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Microcomputers and Data Communications

Applications and Opportunities For Accountants

By Benny R. Copeland, Sharon Garrison, and K.K. Raman

Accountants are being forced to become familiar with data communications techniques for microcomputers. Many accountants are already routinely using microcomputers to access various types of data communications systems every day, perhaps without even knowing all the types of systems they actually use. It is not unusual for an accountant to start the day by signing on to a computer terminal and being greeted by a list of messages and perhaps an agenda for the day. Most likely, the retrieval of messages is accomplished through a networking system where various terminals in the organization are linked together. The next task of the day might be to set up a worksheet and manipulate data on a stand-alone microcomputer. Once the worksheet is complete, the accountant may then load the results into the company's mainframe computer. Or, perhaps the accountant must plan for a business trip. By using a commercial database, the accountant can check airline schedules, book flights, make hotel reservations, and even get a list of good restaurants in the area.

All of the above tasks involve data

communications, and all can be performed using the same microcomputer, but all utilize very different types of data communications systems.

Accountants are discovering that no longer do they make exclusive use of mainframe computers as "centralized" or "decentralized" systems. Rather, they use different types of computer systems based on the task to be performed. The alternative systems may be called "contingent systems"—computer systems which can be selected for use according to the unique circumstances of the function to be performed. In the next few months, even more will be heard

Data networks consist of cables and control devices that connect mainframes, micros, terminals and printers.

about contingent technologies as additional companies enter the field of data communications and networking and seek to market this technology to business customers.¹

To fully understand the potential of such technology, it is necessary to have a working knowledge of local area networks, videotext and videotext information systems, and some of the commercial databases now available. The objective of this article is to discuss data communications, or "telecommunications" as it is frequently referred to, and to indicate some practical applications of this technology to the professional accountant.

Microcomputer Networks

Data networks consist of electronic cables and control devices that connect mainframe computers, microcomputers, terminals, and other devices such as printers, thereby allowing them to communicate directly with one another.

The primary need for a microcomputer network is indicated when two or more employees need to work with the same data base. Historically, the solution has been for the employees to exchange disks. Or the employees duplicate the data base and work on the data base simultaneously. The problem that may arise is confusion as to which of the copies is the "correct" data base. Further, with several people using the same data base, no one individual may be willing to take responsibility for maintaining a current copy of the data base or for assuming a proper back-up of the data base.

Another reason for creating a network is the need for several microcomputers to share a common peripheral, such as a high-speed printer. The decision to create a network is subject to analysis by using standard capital budgeting techniques. Building a network to permit the sharing of peripherals may or may not be cost beneficial. However, the matter of shared files does not lend itself to such analysis. If several microcomputers need access to a common data base, then a network becomes almost essential.²

While a network may appear simple in concept—"just hook the microcomputers together"—the technology is relatively complex. There are two primary technologies available for use at present: digitized PBXs using twisted-wire technology, and Local Area

Networks, called LANs, using coaxial cable and packet switching technology. The proponents of each cite certain advantages, and also point out claimed disadvantages of the other system.

Digital PBX. A PBX is, of course, the old familiar telephone switchboard. However, modern digital PBXs have the capability of carrying data as well as voice transmissions. Proponents of PBX technology claim several advantages. First, the technology is relatively simple, consisting primarily of a pair of twisted wires running from the central switch to each device on the network. Because the system is digital rather than analog, a MODEM (MODulator-DEMODulator) is unnecessary. Only a relatively inexpensive interface is required. Second, additional devices can be added relatively inexpensively, requiring only that a pair of wires be run from the central switch to the new device. And finally, the PBX is the only system which allows concurrent transmission of both data and voice.

Modern digital PBXs carry data as well as voice transmissions.

Opponents of the PBX system point out that the system must shut down whenever the central switch goes down, as there is no distributed switching ability. Furthermore, when the limit of the PBX is reached, it becomes very expensive to expand the capability of the system. Also, if both voice and data transmission are desired, additional pairs of wires of multiplexing equipment may be required, increasing the cost significantly.

Local Area Networks. Proponents of the coaxial Local Area Network also cite numerous advantages. First, only a single cable is required, with each device (microcomputer, printer, etc.) attached to it, whereas with the PBX system a pair of twisted wires must be

run from the central switch to each individual device. Thus, the LAN is easier to expand, since new devices can be connected to the same cable. Secondly, the transmission rate is several times higher for the LAN than for the PBX, making it more suitable for continuous use than a PBX system. Opponents of the LAN point out that this higher transmission rate is usually achieved through packet switching technology, which is fairly expensive. Finally, LAN proponents point out the advantage of a "layered" communications system, which makes the addition of new technology or the expansion of the network much easier than with the PBX system.³

The flow of communications through the LAN is coordinated by a device known as a "controller". This controller functions somewhat like a traffic policeman, directing traffic and cleaning-up after collisions between messages. In addition to the controller, some networks require that each device connected to the network have an interface, something like the MODEM used to connect a microcomputer to an analog telephone line. The interface may be built inside the device, or it may be located in a box alongside the device.

