Education – Higher Ed

# University of Nebraska at Omaha

WYSE

THE GLOBAL LEADER IN
CLOUD CLIENT COMPUTING

Case Study


## Wyse thin clients support the University of Nebraska at Omaha business school's gold LEED status

### Challenge: Going for the gold

There's only one gold LEED-certified academic building in the state of Nebraska: Mammel Hall, the new College of Business Administration (CBA) facility on the Omaha campus of the University of Nebraska. Today Mammel Hall serves as the center for 2,500 students in the CBA: 2,100 in undergraduate programs, and the remainder studying for graduate degrees.

LEED (Leadership in Energy and Environmental Design) is the U.S. Green Building Council's benchmark for sustainable design, promoting a whole-building approach to sustainability. LEED certification was a core part of the vision for Mammel Hall from the outset. "We talk about sustainability with our students all the time, and urge them to take that commitment into the world of business," commented David Nielsen, director of technology and budget and building manager. "We want them to see that it's not just an idea we talk about, but a principle we follow."

When the design process began in 2008, the college had to decide what technology Mammel Hall would need… and how much the CBA could afford, in terms of energy consumption, ongoing maintenance, and capital outlay. Mammel Hall would have to be an extremely high-tech facility, both to help its students build the technology skillset required of modern businessmen and businesswomen – and to attract students, faculty, prospects, and other members of the community.


"We needed to double the number of computing devices in the labs and conference rooms to 230," said Nielsen.

## Viewpoint

"Mammel Hall would have to be an extremely high-tech facility, both to help its students build the technology skillset required of modern businessmen and businesswomen – and to attract students, faculty, prospects, and other members of the community."

**DAVID NIELSEN**
**DIRECTOR OF TECHNOLOGY AND BUDGET AND BUILDING MANAGER**
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University of Nebraska Omaha

But a university is a challenging environment for PCs. Nielsen knew that his team would have had a difficult time scaling up to maintaining 230 machines. "With our staffing, we would have been stretched to maintain 230 machines, spread across 121,000 square feet. Moreover, by the time the PCs were three years old, we'd need to allocate the funds to replace them all."

The CBA Information Technology (IT) team got to work, solving the challenge of implementing impressive technology at an affordable price. In the past, the team had explored the idea of virtualizing the servers but reluctantly ruled that out as too expensive to implement. Still, it started them thinking about virtualizing desktops as a cost-cutting measure – and a source of energy savings. Running 230 PCs would consume a large amount of electricity, which would be in conflict with the LEED certification that was such an important part of the vision for the building. Thin clients can deliver virtual desktops for less than 10 percent of the energy required by a typical PC.

The CBA IT team evaluated virtual desktop thin-client solutions from Wyse and HP. "As soon as we saw the user experience delivered by the Wyse TCX suite, and the power of the Wyse ThinOS, we knew that Wyse thin clients would enable us to deliver the high-tech experience we wanted, while giving us the manageability and power savings we needed," Nielsen said.


The team proceeded with caution. It made the decision to roll-out a pilot of the virtualized desktops utilizing Wyse V10LE thin clients. The pilot needed to be "real-world" but not be in a mission critical area. The college had six kiosks throughout the building that gave access to a web browser and very limited applications. This seemed to be the perfect fit for the pilot.

The kiosk pilot was a success and now it was time to test the thin clients in a lab setting. This would be critical to the final decision to continue down the road of virtualized desktops. One 25-unit lab needed new machines anyway, so the team replaced them with 25 Wyse V10LE thin clients as a proof of concept.

"On the first day we had the thin clients running, the chair of the department came by to comment on the 'new PCs' and thought they were great," recalls Nielsen. "He commented on how fast and quiet they were. We knew within days that we could easily scale up a thin-client deployment to the 230 machines we needed – and more."

## Cooler Solution

"Resource constraints might have resulted in making fewer workstations available to our students. Thin clients provided a less expensive, quieter and cooler solution, one most consistent with the sustainability theme so evident in our new LEED gold-certified building."

**LOUIS POL**
**DEAN**
**COLLEGE OF BUSINESS ADMINISTRATION AT UNIVERSITY OF NEBRASKA AT OMAHA**

## Solution

### Thin clients deliver what CBA needs – at a price it can afford

Today, approximately 230 Wyse thin clients support the CBA's activities. More than 100 run in specialized labs, including 50 Wyse C10LE thin clients in one large open lab and 30 dual-screen V10s in an investment lab where students view trading information and drag and drop real-time data into spreadsheets and other applications.

In addition, one classroom features 50 Wyse C10LEs to support hands-on teaching of business-related technology. A business development training room houses another 14 units. Unlike the previous building, Mammel Hall provides six student breakout rooms so that students can collaborate on projects in small groups using a C10LE and a 52-inch screen. They can use the units to access and explore the information and applications they need for their projects.

The school's seven conference rooms also feature Wyse C10LEs, all with a 52-inch screen to facilitate presentations. And, in one of the building's most futuristic touches, next to each of the 40 classroom and conference room doors is a touch screen, powered by a Wyse C10LE device that lists the schedule for the day and any special announcements. People can use the touch screen to pull up a map of the building, and check of the location of events across the entire facility.

