

## **Technology Planning: Oregon State University's Information Commons**

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The centerpiece of Oregon State University's newly expanded and renovated Valley Library includes a large public computing facility, the Information Commons. From the beginning, the Information Commons was planned to be more than just another "student computer lab", with a strong emphasis on offering a facility for library users to access information in electronic format in the same location as library reference services. Word processing and other software applications were to be offered only on a limited number of machines. An implementation group studied patterns of student computer use elsewhere and, in a report written in March 1998, made recommendations about the configuration of the new facility. Mostly due to budgetary limitations, some of the recommended features did not materialize, but the general nature of the facility remains true to the original intent.

### *Hardware*

The original report called for a mix of computers. Approximately 30% were to include library software, productivity software and Internet access; 50% were to be limited to access for library databases and Internet access; and the remaining 20% were to be for e-mail access or specialized multimedia applications. Surprisingly, since probably no one has referred to this report recently, the mix will still be approximately in these proportions after we install 50 more thin-client SunRay workstations this summer. The "specialized multimedia applications" never materialized due to support issues, but at the end of this summer the Library will have 74 Internet access machines, 53 computers with Internet access and Microsoft Office and a small number for Internet access and e-mail (e-mail is not necessarily available on other machines – see discussion below). In addition there is a single workstation with special "adaptive technology" hardware and software to enable computer use by people with disabilities.

The Library added new computers several times during the short life of the Commons, mostly in batches of 40 – 50 machines, and there is now an interesting mix of hardware, whose age and relative computing power somewhat dictates their use.

The very oldest machines, which are almost of museum-age by now (i.e. more than 7 or 8 years old!), are running Kermit to access the text version of the library catalog or the ageing Pine e-mail that is (amazingly) still offered to students as an e-mail system. We use Kermit for the telnet connection because few students are old enough to remember when everyone used it as the de facto standard and so do not know how to tamper with it as easily as they would with newer software. All of these machines are due for replacement in a few weeks' time.

A substantial number of relatively slow Pentium computers were purchased from Tangent Computers when the Commons opened and they are used to run only Netscape, either in kiosk mode to access only with the web-based library catalog, or to connect to the Web. Although they are Pentium machines, they are slow enough not to

run Microsoft Office very effectively – a controversial issue, since they have floppy disk drives and the thin-client workstations do not, as discussed below.

Our newest conventional desktop computers are Tangent Pentium 350s and are in high demand because they have Microsoft Office and disk drives.

### *Thin clients*

Our latest acquisitions for the Commons, and for placement throughout the library, are 95 *thin client* workstations. Thin clients are effectively sophisticated dumb terminals. They have enough internal intelligence to find and connect to a server and display whatever the server sends to them. All the real work is done entirely by the server, which does not even need to be located near the clients. At OSU, forty-five of these are NCD workstations connected to a Windows 2000 server. The NCD clients have a built-in Windows CE operating system, which is all that is needed to connect to the server. This operating system is the same as that used by some brands of Palm Pilot –type devices. They have no moving parts or disk drives. These are supported by two servers running Windows 2000 Terminal Services. Some of these client workstations offer Microsoft Office, while others are limited to Web access. The other 50 thin clients are Sun Computer's SunRay stations connected to a Sun Enterprise 250 server, running Sun's Unix (Solaris) operating system. Their purchase was made possible by a generous grant from Sun Computers. These eye-catching workstations will offer Netscape access only, since Unix-based Netscape is almost identical to Netscape for Windows.

There are several advantages to using thin clients in a public access setting:

- The workstations are cheap (~\$400 - \$500 to purchase) and have a much longer useful life expectancy than a conventional workstation. Since all the true work is done by the server, thin clients can apparently run almost any application. As new applications are developed, the thin clients can still be used although the server may need to be replaced. Replacing one or two servers is generally cheaper than replacing 45 conventional workstations.
- Updating the software on the server effectively replaces the software on all the workstations simultaneously, so management is much simpler and cheaper.
- All client workstations are identical, so if one fails, an unlikely event since there are no moving parts, it can be switched with another one and the new one needs no configuration or software.

