November 1, 1996

Remotely Possible? Simple Remote Access to the Network

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by Margaret Sylvia

"Remote access to the library is possible without a magic wand."

Remote access is the rage. People want to get information without leaving their homes or offices, and for the first time we have the technology to make this really feasible on a widespread basis. After browsing the Internet for a while, people begin to wonder why they can't just click on a button and get the same information at home that they get at the library. And why not? Many of us in the library community are working toward making information more widely available, but the process of getting anything other than the library catalog online sometimes seems daunting.

St. Mary's University Academic Library

We first implemented remote access at St. Mary's University Academic Library nearly five years ago. This occurred within six months of the initial implementation of the library computer network and remote access was possible through the use of a V-Server from Virtual Microsystems.

This worked well until recently when some vendors began upgrading their searching software to include memory requirements that the V-Server could not handle. Then another problem arose after the merger of Virtual Microsystems and Logicraft when we were unable to get the customer service we needed to keep the V-Server operational. We began to look at new ways to provide remote access to library information for our students and faculty.

Specifications for Remote Access: TCP/IP Support & Multitasking Capabilities

With our previous experience of remote access and its problems, we had an idea of what we wanted to provide and some of the pitfalls that could occur. We knew that we would like to provide remote access via telnet connection to the library. Our previous connection did not provide TCP/IP transport and this was growing into a bigger problem as TCP/IP and telnet became the standards for remote access.

We also did not want to purchase and provide technical support for a bank of modems in the library. The modems on campus belong to the computer center and this arrangement suits us admirably. We originally elected not to have our own modems several years ago and to provide our access to students through the campus network via a direct connection with the computer center. With the V-Server, our users needed to dial into the campus modems and log in to the network first before accessing the CD-ROMs. This provided a level of security for the library network and exempted us from the mechanical and technical problems provided by modems.

In any case, we knew then and know now that we did not want to deal with a bank of modems in the library, but preferred to provide access in some other fashion, now preferably via telnet. Though telnet access does not provide the level of security we had previously when users were required to dial in to

campus modems and log in to the campus network before accessing the library through a dedicated line, telnet is a well-used and familiar method to most system administrators and users of the Internet. We wanted a method of access that would be available to all our users without our intervention in their systems, and we felt that the combination of dial-up access through the computer center modems along with telnet access to the library would fit the bill.

We wanted to provide remote access to multiple users simultaneously. But we wanted to do this without installing a whole bank of PCs in the library, each dedicated to a single outside user. There are a number of remote access options available in which this scenario occurs. But that was not, we felt, a very elegant solution to the problem. In other words, even though inside the library we have one machine per user on the network, for remote access we wanted to have a single machine to service multiple simultaneous users.

Terminal Emulation & Keyboard Mapping

Another problem we were aware of was that our users own many different types of telecommunications software and that they connect to us using a variety of terminal emulations. Intertwined with these problems is that of keymapping. When connecting with a remote computer, one is generally confined to emulating a dumb terminal. Most commonly when using telnet access, a VT-100 terminal is emulated. There are some fairly significant differences between the keyboard on a VT-100 terminal and the keyboard on a PC. For instance, the VT-100 has only four function keys while the typical PC has 10 or 12 function keys. This presents a problem when the remote user emulating a terminal is attempting to use software that expects keystrokes from a PC. To complicate matters, various types of telecommunications software have slightly different ways of emulating even the same terminal types and the library, of course, has no control over what type of software people are using to connect.

To handle these problems, there are a number of remote access options that allow you to attach to the network via a modem using client software. PC Anywhere and Carbon Copy are just a couple of examples of software that allow you to take over a PC and run it from a remote site. Novell puts out its own remote access solution called Netware Connect, and Shiva Corporation offers LANRover. There are other examples of remote access that require special client software along with other hardware and software on the network. For a good overview of these types of remote access options, the August 1995 issue of *PC Magazine* featured a number of remote access software and hardware solutions (Derfler, 1995a; Derfler, 1995b). Most of the options reviewed are geared toward business usage where a limited number of users would be served, client software is usually required, and the system administrator providing remote access would have some control over the hardware and software of the users. For remote access to a library environment with thousands of potential users and no control over its users' software/hardware, applications with these types of requirements are unsuitable.

