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Online Searching With a Microcomputer

Carol Tenopir
University of Tennessee - Knoxville

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By Carol Tenopir

EXPERTS have predicted that by the end of 1985 more than half of all search intermediaries will be using microcomputers instead of dumb terminals for online searching. Many of you have already made the switch. This column is for those who are contemplating the move to a microcomputer and need some basic information.

Benefits

If your current terminal needs replacing or if you are in the market for an additional terminal, in most cases it makes more sense to purchase a microcomputer. For very little more money, the microcomputer is much more cost-effective because it can be used for other purposes such as word processing, administrative support functions, and library record keeping. For small libraries that do not conduct online searches all day, this multiple use capability is especially attractive. Currently many new micro models are almost as portable as the smallest dumb terminal (although the smaller computers are often not as comfortable as larger computers for functions such as long hours of word processing).

Searching with a microcomputer may allow you to spend less total time online and derive more benefits from your online time. With proper software, a microcomputer allows you to:

- automate the log-on protocols to the telecommunications networks and host systems,
- store initial search strategies and then upload them to the host system,
- capture search results on disk (download) for later printing,
- reformat captured searches to eliminate duplicates or to create custom formatted bibliographies,
- create in-house databases of database subsets, and finally,
- make use of powerful database access software that will allow you to do such things as search more than one system using a single set of commands.

Hardware & software required

Computer store personnel seem to be more knowledgeable about online communications now than they were two or three years ago, but it is still good to have a clear idea of your requirements before approaching a retail store. The basic requirements are simple but there are many options within each:

1. A microcomputer with a) an Electronics Industry Association standard RS232C serial port (to allow connection of a modem) and, b) at least one floppy disk drive is highly desirable. In many micros, the serial port is built in, in others (notably Apples and IBM PCs) you must purchase a communications card with a serial port.

2. You will need a modem. Some microcomputers come with built-in internal modems (e.g., Radio Shack Model 100 and Kaypro 4). Others allow you to purchase an internal modem contained on a plug-in circuit board (an alternative to buying the communications card and separate modem for Apples and IBM PCs). External modems can be either direct connect or acoustic coupler. Most eveyone is familiar with the old rabbit ears acoustic coupler. They are still OK, but direct connect modems are more reliable, allow more functions, and are now comparable in price.

3. If you have an external modem, you will need an RS232C cable to connect your modem to your microcomputer serial port.

4. Communications software you will need is discussed in more detail below.

5. A printer is optional but highly desirable.

More about modems

As mentioned above, there are many options when it comes to buying a modem. Your modem should be purchased at the same time or after you purchase the computer and communications software, because it must be compatible with each. Some communications software is made to work best with certain types of modems. For example, the *PC-Talk III* package for IBM PCs is configured for the Hayes Smartmodem (or for Hayes compatible modems). It must be reconfigured to work with other modems. *Remember II*, a package for the Apple IIe, works only with the internal Hayes Micromodem IIe.

The modem can be either 300 or 1200 baud, with 1200 baud more cost effective in the long run with online systems that charge by connect hour. A 300 baud external modem generally sells for between $100 and $300, a 1200 baud modem for between $250 and $600. The 2400 baud modems are now on the market for approximately $800, but the major online systems do not yet support 2400 baud searching. Look for this to change in the near future with developments such as Dialog's own telecommunications network, DIALNET.

The modem should allow both full duplex and half duplex modes and communicate in an asynchronous mode. Except for software compatibility, the brand of modem doesn't generally matter as long as it meets industry standards. The 300 baud modems must be compatible with the standard Bell 103 modem, 1200 baud with the Bell 212A modem or Racal-Vadic 3400 series. Also it is generally safer to purchase any equipment at a store where you can go back for help or with problems rath-

Carol Tenopir is Assistant Professor at the Graduate School of Library Studies, University of Hawaii, Manoa

er than through the mail. If you purchase a direct connect external modem, you must have a modular phone jack so the modem can be plugged directly into the wall.

Modems for online searching need only the "originate" capability because generally you are initiating all of the calls. If for other functions you will ever want to have someone call your computer (patron access of an in-house database for example), you will also need an answer capability. Originate-answer modems are becoming the standard, however, and there seems to be little cost difference between originate only and originate-answer modems.

Other optional but desirable modem features include: the ability to do both touch tone and pulse code dialing; automatic dialing; and automatic redial of last number.

Communications software

There is a wide variation in the capabilities, sophistication, and cost of communications software suitable for online searching. Some do little more than turn your microcomputer into a terminal (terminal emulators), others offer enhancements to the search process. You will want to reread "Mason on Micros" in the October 1, 1983 *LJ*, p. 1855-57, for more on "Communications Software." Sources of communications software are listed at the end of this column. Important basic features to look for in communications software include:

- ASCII code transmission (American Standard Code for Information Interchange);
- compatibility with hardware and modem;
- ability to specify at least 300 and 1200 baud rate and full or half duplex;
- asynchonous mode;
- break key emulator (most microcomputers don't have a break key);
- ability to redefine other keys;
- downloading capability (often called receiving or capturing);
- uploading capability;
- ability to access the communications software command mode without logging off from the host system;
- control of printer;
- ability to store telephone numbers and passwords;
- automatic log-on using the stored numbers and passwords; and
- automatic redial feature if lines are busy.

