Use Email for Efficiency

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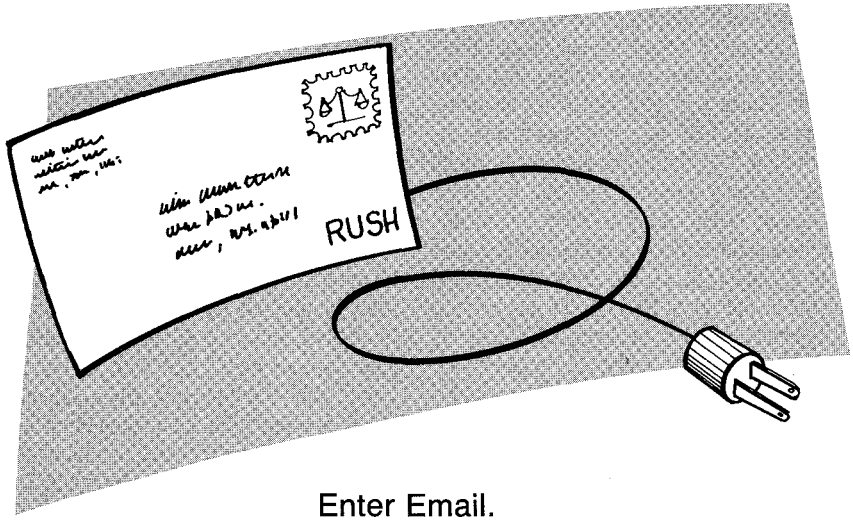

Enter Email.
Exit Courier and Fax.

IT SEEMS THAT almost every day somebody comes up with a new way to send a document, whether it is a half-page memorandum or a thousand-page contract, from here to there.

Courier delivery, dating back to ancient times, is still a thriving business. In this age of vans and jets the overnight letter is the first choice for many law firms.

But sometimes overnight is not fast enough. Courier services also have the risk, no matter how remote, that the package might be delivered to the wrong party or might be opened and read by the courier itself.

Enter the facsimile (fax) machine. The newest fax machines can transmit a document across town or across the world at 15 seconds per page. They can send drawings as well as text. And fax offers a high degree of security, since the message is transmitted directly to the receiving party (although fax cannot protect against a phone tapper with another fax machine). But perhaps fax's greatest advantage is its price: the machines cost about the same as a full-featured office typewriter; the per-message cost of fax is less than a quarter a page, including the cost of supplies and the telephone call.

Fax has disadvantages too, some it shares with overnight delivery, some are all its own. Anybody who has ever tried to edit fax copy knows that the letters are jagged and poorly formed; several hours of working with the pages can lead to headaches and eyestrain; and fax paper has a funny texture.

Another problem with fax is that fax machines can be busy. Recently, busy phone lines delayed the transmission of a document from a New York law firm to a corporation in Cambridge for two days. As fax becomes more and more popular it will become harder and harder to get another firm's fax machine on the telephone.

But the single largest problem with fax is that the document must be retyped if the recipient wants to make changes and print out a clean copy.

EMAIL • Long before fax, another form of electronic communication existed: electronic mail, using computers, telephones, and modems to transmit messages from computer user to computer user.

Electronic mail is better than fax: Since documents are delivered directly to the recipient's computer, they do not have to be retyped before new drafts can be printed.

For those who use it on a daily basis, an even greater advantage of electronic mail ("email") is its ability to help busy people who are on different schedules coordinate meetings and conduct computer-moderated discussions. Email is often superior to the telephone because both parties need not be available at the same time to exchange information. In many cases responding to an electronic message is faster than making a telephone call and leaving a verbal message with a secretary.

Because telephone messages have to be written or typed by a person at the other end, people tend to leave short phone messages: "Mr. Stevens called returning Mr. Johnson's call." Since electronic mail involves no tran-

scription, users tend to leave long messages with detailed instructions. Electronic folders allow email users to file electronic messages away for future reference.

Electronic mail has flourished on the university campus and in the computer engineering communities since the mid-'60s. In the early '80s, with the advent of commercial electronic mail networks, electronic mail became available to anybody with a terminal (or a personal computer), a modem, and a few dollars.

