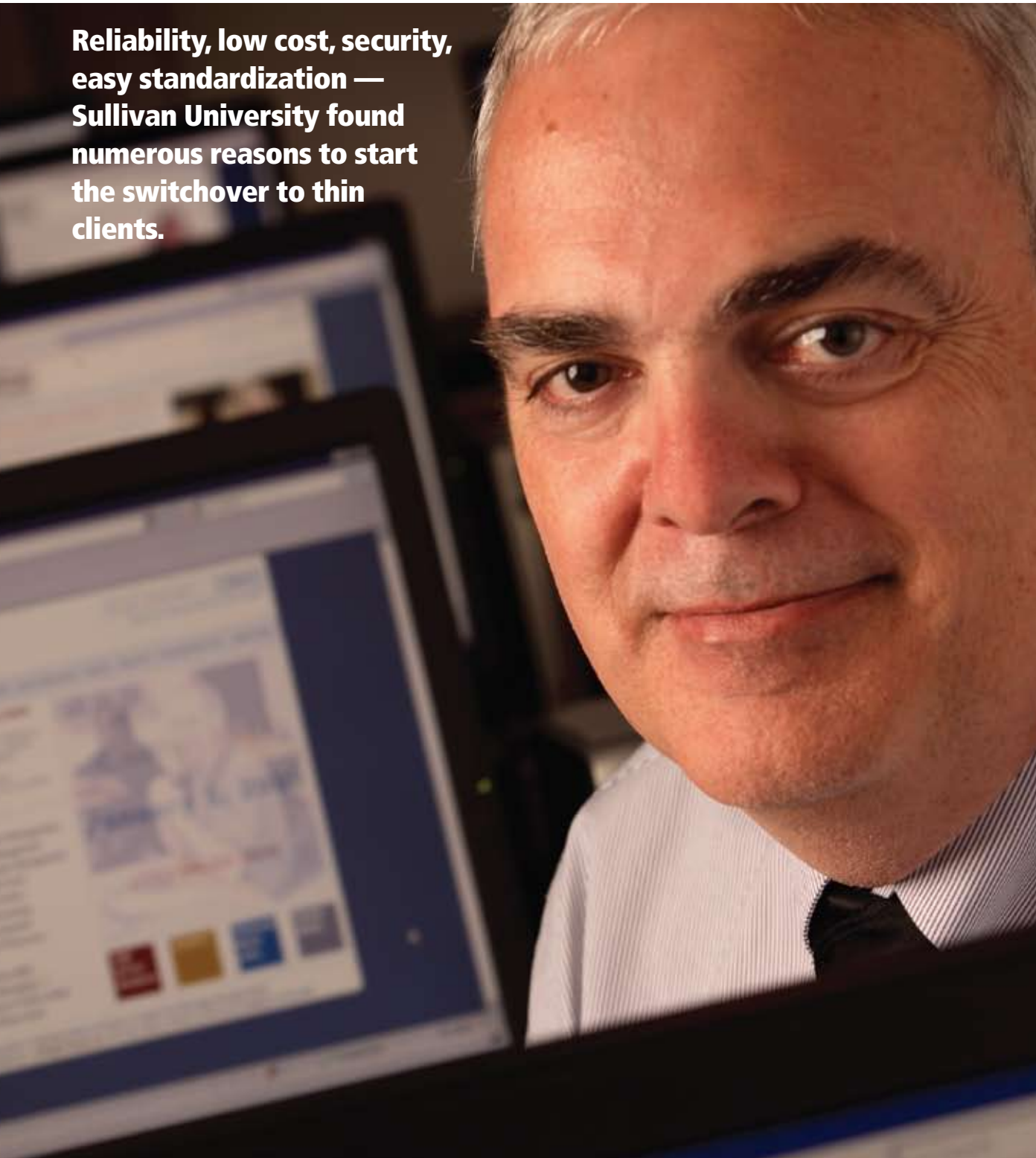


# Thin Clients Offer Robust Benefits

**Reliability, low cost, security, easy standardization — Sullivan University found numerous reasons to start the switchover to thin clients.**





Michael Grosse  
Chief Technology Officer  
Sullivan University  
Louisville, KY

Shortly after he was hired as chief technology officer in January 2005, Michael Grosse started putting thin client computers to work at Sullivan University (SU), the largest private college system in the state of Kentucky. Grosse had used thin client technology and watched it evolve for years, and was eager to introduce its cost-saving and management benefits to his new workplace.

Thin clients — solid state computing devices that provide network access to servers, which run applications and perform most of the processing — were first used at SU in a lab that supported training programs for college administrators, and also in one of its classrooms.