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No Special Client Software

We wanted our remote access option to provide a solution also to the keyboard mapping problem that would not involve distributing special software to our users. So, in my consideration of solutions, I excluded those that required the distribution of special software to users, particularly if that software was licensed for each user. Distributing and installing software causes extra difficulty and expense for the library and the user. No matter how simple the software installation, there will always be users who will have problems and we do not have enough personnel in our library to provide software support for all our users. By allowing users to furnish their own communications software, most of the necessary software support can be provided by the software vendor or publisher. I also excluded, as mentioned before, solutions that required modems to be based in the library and solutions that did not provide TCP/IP support.

CD-ROM Drive Support

In addition to the problems of TCP/IP support, DOS support, and multitasking capabilities, we can add one more remote access issue: that of CD-ROM drive support. CD-ROM drive support as a remote access problem will vary depending on the CD-ROM networking solution you employ. For those running networks in which CD-ROMs appear as simple volumes on the network, CD-ROM drive support is no more of a problem than remote access to any other part of the network. However, for any solution that requires special software on the workstation, including DOS extensions, CD-ROM drive support is an issue in remote access. It was an issue for us in the past as we had been running DEC Infoservers to serve the CD-ROMs to the network and these required a number of special client drivers on a Novell network. However, we recently switched to SCSI Express for a couple of reasons.

First, our Infoservers were six years old, and while they served us well, they couldn't last forever. Second, we wanted to provide remote access in the simplest possible way and that meant finding a solution where no special CD-ROM drivers are needed on the workstation. SCSI Express software provides CD-ROM networking in this fashion.

No CD-ROM drivers need to be installed on the workstation because the CD-ROMs are seen by the network as additional volumes, so they appear and are used in the same way as any other software on the server.

So, in a nutshell then, our goal was to provide remote access for users so that it was as simple as possible for them to log in and to use the network with whatever telecommunications software they had access to. We also wanted to make the remote access simple for ourselves so that we could avoid using a bank of modems and avoid distributing software to several thousand students every semester and helping them install it. Most importantly, we wanted to avoid distributing client software. This was the part of our previous remote access package that caused the most problems for us and for our users. No matter how simple and trouble-free the installation seems to be, there will always be people who have trouble with it and hardware/software combinations that conflict with it. I started putting together a list of possible remote access options and, after excluding the possibilities that didn't meet most of our initial criteria, I was left with only a few choices.

Options for Remote Access

First on our list was an option that we had looked at a few years ago when we initially began using remote access—a J&L Chatterbox. Second was a piece of hardware from Logitech, which was the company's replacement for the V-Server and very similar to it, called Omniware. Next, I found there was a possibility of using a combination of bulletin board and doorway software to give remote access to CD-ROMs and there seemed to be at least a couple of different ways to accomplish this. Finally, I located some specialized remote access software called Everywhere Access or EA/2. Again, there are many other ways of remotely accessing networks but there seemed to be relatively few that met our needs. I will examine these solutions individually beginning with the J&L Chatterbox.