Network Benefits. Until network technology was developed, microcomputers were limited to communicating only with mainframe computers, or to one other device using the mainframe computer as the switching device. The problem with such an arrangement is that the flow of all communications had to be directed through the large mainframe computer. If the lines to that computer were "busy" then communications had to be shut down. The advantage of a network is that every device on the network can communicate directly with all other devices on the network, thereby freeing the mainframe computer from serving as a switching device. A microcomputer can communicate directly with another microcomputer, with a printer, or with the large mainframe computer. Such a system is versatile as well as efficient.

A network allows microcomputers to be used to their full potential. For example, an internal auditor could develop worksheets and run preliminary calculations on a microcomputer on a stand-alone basis using a spreadsheet program, and then communicate with

Local Area Networks (LANs) require only a single cable with each device attached to it.

a mainframe to perform analytic review or sampling procedures, and then send the final result to the supervisor's terminal for review. The potential of local area networking systems is impressive, being limited only by the imagination of users.

When investigating the need for a network, the accountant should begin by analyzing the management information system to determine the objectives to be accomplished. Then, contingent technologies appropriate to these objectives can be investigated. As with all aspects of computers, costs of data communication systems vary widely. A comparative study must be made of the respective costs and benefits of each system, keeping in mind the objectives that the system needs to accomplish.

Videotext

Videotext (or Videotex) is the blending of video and textual technologies to transmit both television-quality pictures and text messages to users and to permit a response. A videotex system is normally composed of a special videotex terminal (or a microcomputer connected to a television set) and a link to a large central computer either through a telephone line or cable system.

The advantage of a videotex system is that it is a relatively low-cost and yet easy to use medium that blends together the picture quality of television with the information processing benefits of computers. The applications are seemingly infinite. Home banking, home shopping, electronic mail, and encyclopedic information searches are but a few of the services possible utilizing videotex technology.⁴

Only a few broad-based videotex services are presently available in the United States, but additional ones are in the process of development.⁵

TABLE 1

Approximate Cost Of National Information Services

Service	Primetime Rate	Nonprimetime Rate
CompuServe	\$22.50 per hr.	\$5.00 per hour
Dow Jones	\$ 1.20 per min.	\$.20 per min.
The Source	\$20.75 per hr.	\$7.75 per hr.

However, the *Wall Street Journal* reported recently that Viewtron, the country's first videotex service, is developing much slower than anticipated. On its first anniversary it had attained only about half of the 5,000 subscribers that had been predicted. Thus, the *Journal* noted that there seems to be a "wait-and-see" attitude prevalent throughout the industry.⁶

In the meantime, text-only services are the primary information utilities available to the public. While they do not offer the advantage of video-grade pictures in addition to text, they are presently available at a reasonable cost. There are three major national text-only information services: The Dow Jones News/Retrieval Service, CompuServe Information Service, and The Source.⁷ Most of the features of interest to accountants are offered by all three services.

Securities Price Quotes. Price quotes on stocks, bonds and commodities can be easily obtained using any of the three services. The reported prices must, however, be delayed fifteen minutes due to SEC regulations.

Investment Advisory Services. Each of the three services offers several investment advisory services. For instance, CompuServe offers such investment advisory newsletters as Brennan Reports, Common Sense, the Contrary Investor, the Dines Letter, and the Fraser Opinion Letter. CompuServe also offers Standard & Poor's General Information Files, which contains detailed financial information on 3000 major publicly-held companies, as well as Value Line Data Base II, a weekly Value Line Investment Survey. The Source offers such services as Raylux Financial Commentary and Raylux Business Outlook,

which feature advice and analysis from investment advisors and economists. STOCKVUE is a service provided from MediaGeneral Financial Services with which subscribers have access to current and historical information on stocks. The system will also rank the stocks on various characteristics.

Tax and Legal News. Recent tax developments and changes in laws are summarized in most of the services. Most also offer an opinion by leading analysts on the effect of the tax and legal changes.

Electronic Shopping. This service is available on all of the three communications services and enables customers to access price information and descriptions of over 50,000 items. Items available on the service can often be purchased at large discounts.

Travel Arrangements. The Source offers such services as AIRSCHED-D which can provide a current list of all domestic flights complete with arrival and departure times, meals, and type of plane utilized on the flight. Using a communications network, customers can make reservations for airlines, hotels, and automobile rentals, and can even tap into a restaurant guide with the Source. Using CompuServe, private pilots can file flight plans.

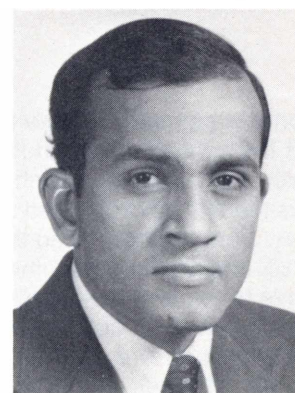
Cost of Services. The pricing arrangements for the different services depend on a number of factors: the time of day the service is used, the



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type of modem (300 or 1200 Baud) used, and the type of membership purchased. Most of the services charge a connect fee or a membership fee. Estimates of basic rates for the least expensive membership for a 300 baud modem are shown in Table 1.⁸ While the costs are not negligible, it should be kept in mind that the expenditures may be deductible.