Because of all of these advantages, electronic mail has become the preferred method of communication in many businesses and universities. In companies with email systems, telephone messages are often routed to a receptionist in front of a terminal who types the messages directly into the system.

Simple Email Systems

Basic electronic mail systems allow users of the same computer system to send messages to each other.

The sender of the message tells the computer who the message is for (the "username" of the recipient), supplies a one-line subject, and types the message. A simple message might look like this:

To: steve
From: peter
Date: 11:45 am, January 15, 1989
Subject: Lunch
Interested?

Steve would enter the message into the system by typing just the recipient, subject, and message body on his terminal (boldface represents text typed by the user at the keyboard):

% **mail steve**
Subject: **Lunch**
Interested?
.

The Date and From fields are automatically supplied by the computer. The single period on a line by itself signifies the end of the message to the computer.

Mailboxes

If Steve is using the computer ("logged on") when the message is sent, the system might beep or otherwise inform him that there is a new message to read. Otherwise, the system will store the message in Steve's mailbox. The next time Steve logs in the computer will print how many messages are pending.

After Steve reads the message he can send a reply back to the sender by typing "reply." Steve can also either delete the message or save it in an electronic folder. Some systems allow folders to be searched for particular words or phrases, so that a message can be found months or years after it is sent.

Mailing Lists

A message can be sent to several users by simply listing their names separated by commas (e.g., "To: steve,

nancy, kate, peter"). Some computers also allow the creation of mailing lists—special addresses which forward a mail message to a list of users.

Networks

Networks connect different computers together to allow users on different computers to exchange mail. A network might be anything from a telephone line to a microwave link. Networks can be small, confined to an office, or they can span across the world. Computers that connect two networks together are called gateways or bridges.

There are many large scale computer networks in existence. Most of the academic, engineering, and governmental networks impose no per-message charge on users. There are also a number of large commercial computer-mail networks. The "networks" can be thought of as very large timesharing computers with many thousands of simultaneous users. Since each of these machines has hundreds or thousands of modems their phone lines are rarely busy.

LAWYERS AND ELECTRONIC MAIL • There are two potential applications of electronic mail for lawyers: communication with clients and lawyers at other firms, and the transmission of documents. In the first application, electronic mail is a substitute for telephone conversations. In the second, electronic mail is a substitute for facsimile transmission (or fax mail).

There are two ways for lawyers to get access to electronic mail:

- Direct modem transmission; and
- Using a commercially available electronic mail network.

Direct Modem Transmission

The simplest electronic mail system consists of two personal computers, each equipped with a modem and connected by a telephone line. Using this system and any one of a number of telecommunication software packages available today (such as Procomm, Crosstalk, or Kermit), documents can be transmitted at relatively high speed from one location to another.

Speed

Just how fast is "relatively high speed?" A 1200 baud modem costing less than $100 can send a 150-page double-spaced document in less than 35 minutes, about the same speed as the best facsimile equipment available today. A 2400 baud modem will cut the transmission time in half; such modems can be purchased for less than $150. Modems with speeds of 4800 baud and 9600 baud are becoming readily available and their prices are dropping rapidly.

Faxes have already reached the speed of 9600 baud. For technical reasons, standard phone lines cannot support speeds much in excess of

19,200 baud. Because faxes contain both a scanner and a printer, they will always be more expensive than modems of a similar speed.

What Can Be Transmitted

More than just documents can be transmitted by modem: As long as both parties use the same application program, any data file from one computer can be sent to another. This means that spreadsheets, databases, personal spelling dictionaries and so forth can all be freely moved from machine to machine. Documents can be sent with their formatting commands, such as underlining, margin changes, and boldface, intact. In principle, sending information by modem is only a little more complicated than taking a floppy disk from one computer and putting it into another.

But transmitting information by modem can do something that floppy disks cannot—it can move information from one kind of system to another. Although the IBM PC and the Apple Macintosh cannot under normal circumstances read each other's disks, modems on the two computers are compatible. Documents can also be sent from personal computers to centralized word processing systems that do not use floppy disks, as long as the centralized system is equipped with a modem.