Prices for packages offering these basic features range from free to approximately $200. Some of the free or nearly free software is surprisingly good, although you won't get glossy manuals or fancy packaging. Most of these free packages are available through local user groups (or check guides such as Glossbrenner's *How To Get Free Software* for alternative sources). I have used Modem-7 for CP/M systems and *PC-Talk III* for IBM PCs and find both to be good. *PC-Talk III* is "freeware"—you may freely copy it, but the author asks you to send $35 if you like the program.

Database access programs are the sophisticated end of communications programs. They simplify the search process by translating user input into the host system command language in addition to serving as a terminal emulator. If you invest in a database access program, make sure it has all of the basic communications features in addition to the more advanced features these programs offer. Database access software packages and their features are covered in more detail in my October 1, 1984 *LJ* column (p. 1828-29).

Costs

Total costs to begin searching with a microcomputer vary considerably, but it is reasonable to anticipate an initial investment of between $1500 and $3500 because you will want to have enough computing power to do other things with your micro. Listed in the Table are the three hardware configurations we use at the University of Hawaii with approximate costs in today's market. There are of course many other possible configurations.

TABLE

	Approximate cost
1. Kaypro II (CP/M portable computer)	$ 1000
Dot Matrix Printer and parallel cable	$ 300 - $ 500
1200 baud Hayes Smartmodem (or Hayes compatible)	$ 300 - $ 500
Serial cable for modem	$ 30 - $ 60
Communications software	$ 00 - $ 200
(We use *Modem 7*, a public domain free package)	
2. IBM-PC	$ 2000 - $ 3000
Dot Matrix Printer and parallel cable	$ 300 - $ 500
1200 baud Hayes Smartmodem (or Hayes compatible)	$ 300 - $ 500
Serial cable for modem	$ 30 - $ 75
Communications software	$ 00 - $ 200
(We use *PC-Talk II*, a freeware package; $35.)	
3. Apple IIe	$ 1200 - $ 2000
Dot Matrix Printer and parallel cable	$ 300 - $ 500
300 baud Hayes Micromodem IIe (plug-in circuit board)	$ 250 - $ 330
Instead of above can purchase: modem and Serial communications card with cable	$ 100 - $ 500
	$ 60 - $ 100
Communications software	$ 00 - $ 200
(We use *Remember II* with the plug-in board, a public domain package.)	

Selected Software Sources

These all provide selection criteria as well as directories to specific packages:

Barden, William J., "Smart Terminals: New Software and Hardware To Simplify Data Communications," *Popular Computing*, August 1982, p. 117-121.

Bernstein, Amy, "Software Survey: More Power, Speedy Protocols," *Business Computer Systems*, November 1984, p. 81+. Includes comparison chart of many commercially available communications programs.

Bruman, Janet L. *Communications Software for Microcomputers*. San Jose, CA: CLASS, January 1983. Also available from ERIC ED234740. Discusses things to look for in communications software. The directory provides only program name, producer, computer, and price with no evaluation. Short bibliography.

Glossbrenner, Alfred. *How To Buy Software*. St. Martin's, 1984. Chapter 17, "How To Buy Communications Programs," includes a useful checklist. This is not a software directory but a guide to selection criteria.

Glossbrenner, Alfred. *How To Get Free Software*. St. Martin's, 1984. Communications software is spread throughout the book, but there is an index. This book may give you more information than you want. Evaluative comments on specific programs are given as well as how to get the programs.

Miastikowski, Stan & George Stewart, "Modems: Hooking Your Computer to the World, Part II, Software Communications," *Popular Computing*, December 1982, p. 111-118.

Software Vendor Directory. Norcross, GA: Hayes Microcomputer Products, 1982. Software compatible with Hayes modems.

Whole Earth Software Catalog. Quantum Pr./Doubleday, 1984. Twenty pages on telecommunicating includes descriptions of some online systems and books as well as software. Not comprehensive but has critical comments.

Articles About Modems

Austin, Sandy, "Modem Survey: Faster Rates and Lower Prices," *Business Computer Systems*, November 1984, p. 80-106.

Gabel, David, "Modems," *Personal Computing*, January 1985, p. 109-119. Excellent, up-to-date buyers guide.

———. "Modem Mistakes You Don't Have To Make," *Personal Computing*, June 1984, p. 120-134.

Miastkowski, Stan, "Modems: Hooking Your Computer to the World," *Popular Computing*, November 1982, p. 88-104.

The, Lee, "Data Communications: a Buyer's Guide to Modems and Software," *Personal Computing*, March 1983, p. 96-128.

Veit, Stanley & David Gabel, "Modems: Your Line to the World," *Personal Computing*, September 1981, p. 90-102.

Fliers Available for Free

BRS/Micro Interface. BRS, 1200 Route 7, Latham, NY 12110.

Making the DIALOG Connection. DIALOG, 3460 Hillview Avenue, Palo Alto, CA 94304.

Stepping Up to a Micro. SDC ORBIT, 2500 Colorado Avenue, Santa Monica, CA 90406.

Terminal Access to the NLM Databases. Office of Inquiries and Publications Management, National Library of Medicine, 8600 Rockville Pike, Bethesda, MD 20209.