On the back end, the CBA uses VMware in a customized way. David McKnight, the server and virtual infrastructure administrator at the college, wrote custom code that helps the college manage all of its Wyse thin-client devices. His approach has been to write scripts to take care of administrative tasks.

For example, he wrote a PowerShell script that turns on all the thin clients powering the digital signs in the building at 7:00 AM on school days and off again at 10 PM, with different schedules for weekends and holidays. He also created another PowerShell script which allows the team to replace any thin-client by simple entering the MAC address of the new and old thin client. This script takes care of assigning the virtual desktop and making all of the appropriate settings.

Though Nielsen originally thought that the school wouldn't be able to afford to virtualize its servers, the price difference between thin-client hardware and PCs enabled him to do so and still stay within his budget. The CBA had seven physical servers, each due to be replaced. Nielsen's team managed to get one more year of use out of them while awaiting completion of the new building, and then virtualized the servers, separating out dedicated virtual machines for SQL, Active Directory, file storage, and other areas. Today the data center houses seven VM hosts and easily supports a virtual desktop for each thin client.


## Managing the Cultural Transition

Nielsen and his team proceeded cautiously, starting with a proof of concept, only to discover that most users didn't notice anything different about the "new PCs" – except that they seemed faster and quieter.

"We don't have worry about down workstations in the labs anymore," comments Nielsen. "And by moving to thin clients we have improved the environmental conditions for the students in lab with much less heat and noise being generated when compare to PCs."

# Benefits

## Saving energy, time, and money

Visitors, staff, and students immediately notice the state-of-the-art computing technologies in Mammel Hall. This makes a great impression, which is important for the CBA's reputation – but it's only the most visible of the benefits of the thin-client implementation, which include energy savings, increased reliability, low maintenance, significantly reduced noise levels, and cost savings.

### Energy efficiency supports LEED sustainability

Despite doubling the IT capabilities available to students, Nielsen is still using less energy for computing than he did back when he was using PCs, because each C10LE thin client runs for almost 15 hours on the same power it took to power a PC for just one hour. Plus, with McKnight's script powering all the machines off and on automatically, machines only draw power when they're likely to be used. No longer are units left running when not needed.

The thin clients contribute to the building's LEED status in other ways, too. With no moving parts and no fans, the Wyse thin clients generate barely any heat, saving on cooling requirements. Plus, the units are more than 90 percent recyclable – and Wyse recycles them free of charge.

### Reliable technology delivers a high-quality learning experience

The quality of students' learning experience was one of Nielsen's priorities in selecting the thin-client infrastructure. He was determined not have downtime and the frustration it caused for students and instructors. "My view is that if a student is in a hands-on lab with a faculty member teaching them an application, but the student is sitting at a PC that isn't working properly, that student is being cheated," says Nielsen. "We can't have that happen."

The academic environment isn't an easy one for PCs, they are used in some cases up to 16 hours a day and by a multitude of students. McKnight credits the Wyse ThinOS with simplifying administration of the thin clients. "I can't imagine doing it all without the Wyse ThinOS," he says. "We use it for about 90 percent of our deployment. No matter what the students have done during the day, each morning when the systems power up, the OS is as fresh as when they were installed."

The Wyse thin clients eliminate many of the security concerns that McKnight used to worry about. Since there is nothing stored on the WYSE devices there is no information or applications that could be compromised in the event the device was stolen. This is critical in the rollout to staff and faculty. Also in the event of a power outage no data is lost because the virtual machine is on a host protected by a UPS and generator.


## Performance and sustainability

"I honestly believe that a full transition to thin clients is the only way to go, especially for organizations that want to cut costs, save energy and human resources, and increase productivity all at the same time. Wyse thin clients enabled us to meet all these requirements – and provide a valuable lesson for our students that you don't have to compromise performance for sustainability. In fact, the opposite – with Wyse, we've shown that the best choice for sustainability can be the best choice, period."

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### Less time spent on maintenance means more time for innovation

McKnight also appreciates the hardware differences between thin clients and PCs – especially older PCs, which were beginning to wear out and require repairs.

"I used to have to load the PC up in cart and take it back for repair, and it could take at least an hour or more sometimes to fix it," recalls McKnight. "Now, if there's a problem with a thin client, we solve it with a reboot. If that doesn't work, I can pull a thin client off a shelf, unplug the machine that isn't working, plug in the new one, and we'd be ready to go in five minutes or less. Plus I no longer need to take up storage space with spare inventory and parts."

By reducing the maintenance workload, the Wyse implementation has freed up IT resources. The CBA IT team has been able to implement and support twice the number of computing devices, touch-screen door signs, digital signs, and a state-of-the-art AV system throughout the building.

### Cost savings support the bottom line

Nielsen says that the school was able to deploy thin clients and virtualize its servers for approximately the amount of money that it would have cost just to deploy an equivalent number of PCs. So while he didn't save money initially, he did get more value from it. As an additional example, he cites the computing resources in the breakout rooms. "Not only were we able to put technology in those rooms, but we were able to put in beautiful and impressive computing devices for a fraction of what it would have cost with PCs," he says. Nielsen's team outfitted the breakout rooms with 52-inch screens picked up inexpensively from a local vendor, with Wyse C10LE thin clients and Bluetooth keyboards & mice.

