

I am a Peace Corps I.T. volunteer teaching computer practice as a promotable subject at a northern Namibian boarding school. I have a BS in Computer Science and worked as a system administrator, programmer, PC support analyst, and systems analyst for 21 years prior to beginning my service. I am recommending that the school migrate from a Windows environment to a Linux environment.

The Money Issue

This school has an air-conditioned computer lab with the following equipment:

Quantity	Processor	RAM	Hard Disk	OS
1	486	16mg	440mg	Windows 95
1	486	20mg	402mg	Windows 95
1	486	12mg	2gig	Windows 95
9	486	16mg	2gig	Windows 95
2	486	16mg	3gig	Windows 95
1	486	20mg	2gig	Windows 95
1	486	32mg	2gig	Windows 98
1	486	24mg	3gig	Windows 98
1	486	32mg	3gig	Windows 95
2	Pentium	112mg	28gig	Windows 98

The school has 3 valid licenses of Windows 95, 2 valid licenses of Windows 98 and no valid licenses for Microsoft Office. The school has a set of Windows 95 installation diskettes which is in very bad shape and 2 Windows 98 CD's, but no working CD-ROM drives which can be used with the Windows 98 start-up diskette for installation on the 486 machines.

All of the 486 machines were provided as used equipment that was donated by an organization in the United States.

Last year the principal was very proud that the school was able to purchase the 2 Pentium PCs (without any Microsoft Office licenses). His goal was to replace 2 PCs every year. The 486 PCs are circa 1993. At two PCs per year the current PCs would not be replaced until 2012 and at least two of the 486s would need to have a lifespan of 18 years.

Only 5 of the current PCs have enough system resources to run Windows 98. I believe only the Pentiums would have enough resources to run anything higher. Microsoft has already phased out support for minor upgrades and patches for at least some of the software the school is running. For example, I can no longer install Internet Explorer 5 from the website and most of the computers cannot support a higher version. If the school stays with Windows, it would need to be able to support Windows 98 until 2012. The school's ongoing O.S. platform would be limited by equipment that would continually be ten years old.

In addition to the hardware upgrades needed, there would need to be money available to address the software licensing requirements. In addition to the licensing for Windows and Office, the school would need licenses for virus-checking software that would need to be kept current (i.e. regular subscription payments) as they do suffer from computer viruses regularly under Windows.

I think it would be unrealistic to expect that the school or the Ministry would have more money in the future to apply toward computer resources. This is one of the more affluent schools in northern Namibia and currently the school cannot provide the learners with adequate textbooks, desks, and chairs.

By migrating to Linux the school would not need to budget money for hardware upgrades or licensing. The Linux server and thin clients would be provided at no charge from SchoolNet and would be loaded with all the software needed. As it is all open source software, licensing would not be an issue. SchoolNet would also provide the software upgrades as needed.

The Support Issue

Currently I am providing 100% of the computer support for the Windows clients. SchoolNet does support the Linux server and Internet access, but SchoolNet does not support Windows clients. Neither the school nor the Ministry has anyone available to support the Windows clients. When I arrived there were already several PCs down, some with quite simple issues. For example, on one system someone had changed the display properties so that the system was not usable and no one knew what the problem was, much less how to fix it. I have been able to keep 20 PCs working in the lab throughout the year although I have had to rebuild several starting by formatting the hard disk and reinstalling all the software. I have also had to diagnose and repair hardware problems, mostly by cannibalizing the parts from two 486 PCs with bad system boards that the school has from the original donation. The client support becomes negligible when using Linux clients and SchoolNet would provide that support when needed.

The inability to secure the Windows and Office environments to limit the access of individual users is a big problem. I can control this to some degree within my own classes by close supervision. I tried to open the lab to all the learners because it is such a great resource for them in an area where they have so few. This led to problems. I needed to spend my classroom time the next day resetting desktop and application program options to the standard that I needed to be able to teach effectively. I usually had many “blue screens” as well. Eventually we had to discontinue the open labs after I actually had to rebuild one of the computers. The ability to continue the computer practice classes had to take precedence.

I do not believe that a Windows environment is a good solution when most of the users (including the teachers) have little or no computer exposure or training. For the labs, I had selected a group of 11th and 12th grade learners who had had previous computer experience and training to supervise the labs, mostly to make sure the systems were shutdown properly and the equipment was not abused. Having a teacher supervise the labs would not be feasible. In order to allow each 12th grader to have access to the computer lab during two study periods a month requires almost 11 hours of supervision a week. The teachers here are already teaching 47 of 49 classes per cycle. The onus to limit user access and prevent inadvertent damage must be on the systems, not the supervisors.

With Linux, each user would need to log in with an account ID. Each computer learner could have a specific ID and there could be generic IDs for use by anyone else coming to the lab. The ability to control each user's access is inherent in Linux. In addition, when a user changes the desktop appearance it only affects that account. The generic users would not be able to impact the computer learners. And since Linux clients do not require any special shutdown, they could be used by a novice without any fear of damage to the system.

Internet access is a great resource in an area where there is limited availability to reading material and media sources. The teachers and learners make good use of it. Unfortunately, it has also greatly increased the number of viruses introduced to the lab. The current solution is to format the hard disk and reinstall the software from scratch. The chance of acquiring viruses would be almost completely eliminated by the migration to Linux.

Two additional benefits of migrating to the Linux platform are:

- Software upgrades are applied once at the server instead of at each individual client.
- SchoolNet can provide training on general computer usage to the school's teachers and learners.

I am convinced that the only financially sustainable and technically supportable option for the schools in this area is the Linux environment. That is why one of the projects I aim to complete during my service is the migration to Linux at this school.

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