General: On an overall basis, my lab seems to be functioning fine right now. Why should I try to manage it better?

Issues with labs

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.

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 tedious as well as 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 useful 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. The only other option apart from this is to be able to access the licensed machine from any location.

Difficulties in monitoring - It would be nice if teachers could access student desktops from their desks and keep an eye on the lab class. With the current setup, this is not possible and physically monitoring each student is close to impossible.

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.

Short 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.

Restriction on location of access - If lab sessions could be accessed from anywhere on the

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campus, the flexibility afforded would be nice. A user doing lab-work right now has to be physically present in the lab to access his/her work or has to carry his/her work data to a different machine with replicated configuration.

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.

Inability to share 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. As opposed to this, now the facilitator has to physically demonstrate the experiment to a group of students or to the entire class.

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. Today’s labs only allow to save data but do not save the machine status and all experiments involving configuration knowledge are affected due to this if setup performed within limited time is incomplete.

Unique solution ID: #1075
Author: Coriolis Technologies
Last update: 2012-03-22 12:23