

CASE STUDY | BUTLER COUNTY COMMUNITY COLLEGE

HARMONIZING PERFORMANCE, FLEXIBILITY, AND SAVINGS

Adding VDI powered by NVIDIA GRID™ technology is boosting graphics performance, lowering costs, and empowering guitar design at Butler County Community College.



Butler County Community College



VDI with NVIDIA GRID graphics acceleration allows students to maintain their rhythms by running 2D and 3D applications with full workstation performance from any location.

AT A GLANCE

CUSTOMER PROFILE

Company: Butler County Community College

Industry: Education

Location: Butler, Pennsylvania

Size: Almost 3,700 students

SUMMARY

- > Community college with budgetary constraints that forced it to reassess its existing PC replacement policy.
 - > Purchased servers to accommodate a future GRID-enabled VDI rollout, but faced challenges because of lack of dedicated graphics support.
 - > Adding NVIDIA GRID K2 cards resolved the performance issues and allows seamless remote access from the classroom or any computer lab on campus.
 - > Total cost of ownership is projected to be 85% to 90% lower over ten years compared to maintaining desktop PCs according to the previous replacement policy
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SOFTWARE

Hypervisor: VMware vSphere

Desktop and Application Remoting: Citrix XenDesktop and XenApp

Key applications: Solidworks, Autodesk Building Design Suite, Adobe Creative Cloud

HARDWARE

GRID boards: K2

Servers: Cisco B200 M3 and C240 M3

Clients: Wyse Xenith 1-3's and old desktop PCs used as thin and zero clients

Butler County Community College, located in Butler, Pennsylvania, is dedicated to providing affordable and accessible education, training, and enrichment opportunities that meet the needs of their community. The College is committed to fostering a supportive, student-centered environment that values integrity, diversity, and excellence. Butler offers 63 associate degree, career, and transfer programs to their body of almost 3,700 full- and part-time students.

CHALLENGE

Several of the academic programs at Butler include access to graphics-intensive 2D and 3D applications, such as SolidWorks, AutoDesk Building Design Suite, and Adobe® Creative Cloud®. These applications ran on traditional PCs located in classrooms and computer labs. Part of the school's planning and budget process included replacing these computers every three years to keep abreast of evolving technologies; however, ongoing budget constraints forced them to reexamine this policy.

"Losing our funding put us in a real bind," said Robert Fullwood, Desktop and Application Delivery Specialist at Butler. "We have students at late stages of advanced programs who are designing big projects, such as entire buildings complete with wiring and other details. On one hand, we can't adequately prepare students to continue their educations or join the workforce using obsolete technology. On the other hand, the challenging budget situation meant that we could not afford to keep replacing the individual PCs. This predicament, plus the inherent challenges of maintaining hundreds of desktop computers, was the key driver behind our search for an innovative solution."

SOLUTION

Research indicated that migrating away from the individual PCs to a Virtual Desktop Infrastructure (VDI) deployment that would deliver desktops and applications from centralized servers could deliver increased desktop and application flexibility while streamlining IT management and reducing costs. Butler first learned about NVIDIA GRID



REASONS FOR GRID

- 1 Full graphics performance when running even the most intensive 3D applications.
 - 2 Remote access from the classroom or any computer lab on campus.
 - 3 Streamlined curriculum planning and setup.
 - 4 Simplified IT management.
 - 5 Sharply reduced total cost of ownership over time compared to previous infrastructure.
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technology in 2012, and seeing a live demonstration at Citrix Synergy 2012 proved that this was the best solution for resolving their needs.

Bandwidth would not be an issue: The network infrastructure at Butler includes a 10GB backbone from the datacenter to the main campus. Remote campuses have datacenter connections ranging from 10GB to 50GB. From there, 1GB switches deliver connectivity to the classrooms.

"Transitioning from our desktop PCs to VDI was a yearlong process," explained Fullwood. "We began by purchasing two new Cisco C240 M3 and eight Cisco B200 M3 servers in order to support a future GRID-enabled VDI. We worked with Jason Hawks from AEC Group in Pittsburgh to set up VDI running on Citrix XenServer, XenDesktop, and XenApp. We dedicated three of the B200 M3s to Solidworks and Autodesk applications and two to Adobe Creative Cloud, with the other B200s either running different applications or being used for testing."

The initial VDI rollout did not include NVIDIA GRID technology. The benefits of streamlined IT management, flexible desktop and application delivery, and lower total cost were self-evident; however, the lack of dedicated graphics support hampered application performance. Solidworks was unusable, and the Adobe applications could not leverage their 3D capabilities.

"We finally added two NVIDIA GRID K2 cards to each of the C240 M3 servers during a break and rolled the new VDI deployment out to all users at once," Fullwood continued. "Part of this process included migrating those servers to VMware vSphere, because that's what we run in the datacenter. We kept XenDesktop and XenApp on the B200 M3 application servers. We had some challenges getting all of the application drivers for different versions to work properly, but we managed to work through it.

"From a user standpoint, some folks had a tough time making the switch, but they came around as soon as they saw how well NVIDIA GRID



The total long-term cost of the NVIDIA GRID-enabled VDI solution is expected to be far lower than our previous infrastructure. The simplified management and improved performance alone are well worth the cost, to say nothing of the flexibility we now have to give our students the operating systems and applications they need to get the most from their educations.

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was working. Today, we have between 2,500 and 3,000 user accounts, of which perhaps 275 are logged into VDI at any one time.”

Today, Wyse Xenith thin clients have replaced desktop PCs in 95% of the computer labs at Butler. CAD labs still have desktop PCs; however, these devices now access applications over VDI instead of serving them locally. Applications are assigned to student groups, and students can access VDI from any computer labs. Most students work either in the classroom or from one of the computer labs; however, some users do have remote VDI access using the Citrix portal.

RESULTS

Adding NVIDIA GRID technology to the VDI deployment yielded immediate results. Solidworks is working, the Adobe applications can use their full functionality, and performance has increased across the board. Students are no longer tied to individual PCs. The ability to access applications and data from any station in any computer lab at any time gives them increased flexibility to work around their schedules and engage more fully with the curriculum.

Instructors planning future courses can test and select applications far more quickly than before, and deploying those applications to student pools is also fast and easy. One course, Dynamic Guitar Design, uses the GRID-enabled VDI platform to help teach team-based design concepts that include product data and lifecycle management, basic math, and physics, woodworking, and basic electronics as students design and build custom solid-body electric guitars. These students can access and work on their project remotely from any device using the Citrix portal.

The IT department has seen a reduced volume of support requests. Further, eliminating the need to manage multiple labs and classrooms full of desktop PCs is allowing the IT staff to work more efficiently. For example, applications and updates can be deployed in just one or two days from a central location, instead of the one or two weeks per semester formerly required to visit and work with one PC at a time.

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Fullwood. “The simplified management and improved performance alone are well worth the cost, to say nothing of the flexibility we now have to give our students the operating systems and applications they need to get the most from their educations.

“We saw some immediate savings by deploying low-cost thin clients. Going forward, the total cost of our GRID-enabled VDI deployment will be roughly 10% to 15% of the total cost of replacing individual PCs at a rate of every two to four years compared to replacing thin clients every seven to ten years. The servers will run for a long time, and we can simply upgrade them or add new servers whenever we need additional resources. We are also saving money on electricity and streamlined IT management. Saving 85% to 90% normally means making some pretty dire sacrifices, but the exact opposite is true with NVIDIA GRID technology.”

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