### The Right Tool for the Job

With the purchase of 15 HP Compaq Thin Client t5720s and five HP t5730s in the first half of 2008, there are now 135 HP thin clients in use in the SU college system. Moving forward, Grosse expects to continue a regular hardware buying cycle, adding 15 to 20 thin clients a quarter.

“When I arrived, there were no thin clients here, but there were obvious applications that were conducive to thin client technology, like the training lab, which had all its software hosted off servers,” says Grosse. “Thin clients have gotten more reliable, and their advantages in some situations just become more obvious.”

Reliability is a major concern in a complex IT environment served by a lean IT staff, says Grosse. Sullivan University is a conglomeration of three separate institutions: Sullivan University, Spencerian College and Louisville Technical Institute. All three schools focus on business education and career preparation, offering programs ranging from technical certification for Microsoft and Cisco skills to degrees in a variety of subject areas.

A total of 7,000 students attend the three colleges spread across six campuses located in Louisville, Lexington and Fort Knox. An additional 1,500 students take online courses. Grosse’s 23-person IT department also supports 1,100 faculty and staff members.

### A Strong Track Record

HP thin clients are the choice at Sullivan University for several reasons, says Grosse. It certainly doesn’t hurt that the manufacturer offers attractive pricing and promotions for educational institutions, but that wasn’t SU’s primary consideration.

HP has embedded the Microsoft XP operating system in its thin clients longer than other manufacturers, which makes its devices a natural fit for Sullivan University, almost entirely a Microsoft shop. Perhaps most important, Grosse has had more than a decade of experience with HP thin clients and their predecessors, and they have earned his confidence.

“In the early 1990s when I was a corporate desktop manager at B.F Goodrich, they weren’t even called thin clients,” says Grosse. “Compaq [now HP] called them remote-boot diskless PCs — basically PCs without hard drives that you could configure so that they could boot off of a network. I set them up so they could remote boot off the DEC VAX servers we had at the chemical plants that ran the applications people needed.”

By the time Grosse moved on to his next job with a small manufacturer in the late 1990s, thin clients were generating considerable technology buzz. As his company bought businesses in other cities, it implemented thin clients to provide services from the central data center at its headquarters. The buzz eventually died down around thin clients, but Grosse’s experience had shown him how useful they could be.

For one thing, as Terminal Services (the components of the Microsoft Windows operating system that allow thin client users to connect to applications and data on the network) got better, thin clients became more reliable in a greater range of situations. And the most recent version, Windows 2008 Terminal Services, represents a quantum leap in functionality, says Grosse.

## Thin Client, Skinnier Costs

Although he hasn't performed any formal ROI calculations, cost was a major factor in the decision to deploy thin clients, Grosse says.

"You're not paying the price that you would for a fully loaded PC," he says. "A lot of the stuff on a fully configured PC is never really used by the end user. The cost of a thin client is at least 20 percent lower than buying a similarly configured PC."

The total cost of owning thin clients is also lower than PCs because, without moving parts, they last longer, says Grosse.

"I have thin clients today that are being used on a daily basis that are almost four years old," he says. "I don't have a lot of PCs in the same environment that are still there after that time. The total cost of ownership is, I would say, at least two-thirds less than a conventional PC."

## The Beauty of Simplicity

Durability also contributes to the ease of management that Grosse says is the biggest advantage of the technology. All that's necessary to prepare thin clients for users is pushing a centralized desktop image down to the devices so that they can access appropriate applications on the server.

When the IT staff opens the box containing a new thin client, it takes about half a day before the device is ready to be placed on a user's desk, as opposed to two days for a PC.

"The beauty of them is that they are so simple," says SU Network Administrator Drew Arnett. "We're doing a lot less updating, a lot less antivirus, a lot less rebuilding. [We're saving time on] those general daily tasks that eat up IT department time."

Thin clients fail less frequently than PCs do. And even when one does die, there's minimal downtime because the devices are essentially interchangeable, says Arnett.

"If one of them doesn't work, we just put another one out there. There's no lead time for [thin clients] as there would be with a PC, [no need to] get the PC staged and custom-tailored for the user," says Arnett. "We can grab any thin client and set it up on somebody's desk. All of the settings and the software and all their files are server side, so we're good to go."

The ease of standardization across all the devices in a user group is another of the more significant benefits of the technology, says Grosse. With thin clients, installing or upgrading desktop software is all performed at the server, with no need to canvas the users and reconfigure their computers. The result is that everyone has the most up-to-date version of any application as soon as it's available.

## Looking to the Future

For now, most of the HP thin clients at Sullivan University are for administrative rather than academic use. As SU continues to buy and deploy the devices, the near-term goal is to migrate as much as 90 percent of the staff to thin clients, says Arnett.

As for the other single classroom deployment, students are still using the machines that were installed in 2005, says

Grosse. Today, the resource centers in the colleges are also outfitted with thin clients.

