

An Introduction to the Case Studies

The organizations studied in this report took three distinct approaches to using open source software for their public workstations. The first approach was to simply replace the Windows operating system with a Linux distribution on every PC. The second approach was to utilize a non-LTSP multi-user configuration, based on Linux, which supports two to six users on a workstation. Both Open Sense Solutions and Useful offer such solutions, although Useful's products are not fully open source. The third approach was to use the Linux Terminal Server Project (LTSP) software to run a terminal session for every user from a central server or set of servers. This thin-client approach can support a large number of users connected to one server—fifty or more, if the server is configured appropriately. It can significantly simplify system administration because the server administers all functions. This approach requires greater technical knowledge but may also result in greater hardware savings, reduced power consumption, and reduced air-conditioning costs.

The relatively recent availability of highly functional Web-based word processing, spreadsheet, and presentation software applications raises another question for libraries reexamining their public workstation solutions. Is it necessary to install any office productivity software on the PC at all? For the typical library computer user, it may actually be more helpful to learn to use Google Docs or one of the other online productivity suites. The advantage for the library computer user is that there is no need to transport data files around on a thumb drive or microdiskette. None of the libraries in this study have discontinued loading word processing software on their PCs, but Howard County Library and Crawford County Federated Library System both mentioned that they were

monitoring the development of the Web-based applications with interest.

Approach 1 Run Linux and a Suite of Open Source Applications on Your PCs

This approach sounds very straightforward, and that is its great advantage. But if you have more than a few PCs, it is important when using this practice to standardize workstation hardware and create a standard Linux distribution that can be used on all machines.

There are many ways to do this. One is to create a fully functional model system, then create an ISO image of your system's disk partition, using Partimage, a Linux utility. An ISO file is a CD image file with an .iso extension that you can use to burn a CD or restore a system. You may then use a system rescue disk created with another open source project, SystemRescueCd, to boot your target workstation and restore the ISO image of your model system to the workstation's hard drive. In order to save time, it is important that your network be configured to assign network addresses from a pool using DHCP. That way, you can avoid having to configure each computer's network settings manually. Alternatively, you could use the Ubuntu live CD to install Ubuntu, then replace most of the files on each machine with those you created on your model machine using a tar (archive) file. These approaches are not hard for someone with basic Linux system administration skills, but may not be appropriate for libraries new to Linux.

Some libraries will find it more cost-effective to contract with a vendor like Open Sense Solutions to provide them with updates on a live CD. When users have problems with the system, instead of diagnosing the problem, library support staff simply boot from the CD and then reinstall the system. This saves a great deal of time.

The Howard County Library is one research site that used this approach. The library has limited the number of system images that must be maintained by standardizing on the same low-cost PCs—it uses refurbished secondhand Dells that it buys on eBay or from National Computer Liquidators. It uses a customized Linux distribution called Groovix (based on Ubuntu), which is maintained by Open Sense Solutions. Howard County also includes a suite of open source applications, including OpenOffice.org, on its public computers.

The Groovix distribution from Open Sense Solutions is configured to time out and reset periodically to deal with abandoned workstations on which there is no activity and to reset when a user logs out. When the reset occurs, any new files left behind by a user are deleted, and any user-modified configuration files are returned to a known state. The software can also be configured to limit users to a library-defined session length. Open Sense also handles system updates for Howard County. Whenever a system is booted, the system runs a script that checks

for updates from Open Sense. If any are found, they are downloaded and installed automatically. This approach minimizes the maintenance load on Howard County staff and costs between \$50 and \$100 per year per machine.

Approach 2 Sharing a Single PC among 2–10 Persons Using a Non-LTSP Solution

Both Open Sense Solutions and Useful offer solutions for workstation sharing for up to ten users. Open Sense Solutions offers Groovix SLIM, which supports distinct sound and 3D video. Its fully open source solution utilizes Groovix, its custom Linux distribution (based on Ubuntu Linux), and is built upon the work of Aivils Stoss, Svetoslav Slavytchev, and the Linux Console Project. Any additions made by Open Sense Solutions are offered back to the open source community.

Useful Multiplier offers a similar solution that is based on open source tools, but also includes proprietary Web-based management applications for centralized administrative control, booking and reservation management, Internet filtering, and other functions. Useful does not offer support for 3D video in its Multiplier configurations.

