and enter an access password. The host then disconnects and automatically dials back the remote computer at either a pre-determined number or a new remote number that was entered with the password. This helps to limit unauthorized users and transfers the long-distance charges to the host company, which usually has a much lower phone charge rate.

If more than one person wants remote access to the network, an additional computer must be set up for each additional user, and this can be an inefficient use of computer resources. To minimize this, multiple CPU (computer processing unit) cards can be set up within a computer so one computer can be used for two or more users. These cards require that a separate modem and phone line be available for each user. The most popular remote control software programs are: pcAnywhere, Reach Out, Carbon Copy, CoSession and LapLink.

Remote Node

Remote node is a method of connecting to a network as an actual node by using the phone line as the cable to connect to the network. Traditionally, this has given the most functionality to remote users but it has been incredibly slow. As a node on a network, there is constant data traffic between the computer and the server. Most network traffic travels at speeds in excess of 10 Megabytes per second. Imagine what happens when you slow that down to modem speeds of 28.8 kilobits per second (kbps). To load a word processing or spreadsheet application over the phone line could easily take 30-45 minutes. Most remote node users load their applications on the remote computer and then access the

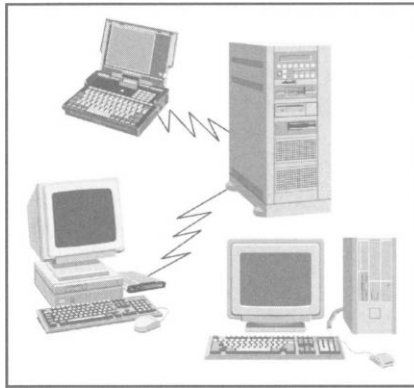
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host for files and printing.

The advantage of remote node over remote control is that users are not required to have a dedicated computer available for dial-in at the host site. Remote node users can dial in from any location and work on the computer, just as if they were physically inside the office. Remote node technologies are improving at a dramatic pace and will become standard for accountants in the future.

One offshoot of the remote node technologies has been the development of a communication/application server. This technology combines the features of remote node and remote control into a format whereby users can connect through a phone line to the application server. The server



manages the network traffic with the file server, which speeds up the transmission process. Each application server can have ten or more connections running independently. If one line goes bad for any reason, the remaining lines are unaffected. This is a great technology for remote users

with older technology (286/386 processors), as they can get reasonable throughput without significant hardware upgrades. It also extends the network to multiple users at a very high performance level.

Some examples of the required software/hardware for this technology include: Shiva LANrover, Novell Network Connect, 3Com AccessBuilder, Xorcom Netaccess and CITRIX.

Now What

Now that we have offered you some of the basics, you probably have identified some areas in your business where some of these technologies can be applied. Contact local vendors and let them show you how their products can meet your needs.

IT

Book Reviews

Following are two book reviews written by Wayne E. Harding, CPA, vice-president of accountant relations for Great Plains Software in Denver, CO and member of the AICPA Information Technology Research Subcommittee. In the wake of the seemingly endless mound of technical reading, trade publications and the like that flood our in-boxes, Wayne suggests the following two titles warrant your consideration whenever you pull over for a rest while traveling the information superhighway.

Being Digital by Nicholas Negroponte
Alfred A. Knopf, publisher,
New York, 1995.

It can be frustrating. Technology is changing at such a rapid pace, it is hard to keep up. Furthermore, you are so enmeshed in the daily routine of just making your hardware and

software function that you can lose track of the big picture. Technology will change the very way commerce operates in our society, and not a single industry will escape untouched.

So how do you come to grips with this pending upheaval? Dr. Nicholas Negroponte's *Being Digital* is a good place to start. His book does a wonderful job of looking at the macro technology picture and explaining to the reader in lay terms just exactly what the impact of technology will mean to businesses and to our daily lives.

Negroponte's premise is that people should think about technology's impact in digital terms. This means that what was once in atomic form will, in the near future, be in a digital form. Under this scenario, for example, paper (atoms) will virtually disappear, to be replaced with electronic source documentation (paper's digital form). What does this mean to the accountant? One response would be that

source documentation will change from paper evidence to electronic evidence.

This book is well worth the time. It is easy to read and incorporates understandable terminology. Negroponte's examples also hit very close to home. When you have completed the book, share it with a peer who needs the critical spark necessary to understand the on-going, and soon-to-be exploding, technological revolution. They will thank you for helping them think out of the box.

First the World—Now a Book

The Road Ahead, by William Gates,
Viking Press, 1995.