Attended Transfer Mode

Moving documents from one word processing program to another can be a little trickier. In these cases (for example, when moving a document from WordPerfect to The Final Word) it is advisable to first convert the document to a "plain ASCII file" or a "text" file. This process strips all formatting commands from the document (for example, instructions to underline or boldface particular words) that might be misinterpreted by the receiving system.

Many firms that exchange documents this way do so in an attended transfer mode. Before the transmitting firm can send the document, it is necessary to call a person at the receiving firm and have them set up the computer system to receive the document.

Server Mode

An alternative to attended transfer is to dedicate a low-cost computer and a telephone line to the purpose of receiving files. The computer is left on and running the telecommunications program all the time, similar to a fax machine set to receive incoming calls. The program is left running in a server mode. In a server mode, commands to send or receive files are issued by the remote computer over the telephone line instead of being typed on the local computer's keyboard.

It is important that no documents be left on the dedicated machine and that it not be connected to any computer networks in the office, so that if a computer cracker discovers the

computer's telephone number by a random search, no documents will be stolen or corrupted.

Electronic Mail Network

An alternative to direct modem transmission is to use a commercially available electronic mail network. The sender logs onto the mail system and deposits the document into the recipient's mail box. At some later time the recipient logs onto the mail system and retrieves the document.

A lawyer interested in becoming an electronic mail user is best off subscribing with MCI Mail (800-MCI-2255) or AT&T Mail (800-367-7225). Western Union (800-527-5184) offers a mail system of its own called EasyLink which is cumbersome to use, although it has links all over the world. The Source (800-336-3366) and Compuserve (800-848-8990, 614-457-8650) are two electronic information systems that also offer electronic mail. These services, however, are not very useful to law firms for a variety of technical reasons. Compuserve, for example, limits messages to 10,240 characters or 600 lines.

Network Always Available

The primary advantage of using a commercial network is that the sender and the recipient need not be synchronized for the document to be transmitted. The electronic mail network is always available to accept messages, whereas the computer at the recipient's office might be busy receiving another document or might be turned off.

The disadvantages of these systems are cost, security, and the necessity to poll the mail system to see if mail has arrived (although it is possible to automate the polling process).

Cost

Although commercial electronic mail systems do cost money, they do not cost very much. AT&T Mail charges $0.80 for every 7,500 characters in a message. Dialmail (800-3-DIALOG), a service offered by Dialog Information Retrieval Service, charges $0.75 for the first 1,024 character "page" and $0.05 for each page after that. MCI Mail charges $1.00 for the first group of 7,500 characters.

Add on top of that the annual subscription fees: $30 for one year of AT&T mail; $25 for Dialmail (Dialmail's fee is only charged once as a sign-up cost); $18 per year for MCI Mail.

Security

Although every electronic mail system requires that users supply both their username and a secret password before they can send or retrieve messages, the messages themselves are stored on the central computer as unencrypted plain text files. This means that the electronic mail company has direct access to the contents of the messages. Electronic mail messages have the same privacy as sending postcards to a post office box.

That security is sufficient for many messages. Oftentimes it is more important that a message be delivered

reliably than that it be delivered secretly. The fact that a client is arriving on a 10:00 A.M. plane or that a lunch meeting is canceled is usually not valuable, confidential information.

If absolute privacy is important, messages can be encrypted before they are transmitted. The messages then must be decrypted by the recipient.

Encryption is a process that translates a message (the "plaintext") into a second message (the "cyphertext") that is unintelligible without knowing the secret decryption key. For a further description of encryption, *see* Garfinkel, *An Introduction to Computer Security (Part 2),* 33 The Practical Lawyer 57 (Oct. 1987).

There are many file encryption programs available on the market for personal computers today. Each offers a different degree of file security; unfortunately, it is nearly impossible for the lay user to know whether a particular package is secure. Unless the party trying to decode the encrypted message is a cryptography expert, however, the minimal security offered by these packages is usually sufficient.

For those concerned about file security a simple rule of thumb is that programs not using the DES or RSA encryption standards are not secure. Fortunately programs that use these standards are available, such as Superkey from Borland International.

Encrypted files, like spreadsheets and database files, contain binary data that are unprintable. Special programs must be used to transmit these files between computers.

Most electronic mail systems require that the user call the network to determine if new mail has arrived or not.