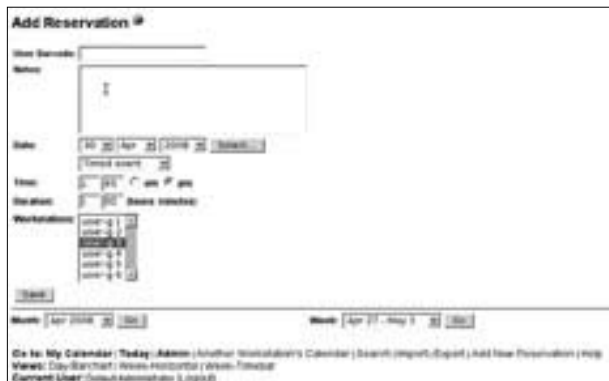


Figure 11
Groovix PC Add Reservation screen.

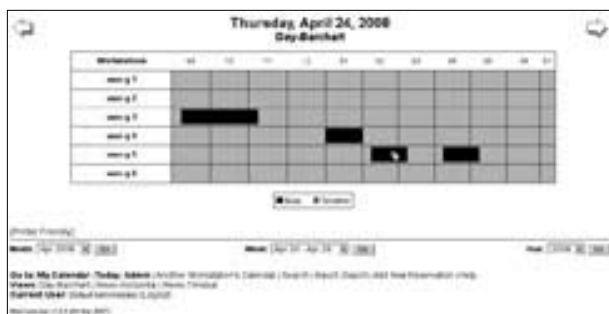


Figure 12
Groovix PC reservations chart.

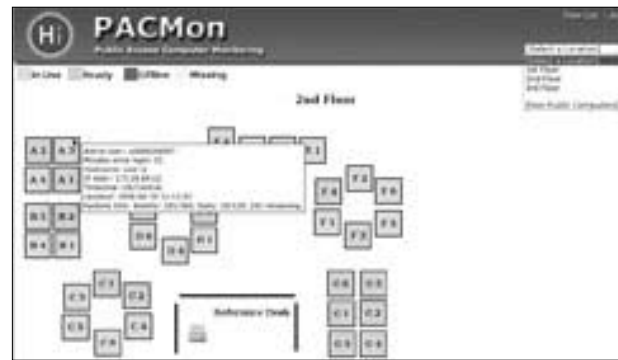


Figure 13
Groovix computer monitoring screen.



Figure 14
Groovix Internet filtering Access Denied screen.

Both turnkey solutions include regular system updates and support. The University of Vermont, Burlington uses Open Sense Solutions' SLIM product.

Approach 3 Run Open Source Applications on a Server Using Thin-Client Software from the Linux Terminal Server Project

The Linux Terminal Server Project (LTSP) produces software that facilitates running a number of users on a single Linux server, with each user utilizing low-cost terminal hardware or a PC running Linux and the LTSP

client software. The software does for Linux what you can do for Windows with Citrix, with the added advantage that the LTSP software is open source and free to download. Advantages to this approach include a low cost; easy, centralized monitoring and control; and, when diskless terminal hardware is utilized, low heat production and power utilization.

The Crawford County Federated Library System in Pennsylvania uses this approach for maintaining approximately seventy-six public-access workstations in seven libraries. Crawford County uses a combination of purpose-built diskless terminals from DisklessWorkstations.com and old PCs as terminals. It also runs OpenOffice.org, plus three browsers—Firefox, Opera, and Mozilla.



Figure 15
Useful DiscoverStation (now Desktop) welcome screen.



Figure 16
Useful station management screen.

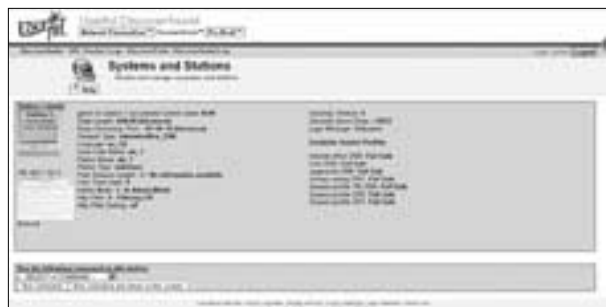


Figure 17
Useful station management screen showing station detail.