Conclusion

More than any other member of the team, the accountant has the technical expertise and the broad knowledge of business necessary to provide assistance in developing a practical management information system.

Data communications is a new technology that the accountant must master in order to continue this tradition of service. Not only will this new technology provide an additional opportunity for the accountant to provide assistance to management, but it will provide a valuable tool for the accountant to use in performing the role of management advisor. Ω

NOTES

¹For current information on this development see "IBM Unveils High-Powered PC And an Office-Computer Network", *The Wall Street Journal*, August 15, 1984, p. 3; "Networks Connecting Diverse Computers Are Expected to Undergo Rapid Growth", *The Wall Street Journal*, August 31, 1984, p. 13.

²For an excellent introduction to local nets for micros see "Local Nets for Micros", David Ferris and John Cunningham, *Datamation*, August 1, 1984, pp. 104-109.

³For a thorough discussion of the mechanics of networks see "Is It The PBX or Is It The LAN?", Philip H. Reagan, *Datamation*, March 1984, pp. 147-150.

⁴For an overview of videotex see, "Videotex: Science Fiction or Reality?", Darby Miller, *BYTE*, July 1983, pp. 42-56.

⁵Current developments in this area are discussed in "Centel Is Set To Plunge into Videotex", *The Wall Street Journal*, August 15, 1984, p. 29.

⁶"Knight-Ridder's Cutbacks at Viewtron Show Videotex Revolution Is Faltering", *The Wall Street Journal*, November 2, 1984, p. 19.

⁷"Ailing Videotex Ventures Haven't Slowed Plans to Market the Information Services", Mike Connelly, *The Wall Street Journal*, March 28, 1985, p. 37.

⁸The rates and particular services are subject to change and should be verified by contacting the service in question.

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timetables, and specific activities which take into account the strengths and weaknesses of the principal participants, especially if the marketing duties are to be shared by several members of the same firm. The discussion which follows is not intended to present all the possibilities, but it should serve as a guide—and, more importantly, a conceptual framework that will help individual CPAs generate more ideas specific to their own practice units.

- Write a brief biographic sketch of the firm and its principal members. Include brief summaries of the major client focus—trucking companies, farmers, wholesalers, etc. This is not intended to be a handout to all prospective clients, but rather a summary of your areas of special knowledge which can be handed to a client or attorney when proposing an engagement.
- Develop a list of the local attorneys who handle a lot of litigation, including their specialties (family law, personal injury, business disputes, etc.). Set up a schedule for meeting with each identified attorney (at lunchtimes if appropriate) and discuss with them their requirements for expert witnesses in litigation matters. Keep up the contacts on a regular basis; one meeting is not going to make any attorney remember a specific CPA when a case comes up three months later requiring a CPA expert witness.
- Develop a list of seminars, speeches, courses, etc. which the firm is qualified to present to professional organizations, service clubs, civic groups, and local colleges. The current media attention to business liability insurance problems is a natural lead in for CPAs to speak on the subject of accounting records required for insurance claims. (Note: CPAs who are not good public speakers should *not* offer to speak publicly. Assign such people to other tasks.)
- Develop a list of local professional organizations and service clubs, civic groups and schools, and offer to speak on the subjects developed above. Also from this list, assign each principal member of the CPA

firm the task of joining some organization(s) and serving in some accounting-related capacity, such as on finance committees, etc. The idea is to be as visible as possible while doing a good job.

- Go through the firm's client list, and set up a schedule for meeting with each major client in a "brainstorming" session. Using a pre-established agenda, discuss the client's operations, goals, and problems. In those discussions, point out the CPA firm's new (or expanding) emphasis on helping clients with litigation matters. (Note: Other additional work may come from such sessions—not just forensic accounting engagements.)
- Obtain client permission to talk about a successful or well-done forensic accounting engagement, and use that as an example—a "reference"—when talking to attorneys, groups, potential clients, etc.

Conclusion

Those CPAs who are considering expansion or commencement of a forensic accounting practice have many factors to consider before making a decision. Too many times in the management of CPA practices such decisions are made "by default"—that is, the practice just goes along without specific direction, and if a forensic accounting engagement comes along, it is treated the same as a tax return engagement. Forensic accounting is an entirely new accounting direction for many smaller firms and the decision to commence or expand into this field should not be made lightly. The pros and cons underlying that decision, discussed above, are only a scratch on the surface of an exceedingly complex area of practice. If the decision is made to go forward, the effort required to establish and expand a forensic accounting practice is substantial. The impact on the firm can be significant—negative as well as positive—and forensic accounting is, therefore, not for everyone. Hopefully, the preceding discussion will help CPAs determine for themselves whether or not they want to enter this field. Ω