

CASE STUDY | AUSTIN COMMUNITY COLLEGE

# EMPOWERING STUDENTS THROUGH PERSONALIZED LEARNING

Austin Community College delivers self-paced student learning using virtual desktops powered by NVIDIA GRID™ technology.



vmware®  NVIDIA®

# Virtual workstations powered by NVIDIA GRID are delivering self-paced learning and support that is motivating students at the Highland ACCelerator to continue their educations.

## AT A GLANCE

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### CUSTOMER PROFILE

**Company:** Austin Community College

**Industry:** Education

**Location:** Austin, Texas

**Size:** Over 600 thin clients supporting approximately 3,700 students

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### SUMMARY

- > Community college in Austin, Texas, that re-engineered an abandoned shopping mall
  - > Innovated a novel approach to teaching math that tailors instruction to individual student needs
  - > Deployed 604 thin clients and over 800 virtual desktops powered by NVIDIA GRID technology in a former anchor store in a single day
  - > Student engagement and learning improved dramatically after only a few weeks
  - > Planning for future expansion at multiple campuses
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### SOFTWARE

**Hypervisor:** VMware vSphere

**Desktop and Application Remoting:** VMware Horizon and View

**Key applications:** General office and academic applications, streaming video, Google Hangouts

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### HARDWARE

**GRID boards:** K1

**Servers:** Dell PowerEdge R720

**Clients:** Wyse D10DP thin clients

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Austin Community College (ACC) is a nationally recognized two-year college serving Central Texas. ACC focuses on student success and providing affordable, flexible pathways to help students reach their education goals, learn new job skills, or advance their career. In August of 2014, the new ACCelerator high-tech learning lab began changing the way students learn by providing 604 computer stations spread over 32,000 square feet in a former shopping mall. This space facilitates self-paced learning for both individuals and small groups instead of the set pace of a traditional classroom setting.

## CHALLENGE

“Two thirds of our students are non-traditional students with jobs, families, and other commitments,” said Stacey Guney, Director of the Highland Campus ACCelerator at ACC. “Normally, they would need to drop a class when life intervened and then start over. The ACCelerator lets them learn at their own slower or faster pace without losing anything.”

This fresh approach to education combined with the need to build out a complete learning center from scratch spurred ACC to research how to best deploy technology to accomplish their goals while managing costs and ensuring both manageability and scalability over the long term.

“The ability to take online classes that include streaming video was a key requirement,” explained Melanie Dickerman, Senior Systems Administrator at ACC. “Our existing computer labs are equipped with individual computers. We visited another university that uses 400 Apple Macintosh computers to deliver online training. Maintenance was a constant issue, and they kept an additional 40 computers on hand in case something went wrong. We don’t have that kind of storage, and we didn’t want that kind of expense or maintenance overhead. Still, we needed to be able to deliver solid graphics performance.”

“Traditional textbooks are obsolete as soon as they’re printed,” added Charles M. Cook, Provost and EVP for Academic Affairs at ACC. “We need a great deal of flexibility to continually update our offerings plus



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## REASONS FOR GRID

- 1 Workstation-class graphics performance.
  - 2 Extremely rapid deployment.
  - 3 Reduced IT resources required for maintenance and upgrades.
  - 4 Cost effective compared to managing traditional lab infrastructure.
  - 5 Improved student engagement and individualized learning progress.
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**Traditional textbooks are obsolete as soon as they're printed. We need a great deal of flexibility to continually update our offerings plus the ability to scale on demand to accommodate continually evolving student and faculty needs. Our traditional labs did not offer this level of adaptability, and we needed to find a better solution.**

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Provost and EVP for  
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## SOLUTION

“When I first heard about the ACCelerator, I thought ‘Wow, this is big; how are we going to support that while reliably keeping the technology up and running?’” continued Dickerman. “We leveraged our long-standing partnership with Dell by reaching out to the Dell Solutions Center here in Austin, and they recommended implementing VDI with NVIDIA GRID graphics acceleration. We visited a business here in town that uses VDI and several other community colleges. I also attended VMworld last year, where I attended every VDI session possible. Dell also provided us with a demonstration and loaned us a server for testing.”