The J&L Chatterbox

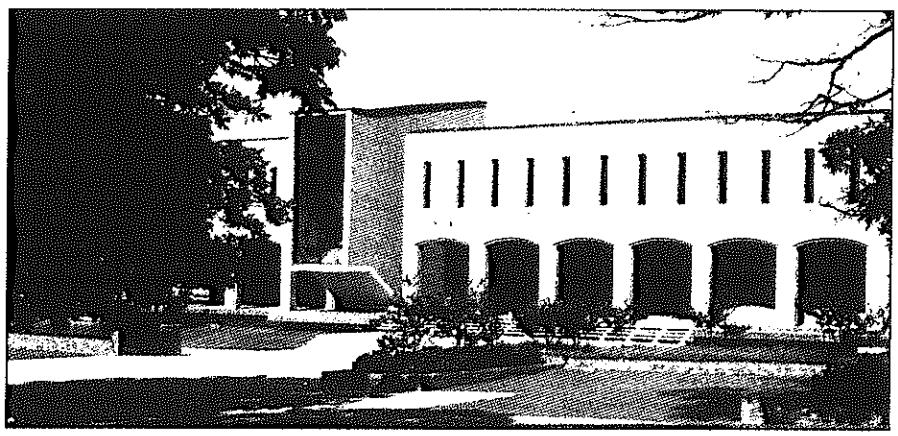
The Chatterbox is somewhat similar to the V-Server in that it consists of several individual central processing units (CPUs) mounted on separate cards installed in a rack or tower. Each separate CPU has its own network interface card (NIC) and appears on the network as a diskless workstation. This is very similar to the Logicraft Omniware solution, which also consists of separate CPUs mounted on cards in a custom tower. In fact, these solutions probably should not have been on the final list since they do require one CPU inside the library for each user outside the library. The reason they were retained was purely psychological in that since all the CPUs were mounted inside a single rack or tower, each appeared to be only "one box" though they contained several CPUs each.

The Chatterbox and the Omniware solutions both have the same advantages in that they are complete solutions in a single package and technical support is available for installation. However, they are both fairly expensive packages and with one CPU per remote user, the number of simultaneous logins they can handle is strictly limited by the number of CPUs you can afford to purchase.

Bulletin Board Systems

Another type of remote access solution used bulletin board and doorway software. Bulletin board system (BBS) software is fairly popular and in widespread use. However, computer bulletin boards have been overshadowed by the recent explosion of Internet use since the emergence the World Wide Web. The advantage of BBS software is that it allows the use of software "doorways," which handle the keymapping and other necessary translation between the remote user and the local software. The disadvantage for libraries attempting to use BBS software for remote access via telnet is that bulletin boards were generally designed for single users and for dial-in access. We needed a way to set up the software so that it was TCP/IP compatible and to give multiple users simultaneous access.

One solution to this problem is to use two PCs. In one possible scenario, the first PC is a UNIX server that handles the TCP/IP access to the network. The second PC holds the BBS and doorway software and a multitasking-type software such as Desqview. Between the two PCs you need multiple serial connections to handle multiple user logins. Advantages of this approach are that it is fairly inexpensive and the UNIX server will also support other TCP/IP activities such as Internet access if you don't already have that. A disadvantage is that this is a custom setup and requires specialized technical support and knowledge of a number of different pieces of software. If you are not already comfortable with UNIX, BBS software, and being your own tech support person, this setup is probably a little overwhelming. However, if you have plenty of in-house expertise or a good local computer vendor familiar



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with UNIX and BBS software, this may not be a problem.

The other bulletin board solution is very similar except that it depends on a particular piece of software called BBSNet, which is based on Novell, so that the UNIX server is unnecessary in this case. However, you do need TCP/IP software such as Novell's LanWorkGroup or the shareware CUTCP to handle TCP/IP access. And you still need the multitasking software such as Desqview to handle multiple users on a single PC.

Advantages of this approach, at least for those of us using Novell, are that this runs on a Novell network and it is fairly inexpensive to implement. For those who are using another type of network like Banyan Vines, this would be unworkable. Again, the big disadvantage is that putting together your own remote access solution from several different pieces of software requires a lot of technical expertise and can be difficult to troubleshoot when there are problems since several different pieces of software are working together to provide access.

Everywhere Access

Our final remote access possibility was a software-only solution called Everywhere Access from Supro. This software allows multiple users to telnet into a single PC and log in to the network. In order to install Everywhere Access, you need a PC with OS/2 and Warp Connect on the network. OS/2 handles multitasking so that many users can simultaneously access the network through a single PC, and Warp Connect, which comes with OS/2, handles TCP/IP or telnet access to the PC. Everywhere Access (EA/2) sets the parameters for the users who telnet into the network.