Many people wonder what Bill Gates is doing writing a book. After all, he has plenty of money, prestige, and little time. The answer? Bill Gates is on a mission: a mission to communicate his vision of a computer on every desk and in every home. This vision might just come to light, especially if

most of the techno-wonders and gadgets explained in the book become reality. Of course, the Gates' share of the profits from the book go to a charity involved with technology education.

The future, however, is just one aspect of *The Road Ahead*. The beginning chapters bring readers up to a basic level of knowledge about technology.

This is the versatility of the book. The knowledgeable reader can skip these chapters, while a technophobe can begin to understand where computers came from and where they are headed. This is a great book to give to people who have a hard time grasping the present and future impact of technology.

This book also allows the reader to gain some insight into the mind of Mr. Gates. It recounts his time at Harvard, starting up Microsoft with Paul Allen, and recruiting Steve Ballmer. How does Bill Gates explain Microsoft's success? The company had a vision that computing would be nearly free. What about the future? The new vision is that communicating will be nearly free.

Enter the Internet and Microsoft's strategy. According to Gates, the Internet is becoming so important that Windows will only thrive if it is clearly the best way to gain access to the Internet. The broad-range appeal of the Internet, according to Gates, is the most important single development in the

world of computing since the IBM PC was introduced in 1981.

The book also includes a CD-ROM which contains the entire book with hyperlinks. It also has a set of videos that Microsoft showed at the November 1994 Comdex, presenting Microsoft's view of computing in the year 2004. You can also take a computer-simulated tour of Bill's new home.

The Road Ahead is easy to read, well organized, and full of Microsoft's vision of the future. Yes, it is a bit self-serving; but, nevertheless, deserves to be read and understood. The book provides a blueprint of a future in which technology will be pervasive in both our personal and business lives. **FT**

Gadget of the Quarter: The Digital Camera

by Wayne E. Harding, CPA

Wayne is vice-president of accountant relations for Great Plains Software in Denver, CO, and member of the AICPA Information Technology Research Subcommittee.

Has the following scenario ever happened to you? You want to add pizzazz and personality to an upcoming proposal or presentation. So you decide to include photos of your staff or of your client. But in order to accomplish this, you have to scan a picture, or maybe have a professional printer reshoot the document. Not any more. The new technology of digital photography will put those days behind you.

Digital photography has been around for several years, but in the past, the cameras involved were targeted at the professional market and cost about the same as a family car. No more. At least six manufacturers

have introduced digital cameras for home and small business use. Casio, Epson and Kodak all sell cameras for less than \$500, while cameras from Ricoh, Chinon and Logitech sell for less than \$1,000.

A digital camera uses no film and requires no film processing. It stores the image in flash memory and photographs easily can be downloaded into the PC for inclusion in proposals, slide shows, or any other graphics-based

products supporting the standard cut and paste. (Editor's note: For example, the picture of the AICPA Information Technology Research Subcommittee meeting at AT&T Universal Card Headquarters was



AICPA Information Technology Research Subcommittee Members at AT&T Universal Card headquarters in Jacksonville, FL, captured via Casio QV-10 digital camera.

taken with the very same Casio QV-10 camera Wayne is discussing here.) We tested the Casio QV-10 and this is what we found.

The camera holds 96 photos with as many as 16 million colors per photo at

a 640 X 480 pixel resolution. Depending on your monitor, the quality of lighting, and the ability of the photographer, these photographs can closely match a 35mm camera shot. The camera is small, light, and easy to use. It also comes with a linking kit for use between the camera and the PC. There is PC software that allows the downloading of the pictures into a special format camera made by Casio. Each photo is 26Kb. The software also allows the photo to be re-saved in either bmp or tif format.

Do you need a print? You can send your selected negatives out to a company that will process them. Or you can purchase the latest color ink-

jets at less than \$500 (e.g., the HP850C or HP855C) for beautiful color prints.

I found the camera to be durable—it survived at least two drops onto a carpeted floor. Two complaints: The small color view finder in the back is hard to see in sunlight and the 4 AA batteries last only long enough for about 100 to 200 photos, including play back. Most large office supply stores and electronics stores have the digital cameras in stock, sometimes displayed in kiosks for demonstrations.

At a time when prices continue to drop and features continue to be added to these home market digital cameras, no professional should be without one! **IT**

NOTICE TO READERS: Publication Schedule Change

We asked for your comments and we have taken action! You might notice that this issue of *InfoTech Update* (ITU) is labeled May/June 1996 rather than Spring 96. The reason is that effective this issue, we will be publishing ITU every two months. This will enable us to provide you with more information on a more frequent basis. We remain committed to helping you navigate the flow of information by acting as your eyes and ears to those developments in information technology that are important to all CPAs.

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