Two years of careful research and planning convinced ACC that VDI with NVIDIA GRID was the ideal model for building out the new campus. ACC purchased nine Dell PowerEdge R720 servers with dual Xeon processors and 256GB of RAM per server. Each server contains two NVIDIA GRID K1 cards that support up to 60 users per card and 120 users per server. Local SSDs provide fast access to the most-used data, and a Dell EqualLogic SAN with a mix of solid state and platter drives provides backend storage. Students access pooled virtual desktops using Wyse D10DP thin clients connected to the servers by a 10Gb fiber network using redundant Cisco switches. VMware vSphere provides the hypervisor, with Horizon and View providing the virtual desktops and VDI access.

“We built a very reliable infrastructure from scratch to support VDI,” added Dickerman. “Everything is redundant except for the single spare server, which is all we need. A failed desktop in one of our traditional labs sits there until IT can get out to diagnose and repair it, but fixing a failed virtual desktop is as easy as logging out and back in. Applying



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Two of us set up the VDI deployment and thin clients in one day, tested it, then hit the switch and went home for the night. We found six hundred and four fully functional virtual desktops the next morning, which would have been impossible in a traditional lab environment. Expanding VDI to other areas of this former mall and to additional campuses will be as easy as purchasing more servers and thin clients as needed, and then pushing our existing images to these new locations.

Melanie Dickerman  
Senior Systems Administrator  
Austin Community College

updates and patches from a single central location instead of traveling from PC to PC is another huge time savings for us.”

A few issues were encountered with sound and the incompatibility of some older USB devices with the thin clients, but most of these have been resolved. Storage was another issue; desktops used to take a few minutes to refresh once a class logged out, which users interpreted as errors. Adding additional storage resolved this problem by speeding up desktop refreshes.

## RESULTS

“Our redesigned developmental math curriculum rolled out to the ACCelerator on August 25th,” said Guney. “People who see this large area with 604 computers may think that our technology is the star; however, we focus exclusively on our students’ success. One student took advantage of this flexible environment to complete three semesters of work in only seven weeks. Other students who need extra time can see their progress, which motivates them to keep going. From the faculty side, our professors feel much more connected with their students here because a traditional classroom makes it easy for struggling students to hide. There is no hiding at the ACCelerator, and our faculty can tailor their approaches to address each student’s individual needs.”

Two thirds of the 3,700 students enrolled at ACC Highland Campus visited the ACCelerator within the first three weeks after it opened—a clear demonstration of how strongly students are committed to their learning.

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The ACC VDI deployment with NVIDIA GRID technology provides unprecedented flexibility and scalability. For example, some GIS students needed access to Google Earth, which was not part of the original plan. Delivering this functionality simply required enabling 3D graphics on the virtual desktops. Other students enrolled in virtual reality workshops also access 3D-enabled virtual desktops with excellent graphic performance. Further, VDI allows staff to rapidly re-image entire blocks of clients. A class at the ACCelerator can request a specific image on a certain number of clients to suit their individual needs and have the environment ready within minutes. Once the class concludes, those clients can once again run the standard image for other students. Faculty and staff can access virtual desktops remotely from any campus using laptop and mobile devices.

“Typically, change in higher education is not fast, but sometimes we have to step out of our comfort zone by experimenting and innovating,” concluded Cook. “At the ACCelerator, we are already seeing students who started at the very lowest developmental math levels and made it through the equivalent of 48 weeks of instruction.”

ACC is already working to expand the Highland campus and the VDI deployment. Going forward, ACC is planning a new campus that will include virtual desktops in a “mini ACCelerator.” They are also discussing whether to begin replacing the individual computers in other labs with virtual desktops.

To learn more about NVIDIA GRID visit  
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