Unfortunately, the lack of disk drives is also a disadvantage, since users like to take their data with them on a floppy disk. The library does not offer storage on the thin client server, but those machines, which offer Microsoft Office, require the users to login to an applications server, where remote storage is available. Nevertheless, the lack of floppy drives has made the thin clients less popular with users than the conventional machines. Recent technical developments suggest, however, that local floppy drives will be available for thin client workstations in the near future.

### *Security*

Various security issues have arisen since the Commons opened in 1999. Theft or tampering with equipment in the Commons has not been too great an issue so far, as the computers are all locked down with a security cable, and we have maintained

software security with Fortres 101 software from Fortres Grand Corporation. However, a more vexing security issue is anonymous e-mail. There were several unpleasant incidents, which culminated with someone sending an e-mailed bomb threat to campus security and the police removing a disk drive as evidence (which reminds me, we never did get it back!). Although the workstations, which offer applications like Office, require an authenticated login, the Internet access machines do not. Librarians felt that the Library should offer access to electronic information on the Web to anyone who comes in, without the requirement for identification. Unfortunately, a small number of people abused this open access by setting up anonymous e-mail accounts through sites such as *hotmail.com* and sending offensive or threatening messages. As these messages were traced back to computers in the Commons, we came under increasing pressure from network administrators to require a login ID for all machines. However, the Library found a simple, but effective, alternative. A login ID is still not required on Internet access computers, but access to free e-mail services is blocked. This was done by creating a *hosts* file to redirect the addresses of all the free mail services, which could be found (over 800 by now) to a local server describing student e-mail services. OSU students and staff can still access their OSU e-mail account on any machine and free mail service, such as Hotmail, can be accessed from any machine, which requires a login. A few machines can still be used by non-OSU users for access to free mail but these users must present an ID to use them. Since we removed the users' anonymity, we have not had any more complaints of abusive e-mail.

A similar security issue made possible by anonymous access to machines has also been resolved. Network Services received complaints of abusive language being used in a chat room for schoolteachers and the source was traced to someone using a Library computer, which does not require a login. This has been resolved by the Library supplying Network Services with the IP addresses of all machines, which do not require logins. Network Services will now be able to block access to certain sites from only these machines if they receive complaints from the administrators of those sites. Only one site has requested this so far.

### *Managing Access*

To offer better accessibility to a limited number of computers, the staff of the Information Commons has experimented with various ways of assigning users to specific computers for a set length of time, though only for computers where a login is required. In cooperation with the managers of several other computer labs on campus, the Library considered using a very sophisticated program, Lab Manager, which was developed by the University of Texas at Austin. Among other features, it offered a graphical representation on the Web of available computers; it automatically limited users to a preset time limit; and had a waiting list function. Unfortunately it was not possible to make it work satisfactorily in the OSU environment. For a short time, a manual method of putting names on a list after checking for a university ID was used. This was replaced by a locally developed online system and then later by the Library's Innovative Interfaces circulation system. A token with a barcode and a computer number was checked out to users with a two hour loan period, and only people with the appropriate token were supposed to use the associated computer. This worked reasonably well.

The whole checkout process was time consuming and has recently come into question as we have added more workstations and substantially improved workstation availability. Accordingly, it was recently decided to discontinue the need to check out computers. It is yet to be seen how well this will work when most of the students return in the fall, but

we are hopeful that most users will find a workstation fairly quickly when they need it. There have been some concerns that users will forget to log out from their accounts when they no longer have to check a token back in, because library staff has always reminded people about it as they returned the token. This does not appear to be too much of a problem so far.

Now that our student staff no longer needs to remain at the counter to check out computers, they are more available to assist users with computer questions and to walk around the facility to check that all the machines are working, as they should. It should be noted, however, that, unlike a regular student computer lab, it was never intended that complex computer questions would be answered at the assistance desk. Anything beyond basic assistance with the workstations is offered by telephone by the University's Computer Assistance Desk. The Commons' Technical Assistance Desk and the Library Reference Desk are adjacent to each other and work closely together, complementing each other's services.

The Information Commons has been both a great success and a great challenge. The new thin client systems have great promise, but remaining hurdles include smoothing out the process of laptop checkouts, personal laptop registrations to use laptops elsewhere in the library, and the imminent plan to start charging for printing. (The latter is an effort to reduce the number of printouts from the incredible number of 800,000 printouts per term). Laptops and printing are both topics beyond the scope of this article, but suffice it to say that they promise to keep things "interesting" in the near future.

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