Attachments

Some commercial electronic mail systems, such as MCI mail, allow the user to send binary files as attachments to electronic messages. Attachments do not print; instead, the program that retrieves the mail from the mail system notifies the user that a message "has an attachment." The attachment must be explicitly unattached from the message and put into its own file. (*See* the description of Lotus Express below.)

Other systems, such as AT&T Mail, allow binary files to be loaded directly into the computer using a binary transmission protocol such as XMODEM or YMODEM. To take advantage of this service, it is necessary to have a program on the user's PC which also supports the XMODEM or YMODEM protocol.

Polling

A second disadvantage to using electronic mail systems is how to find out when new mail has arrived. Most elec-

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tronic mail systems require that the user call the network to determine if new mail has arrived or not. This process of checking for mail is called polling.

The polling problem is compounded for users with many electronic mail accounts. Each account must be polled separately to find out if any mail has arrived.

One company, DA Systems (408-559-7434), sells a service whereby their computer will automatically poll all of a user's electronic mail accounts. When mail is detected the DAS computer will copy it out and forward all of the mail messages to a single account.

Another solution to the polling problem is to use a program called Lotus Express (800-354-1043), developed by the Lotus corporation, which automatically polls a user's electronic mail account. The user can program Lotus Express to call MCI as often as desired; the program checks to see if any mail is present and, if so, transfers it to the user's personal computer and rings the PC's bell.

The really nice feature of Lotus Express is that it performs all of these functions automatically in the background, without interrupting any task that the PC is currently performing.

A similar program is offered by AT&T for users with AT&T computers.

Users of electronic mail will testify that it is a time-saving communication process that is incredibly addictive.

Beyond Electronic Mail

Many choices are available to electronic mail subscribers. Several services (including MCI Mail and AT&T Mail) allow electronic messages to be printed and sent via U.S. mail or courier to a non-electronic mail recipient. Messages usually arrive the next day, since they are mailed in the destination city; they can also be printed on a digitized letterhead.

Another service provided by DA Systems allows electronic messages to be converted to fax messages and sent to any facsimile machine in the world. AT&T Mail has a service that allows a user to dial into a central computer using a touch-tone telephone and have one's mail "spoken" over the telephone by a synthesized voice.

Of course, all of these services cost money. Fortunately, like electronic mail itself, they do not cost very much.

The most frustrating aspect of electronic mail is that it is not in use universally. Users of electronic mail will testify that it is a time-saving communication process that is incredibly addictive. Whenever electronic mail becomes available, people find more and more uses for it.

COMPUTER NETWORKS TODAY • There are four basic kinds of computer networks:

- Research networks, used by universities and the military;
- Company networks, used internally by large corporations such as Xerox, DEC, IBM, and AT&T;
- Cooperative networks, fostered by communities of users with similar interests; and
- Commercial networks, providing services to outside users for profit.

With the exception of the commercial networks, most network users use one of the following networks:

ARPA Internet

Implementation of the first large-scale computer network began in 1969. The ARPANET's original purpose was to allow ARPA (The Department of Defense's Advanced Research Projects Administration) contractors to share information, computational resources, and exchange mail. In 1983 the ARPANET was divided in two: the MILNET, a non-research practical network used by the military, and ARPA Internet, a large network with an estimated 60,000 machines connected to it in universities, government, and businesses.

BITNET

Because It's Time NETwork is a large-scale cooperative network of over 1,300 computers (mostly IBM mainframes) located in 21 countries. Most BITNET sites are located at universities.

CSNET

Another large-scale network providing mail and other services for universities and research institutions, CSNET has links to networks in Australia, France, Germany, Israel, Japan, Korea, Sweden, and the United Kingdom.

DEC's Easynet

Easynet is Digital Equipment Corporation's internal engineering network, also used by some DEC customers.

UUCP

UUCP is a network of approximately 7,000 computers running the Unix operating system connected together by telephone lines. (UUCP stands for Unix-to-Unix-Copy.) UUCP has no central management; new sites join the network by finding an existing site that is willing to provide a connection. The network is relatively unreliable.

AUTHOR'S GLOSSARY

ASCII American Standard Code for Information Interchange, the standard coding system used inside a computer to represent the Roman character set.