

What's missing in today's college lab?

Listed below are concerns raised by teachers and administrators at the Faculty Development Program organised by the University of Pune, on Virtualization, at SIMCA, Pune during 15-16 January 2011.

Multiple Operating Systems

Typical computer labs today are dedicated Windows or Linux labs. The more enterprising/ accomplished administrator configures a machine for dual boot. Patch management and upgrading multiboot environment is complicated.

Mobility

Software configurations are typically tied to specific labs making re-assigning labs a difficult proposition. Installing on alternate machines to support mobility increases licensing costs and reduces desktop performance.

Low reliability

Given that lab use is prone to errors, machines are often rendered unusable for extended periods of time until administrators restore functionality. This severely impacts the overall availability of the lab.

Difficult to backup

Given that there are numerous desktops to be covered during backups, it is often the case that many of them are inadvertently left out. More often than not, no backups are taken of lab machines.

Multiple machines per student

In today's scenario it would be prohibitively expensive to provide students with more than one machine to run experiments, and therefore experiments involving networking and heterogeneous environments are often avoided.

Root access is disruptive

Providing students root access to their machines is a certain recipe to extended downtimes. Yet without administrative privileges, it is impossible to experiment with kernel drivers, application installations and many such experiments.

Difficult to maintain

Given that many users share a machine, it becomes very difficult to maintain the software configuration on it, especially when usb drives are regularly used to upload updates to the system.

Tedious to prepare for an examination

Before every exam, the lab machines need to be re-installed to ensure a pristine environment during the test. This process is extremely time consuming and therefore, labs that have been prepared for an exam are often quarantined before and during examinations.

Licensing

While for mobility, it would be nice to have all software installed on all desktops, that would substantially increase licensing costs. If one could uninstall and re-install application software at will, one could contain the licensing costs to cover exactly what one uses.

Difficulties in monitoring

It would be nice if teachers could access student desktops from their desks and keep an eye on the lab class.

Managing power consumption

Given the focus on the environment as well as from the economic perspective, it would have been nice to control/reduce the power consumption of computer labs. While it obviously would reduce direct energy costs, it would also require reduced installed capacity for the UPS systems.

Expensive & underutilized

A traditional computer lab is reasonably expensive to setup even considering dropping

hardware costs and to compound matters, the investment made is almost always under utilized.

Long refresh cycles

Given that desktops get obsolete and begin to fail rather quickly, a refresh cycle of 4 years is often the standard. Doubling the useful life of lab equipment would be interesting.

Access from anywhere

If lab sessions could be accessed from anywhere on the campus, the flexibility afforded would be nice.

Instructions not linked to experiment

Lab sessions still require significant hand holding on the part of the facilitator or teacher. If one were able to provide the required information via say a web course, the conduct of a lab session would become easier.

Sharing desktops

The ability to demonstrate a lab activity to an entire class without having to physically group around a terminal would help with the smooth conduct of a lab session.

Storing state information

If work done partially, or assignments submitted, can be preserved for a later date, it would greatly improve the utility of a computer lab.