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Using Thin Client Technology to Offset Costs in a Demanding University Environment

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Introduction

Public Universities continue to see the need to balance leading edge technology and information availability with the increasing costs that these require while attempting to keep education affordable for today's students. Incorporating thin client technology into the campus network infrastructure can help to increase the available technology without increasing costs or causing a rise in tuition by instituting a laptop requirement.

What is a thin client?

Those of us old enough to remember the days of dumb terminals might attempt to pigeonhole thin clients into that category. Today's devices are as far more advanced than those 3270 / VT100 terminals as today's computers are ahead of the original Apple II. Of course each has a processor and RAM along with onboard video and audio. They will also come in three basic flavors categorized by the operating system resident on the flash memory in the device. The most basic comes with a version of WinCE as the OS. More sophisticated versions have either a Linux load or Windows XP Embedded installation. The key to all three categories is that there is no hard drive resident on the device. In fact in nearly every example across all manufacturers there are no moving parts besides the keyboard and mouse. Each also has some sort of "write protect" built into the OS, so no changes can be made to the operating system on a permanent basis. Simply power cycle the device and everything is as it was when originally deployed.

Current Initiatives

The University of North Carolina at Charlotte is spearheading an initiative in the UNC system by deploying thin client devices in a number of different ways. These deployments include thin clients in stand alone kiosks, as web / email stations, in areas where data sensitivity is paramount (HIPPA, SSN, etc…) and when coupled with a back end infrastructure such as Citrix or VCL (Virtual Computer Lab, NSCU), these devices can be used in lab environments, as rapidly deployable workstations, even replacing PCs completely.

UNC Charlotte installed several thin clients in one of the campus cafes. Students are able to surf the web, check their email, and print to a Library pay-for-print station while enjoying the café atmosphere.

Thin Clients are also available throughout the Student Activity Center and the Campus Community Center in kiosk form. Students can login to the portal, check their email, or just surf the web with these stations.

A student initiative for the new Psychology Doctorate program was instituted with 40 thin clients installed in student offices and a student "bullpen" common work area. These students have access to University licensed applications via Citrix along with the ability to check their email, surf the web, and print to a shared printer.

Additional units are scattered through the College of Education, College of Computing and Informatics, College of Human and Health Services, Information & Technology Services, Admissions, and the Registrar's office for Faculty/Staff and student workers to use.

Additional installations will be taking place through the summer to increase their integration into the Student Government Association for web stations. Additional initiative is being planned for the Atkins Library to reduce maintenance and increase availability of workstations. With the increasing accessibility of web based applications the usefulness of thin clients continues to grow.

Advantages

Reduced time to deployment – Since the thin clients have only onboard flash memory for the operating system, time required for configuration is reduced dramatically, in many cases on a generic environment it can simply be the time required to set the unit up. To increase this effectiveness a deployment server can be incorporated to speed deployment of a custom load.

Reduced Support Costs – Once set up and configured, the maintenance costs associated with thin clients is practically zero. With no moving parts they are extremely durable, a major asset in a campus environment. They also have greatly reduced energy requirements, reduced heat dissipation and since all the devices can be managed from a moderately sized central server, reduced support personnel visits.

Reduced Acquisition Costs – Since only the operating system and some other basic functions actually reside and are performed on the device, multiple applications can be virtualized using just a few servers on the backend.

Longer Life Cycle – Since the demand on the device itself is reduced, they don't become obsolete as quickly as standard PCs. When looking at the usefulness of a thin client, you should double the typical lifecycle given to a desktop computer.

Fewer Security Incidents – With the incorporation of the “write protect”, along with the limited capability of the device and the ability to simply “push the button” to restore the device to pristine condition, the security advantages are apparent. Additional advantages can be leveraged in areas where local data can be a security risk such as when HIPPA guidelines need to be enforced. No need to be concerned about patient data on the device when none of it ever resides there besides in volatile RAM.

The Other Side

When considering the incorporation of thin clients into your environment, there can be a greater upfront cost if there is a desire to fully take advantage of their usefulness by creating the backend infrastructure. This means creating a Citrix farm or assembling a VCL solution for more powerful application needs. This cost is easily offset by maximizing concurrent connectivity of such an environment as well as the additional usefulness of such an environment with anytime, anywhere accessibility.

Conclusion

Thin clients should be adopted as a part of the overall workstation lifecycle management program across any campus. This implementation can be done in stages starting with stand alone and kiosk installations especially in public access areas. This allows device integration and familiarization without an initial backend application delivery method. Once a remote application delivery mechanism is in place such as either Citrix or VCL as detailed earlier, the implementation can be continued by deployment in areas that require more intensive computing solutions. In addition to this, thin clients configured as laptops and tablets can be used as checkout computers that don’t need support personnel to reconfigure them after each use. The advantage of thin clients configured in this way is the extended battery life they provide without the need for supporting the normally power hungry hard drive, allowing greater freedom and mobility.