There are plans for future classroom deployments. The SU colleges have few classrooms designated for use by specific academic programs, so some PCs are loaded with as many as 60 applications to meet the needs of all the classes passing through in the course of a week. Eventually, the thin clients will have more widespread academic use, says Grosse, because of reallocation of physical space and the use of virtual desktops (see sidebar on next page).

## Consider the Network

While IDC analyst Bob O'Donnell sees renewed interest in thin client technology, he disputes the notion that thin clients faded away, along with their hype, after the late 1990s.

"There have been slow, steady sales increases for thin clients all along," says O'Donnell. "You have to differentiate between hype and market realities. We project the 3.7 million units shipped this year building to 7.2 million in 2012."

Many of the problems associated with the early use of thin clients can be traced to the slow networks on which organizations were trying to run the devices, says O'Donnell.

"Thin client technology is very network and bandwidth dependent," he says. "The networks are there now, and there's much better software to manage the connection, but it's still an issue to be aware of."

Having the network connectivity to provide adequate throughput on the thin clients is an essential issue for any

## Consider This Before Going Thin

IT managers who are planning a move to thin client technology should consider the advice outlined below from Sullivan University CTO Michael Grosse.

1. Understand your network and how the traffic from thin clients will affect its performance.
2. Find a good tool to manage your thin clients (such as Altiris, Wyse, etc.).
3. Understand the capabilities and limitations of the thin client environment. Not every application will run in a thin client environment.
4. Prepare your targeted users for the change. Education is the best defense against misconception.
5. Start small. Don't plan to replace all your desktops overnight. Learn what does and doesn't work before you propagate the environment.

higher education institution considering the technology, says SU's Grosse.

Most of Sullivan University's production servers are located in a commercial data center in Louisville. The major campuses of the college system are linked to the data and applications in the center through a 100Mb metro-Ethernet connection. Smaller campuses use a 10Mb metro-Ethernet connection.

"On a daily basis, we probably serve about 250 Terminal Services users," says Grosse. "They're not all on thin clients, but they're all accessing the terminal servers. If you just throw that all out there and haven't really looked at your network and how you're going to configure your terminal servers, your thin client users are going to be screaming at you."

## Making the Case

Despite the advantages IT departments recognize in thin clients, user reaction to the switch from PCs can be a major barrier to successful deployment. The move to thin clients means that users have significantly less control over their desktops, and IT managers have to be prepared for some pushback, says Grosse.

"There seems to be no middle ground in how people feel about thin clients at first," says Grosse. "A lot of people say the technology inhibits the end user. But a lot of other people say that thin clients make users more productive.


They're more focused because the technology doesn't allow them to wander into applications that aren't work-related."

Unfortunately, users are vexed by some of the same features that make thin clients attractive to IT managers. Thin clients are easier to secure, and they provide a consistent desktop environment for users in the office or when working remotely. There are no extraneous applications to undermine their performance, as can be the case with PCs, says SU's Arnett.

"It's not their job efficiency that users are necessarily worrying about with thin clients," he continues. "It's because they want to look at the pictures from their digital cameras at work or use one as a screensaver.

"In the PC environment, you often get crummy software installed by users that junks up the machines. Their performance starts to degrade, and pretty soon we're having to rebuild them. Every time the thin clients restart, they're returned to the way we set them."

IT managers first need to make a philosophical case for thin clients before they make an economic case, says Grosse. He recommends starting early to persuade administration and users, and stressing the capabilities of the technology rather than restrictions.

"In any institution when you introduce change, the more easily it's accepted the more productive it becomes," he says. "You have to introduce thin clients by saying, 'This is what you can do.' Emphasis how great that is." 

## The Next Step: Virtual and Thin

Sullivan University plans to continue and eventually extend its use of thin clients. But the future of the technology lies in virtualization, says CTO Michael Grosse.

"A lot of institutions like us are headed toward having a virtual desktop sitting out on a server," says Grosse. "All the processing will happen on the server more efficiently than it would on a desktop. So a thin client would be the perfect vehicle for accessing the virtualized desktop."

In many ways, desktop virtual machines combine the maintenance and management advantages of thin client/terminal server infrastructures with the user-pleasing flexibility of fully configured PCs. If policies permit, users can customize virtual desktops

and load their own applications, while IT departments can still manage them centrally on servers.

"A virtualized desktop will boot and load dynamically on a thin client and give you the same full experience everywhere," says IDC analyst Bob O'Donnell.

That potential could provide a new model for accessing information, according to Richard Katz, vice president of Educause, a nonprofit association that promotes the use of information technology in higher education.

"I imagine lots and lots of networked thin clients on campus, so that every 20 feet a student can sit down, authenticate to the network, and go to work," Katz says. "When virtualization of desktops is widespread, this will really change the mobility paradigm."

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