EA/2 is fairly inexpensive and gives multiple users simultaneous access to the network on a single PC. However, the CD-ROM drive connections must be made through OS/2 instead of DOS, so OS/2 drivers must be available for your CD-ROM networking solution. Again, some in-house technical expertise is needed for this since free technical support for EA/2 is available through e-mail only. Telephone calls to the company for technical support are prohibitively expensive.

In the end, after balancing all our needs against the money that was available for remote access, we chose to install EA/2.

Installing Our Choice: EA/2

As mentioned earlier, OS/2 is the operating system for Everywhere Access; OS/2 also handles user multitasking. Be sure that OS/2 drivers are available for your CD-ROM drives if your network requires any kind of drivers at the workstation level. There is also a DOS-based version of Everywhere Access, but it does not handle multiple simultaneous users.

Selecting the EA/2 Server

Be sure to select a high-end PC as the EA/2 server. Since the server will be handling multiple users simultaneously, it makes sense to use a fast and powerful machine for this. The more users you have the more memory the PC will need (approximately 1 megabyte of memory per potential user will be required). Select a machine with a high CPU speed to improve performance. The size of the hard disk is not as critical as the size of the memory. You need enough space to hold the OS/2 and EA/2 software and whatever temporary files your users may generate. However, if you are not using this machine for anything else, and you shouldn't be, a 1-gigabyte hard drive is more than large enough. But if you must choose between a larger hard drive and more memory, spend the money on extra memory and use a smaller hard drive.

Use a reliable network card for good network connection and an uninterruptible power supply in order to prevent unplanned shutdown of the machine. OS/2 is sensitive to being powered down with its files open and can get corrupted if it is not shut down properly. Also, plan for the EA/2 PC to have its own individual IP address.

Installing EA/2 Software

In order to install the EA/2 software, you create a virtual boot disk on the

How to Contact the Vendors Mentioned in this Article

BBSNet
MurkWorks
PO Box 610
Potsdam, NY 13676
315/268-1000
Fax: 315/268-9812
BBS: 315/268-6875
info@murkworks.com

J&L Chatterbox
J&L Information Systems
9600 Topanga Canyon Blvd.
Chatsworth, CA 91311
818/709-1778
Fax: 818/882-9134

Omniware
Logicraft Information Systems
22 Cotton Road
Nashua, NH 03063
603/880-0300
800/880-5644
Fax: 603/880-7229

EA/2
Supro Network Software
PO Box 18
Warsaw, Ontario
Canada K0L 30A
705/652-1572
Fax: 705/652-0570
info@snsi.com

OS/2 machine so that remote users are booted in individual DOS work spaces. This is not as tricky as it sounds and full instructions are included in the EA/2 manual. Next, you need to install network security measures and a number of those are built into EA/2. For instance, you can restrict the IP addresses that have rights to telnet into the network; you can restrict the files that users can access; and you can restrict read, write, and execute access to the files that they do have access to. You can also limit the total number of simultaneous sessions available in order to improve performance.

Terminal Emulation & Remote Printing

Regarding keystroke emulation, EA/2 accepts the most common terminal emulations, ANSI, VT-100, VT-200, VT-300, and VT-400. For function keys and other keys not provided on the particular terminals (such as page up and page down), alternate keystrokes are provided by the EA/2 software. For example, "esc F 1" emulates the F1 key. These keystrokes can be made at command level or they are also available via a menu-driven format. Finally, if you really want to give out software, a specially programmed version of Kermit is available that has all its keys programmed properly so that F1 is F1, and so forth.

Printing remotely has been another problem that we have faced. In the past, we were forced to redirect all remote printing to a file in the user's campus computer account. EA/2 allows redirection of printer output to files but it also allows redirection to a remote printer attached to the user's PC. This is much more convenient for users than having to hunt for their output in a file in their computer account, transfer it to their PC, and then print. However, users can still redirect their output to a file if they wish.

Conclusion

Remote access to the library is possible without a magic wand. We have seen increased use of the library in recent years either because of, or despite, the possibility of remote access. One reason for that may be that most full-text material is still only available inside the library. The effects that remote access will have on future library use as more full-text material becomes available online are yet to be examined but will certainly have a profound effect on how libraries do business. ▲

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