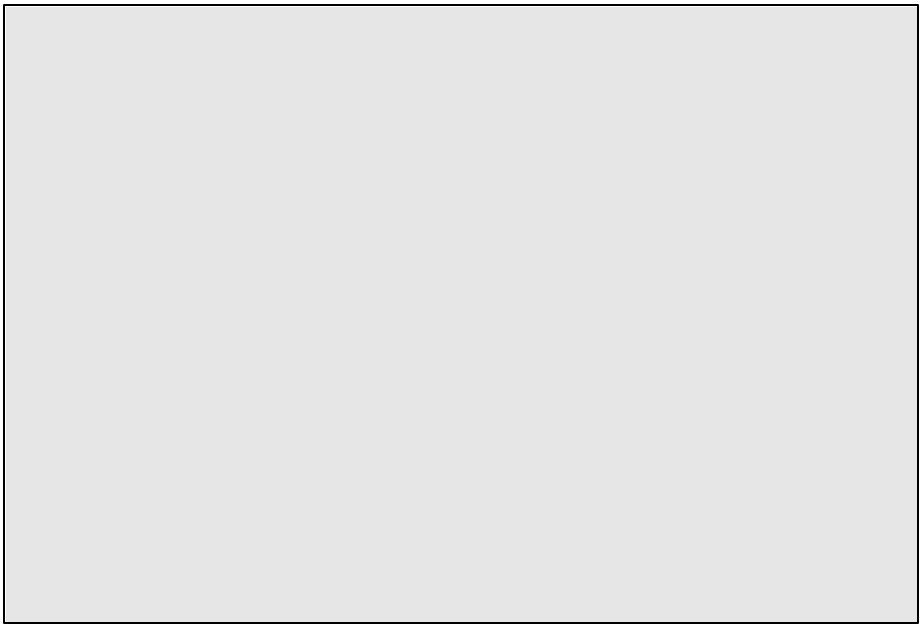
Case History

Stanford University Uses MacTCP to Connect the Campus

With MacTCP implemented, students can access multiple hosts concurrently during research projects.



Located in Palo Alto, California, Stanford University has 1000-4000 Macintosh personal computers on AppleTalk and TCP/IP networks and another 6000 Macintosh personal computers owned by students. The faculty use Macintosh personal computers for research; the staff uses them for administrative functions; and university students use clusters of Macintosh personal computers in dormitories and libraries for research and writing.

Many Macintosh users at Stanford need to use TCP for high-speed access to remote machines on the Stanford campus or at other locations. For example, the administrative staff uses an IBM 3090 supercomputer for centralized administrative information such as financial data, purchasing, student services, and personnel. Stanford developed MacSamson, a Telenet-based MacTCP application, to provide closely integrated terminal interaction with the 3090 time sharing system. In addition, the university has Digital VAX systems, SUN file servers, and a variety of minicomputers from other manufacturers.

To develop mainframe communications programs, the university has implemented MacTCP over Ethernet cabling. According to Director of Networking and Communication Systems, Bill Yundt, "Before MacTCP was available, we had written our own TCP/IP protocol stacks and used them in several applications. When Apple

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introduced MacTCP we removed our protocol stacks and replaced them with MacTCP. It fits better into the friendly, Apple communications environment, is integrated with the Apple Communications Toolkit, and frees us from making updates as Apple introduces new versions of the System software."

The most widely used application based on MacTCP enables users to conduct up to five Telnet sessions with remote computers, concurrently. According to Yundt, "This is a real time-saver. The overhead for keeping a session open is very low, so it's much easier to leave multiple sessions open than to close them and restart them as needed."

For example, the reference librarian might run one session with the university's on-line catalog, one to a minicomputer running a data library, another session to the Lockheed Dialog service, and yet another session to another information service. The librarian can consult several sources to answer a question, without spending time logging on and off different systems.

Another application, FTP (file transfer protocol), allows high-speed file transfer. "Using FTP, I frequently transfer Macintosh and mainframe programs under development at other universities or the National Center for Supercomputing Applications (NCSA) to the Macintosh at my desk at speeds of 50-100,000 bits/second," says Yundt. "By allowing this kind of exchange, MacTCP has vastly improved the ability of institutions to collaborate with each other in software development."

The university has used MacTCP to develop two applications to aid users in locating other users. Using the Finger program, a user can indicate a specific UNIX machine to find the identification of the person using that machine and contact information. Using the Whois program, a user can enter an individual's name and find out directory information about the individual, including their E-mail address. "Both applications are integrated with MacTCP, which permits their use while Telenet and FTP sessions are active. A user can be running five sessions, while interspersing use of Finger or Whois from a pull-down menu," says Yundt.

The next phase of MacTCP software development at Stanford will focus on interprocessing and co-processing applications. One planned program is a software license server that will allow a Macintosh user to access software that is licensed for a limited number of concurrent users. Another database application under consideration is an access program using SQL-type queries that will enable administrators to establish dynamic links between their own spreadsheets and mainframe data.