Ongoing cost savings have already begun: Nielsen is saving on maintenance time and energy, and calculates that within five years he'll have saved $125,000 in reduced energy costs and avoidance of one full hardware replacement cycle.

"And that's just with our current deployment," he comments. "Now that we have the infrastructure, every time we want to add a thin client to the system, we can do so for approximately less than half the cost of a PC, saving about $400 every time."

Nielsen expects to avoid several hardware replacement cycles, hoping that the Wyse thin clients will last up to 10 years. "That's completely possible," he says. "And while PCs get more expensive to maintain as they age, the beauty of thin clients is they work or they don't. They won't be requiring more maintenance in their last years of service."

| ROI factor | ROI calculation | Benefit / Cost avoidance |
|---|---|---|
| Reduced costs of hardware | $400 savings for each PC replaced by a thin client | Replacing the school's 200 remaining PCs with thin clients will save $80,000 |
| Longer life cycle: 10 years vs. 3 | Using the same thin client for 10 years instead of buying three PCs over the same period saves an estimated $490,000 | Projected $490,000 in PC hardware savings over 10-year period |
| Reduction in support overhead | Instead of having to increase support resources for 230 PCs – productivity actually increased using thin clients | Avoided need to hire one new FTE at $37,000 |
| Lower electricity consumption | A thin client uses one-fifteenth of the energy required by a PC, plus helps save money on cooling | For 230 thin clients, $7,000 a year. |

## Conclusion

### Wyse cutting-edge technology also cuts energy and other costs

Business success today depends heavily on the intelligent use of technology, so business schools need to demonstrate good business practices as well as sustainability practices when incorporating technology. Mammel Hall does all that, with its LEED gold designation, incredible architecture, touch-screen door signs, large and silent computing labs, and streamlined thin-client devices.

"Resource constraints might have resulted in making fewer workstations available to our students," comments Louis Pol, dean of the CBA. "Thin clients provided a less expensive, quieter and cooler solution, one most consistent with the sustainability theme so evident in our new LEED gold-certified building."

"We couldn't have purchased or maintained the level of technology we now have if we were still using PCs," Nielsen confirms. "We would never have been able to put touch screen devices adjacent to each classroom door. We could never have put units in small conference rooms or student breakout rooms."

And the CBA IT team isn't done yet: they will be adding a mobile lab shortly, putting thin-client laptops on a cart to enable any classroom to become a computing lab on demand. At the same time, they are planning to start swapping thin clients for the PCs used by staff and faculty. "Within the next two or three years, we aim to have a PC-free building," Nielsen says.

Nielsen credits Wyse support staff with easing the transition, both by coming onsite to help plan out the implementation and by responding rapidly to questions or issues. And he credits the students, faculty and staff for their support of LEED and their enthusiasm for sustainability. "We have all learned lessons of sustainability and continue to do so," he says. "Businesses, other universities and the community look at us as a showcase of smart energy use."
The central IT department that serves the University of Nebraska at Omaha is now looking at using thin clients for digital signage and plans to launch a thin-client lab.

"I honestly believe that a full transition to thin clients is the only way to go, especially for organizations that want to cut costs, save energy and human resources, and increase productivity all at the same time," Nielsen says. "Wyse thin clients enabled us to meet all these requirements – and provide a valuable lesson for our students that you don't have to compromise performance for sustainability. In fact, the opposite – with Wyse, we've shown that the best choice for sustainability can be the best choice, period."

# Summary

## Customer

- College of Business Administration at University of Nebraska at Omaha
- 2,500 students

## Challenge

- Provide state-of-the-art computing facilities
- Minimize energy use in keeping with LEED certification
- Ensure IT reliability
- Reduce maintenance burden
- Maximize cost effectiveness

## Solution

- Centralized cloud client computing environment with 230 Wyse C10LE & V10LE thin clients connected to 7 VMware hosts

## Results

- Increased number and quality of IT resources
- Minimized power requirements to increase sustainably
- Virtually eliminated downtime
- Freed maintenance staff for other activities
- Implemented more sophisticated technology for the same price


### About Wyse Technology

Wyse Technology is the global leader in Cloud Client Computing. The Wyse portfolio includes industry-leading thin, zero and cloud PC client solutions with advanced management, desktop virtualization and cloud software supporting desktops, laptops and next generation mobile devices. Cloud client computing replaces the outdated computing model of the unsecure, unreliable, energy-intensive and expensive PC, all while delivering lower TCO and a superior user experience. Wyse has shipped more than 20 million units and has over 200 million people interacting with their products each day, enabling the leading private, public, hybrid and government cloud implementations worldwide. Wyse partners with industry-leading IT vendors, including Cisco®, Citrix®, IBM®, Microsoft, and VMware® as well as globally-recognized distribution and service partners. Wyse is headquartered in San Jose, California, U.S.A., with offices worldwide. More information can be found at www.wyse.com or by calling 1-800-GET-WYSE.



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