

SUCCESS STORY | USC VITERBI SCHOOL OF ENGINEERING

DELIVERING CUTTING-EDGE PERFORMANCE BEYOND THE LAB

NVIDIA GRID™ vGPU™ helps the USC Viterbi School of Engineering address growing resource planning and course delivery needs.



Deploying VDI gives students full access to graphics-intensive 3D applications from any location while easing resource scheduling and IT management.

AT A GLANCE

CUSTOMER PROFILE

Customer: USC Viterbi School of Engineering

Industry: Education

Location: Los Angeles, California

Size: Over 8,000 students and faculty

SUMMARY

- > Top-ranked undergraduate and postgraduate engineering school in the U.S.
 - > Increasing enrollment and demands for technology created challenges on existing resources
 - > Leveraged NVIDIA GRID technology to deliver high-performance virtual desktops
 - > Expanding the deployment and adding NVIDIA GRID vGPU technology to increase user density per server
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SOFTWARE

Hypervisor: VMware vSphere

Desktop and Application Remoting: VMware Horizon View

Key Applications: Over 200 applications with various levels of graphics acceleration requirements.

HARDWARE

NVIDIA GRID Boards: K1 and K2

Servers: Dell PowerEdge R720 and R730

Clients: Various desktop, laptop, and mobile devices. Thin and zero clients are being phased in as existing computers reach end of life.

CHALLENGE

The USC Viterbi School of Engineering (USC Viterbi) is an elite, innovative school that has received international recognition for creating new models of education, research, and commercialization that prepare students to face real-world needs. The school's first priorities are the education of outstanding students and the pursuit and publication of new research.

It's also one of hundreds of colleges around the country facing a key technology challenge of the 21st century—a large, tech-savvy student body with multiple devices and sophisticated demands. Its 8,000 students are supported by 286 faculty teaching 1,300 class sections per semester, and 27 computer classrooms with over 900 desktop and laptop computers running more than 200 applications. The IT department consists of 18 full-time staff and about 50 student workers.

"Today's students are more knowledgeable about IT and have higher service expectations," said Michael Goay, Executive IT Director at USC Viterbi. "They are also increasingly mobile: the average student has two or three devices and wants to be able to access school applications and data on all of them. Meanwhile, more...classes are using graphics-intensive 3D software that requires ever-increasing processing power to run with acceptable performance. And of course, we have to keep every computer operating with proper application licenses, updates, patches, maintenance, and upgrades. Keeping up with these demands is an intriguing challenge, to say the least."

SOLUTION

USC Viterbi turned to NVIDIA to help address these challenges, kicking off a Virtual Desktop Infrastructure (VDI) project that lets students access Windows-based engineering applications at any time, on any device, from any location. It also frees the faculty to focus on teaching—rather than managing apps on students' devices—and eases the burden on computer labs by allowing classes to access applications from non-computer-equipped classrooms. Centralizing IT management means



With NVIDIA GRID vGPU™ technology, we are increasing user density, maintaining 100% application compatibility and providing smooth performance which will allow us to expand our school offerings.

Michael Goay
Executive IT Director
USC Viterbi School of
Engineering

the IT department can devote more energy to improving service while containing costs.

“Our initial VDI deployment using NVIDIA GRID™ graphics acceleration proved that we are on the right track,” said Goay. “We thought we had it made, and then along came NVIDIA GRID vGPU™ technology that will allow us to get even more out of our VDI investment by increasing user density while maintaining 100% application compatibility and full workstation performance. This will allow us to greatly expand our ability to serve more applications, classes, and students while opening the door for new online or on-campus classes to use 3D applications. Meanwhile, we’re looking to convert the existing desktop and laptop computers to zero/ thin clients in our labs as they come due for replacement.”

Going forward, USC Viterbi is looking to make additional enhancements to the growing VDI deployment. This includes replacing local SSDs with software-based storage acceleration technology to boot the VDIs in conjunction with the existing Dell hybrid storage arrays. The school is also looking at the best way to replace faculty and staff computers with virtual desktops and BYOD support.

“Giving students anywhere, anytime access to applications and data means that we no longer need to worry about scheduling labs and juggling competing demands. Implementing NVIDIA GRID and vGPU is completely changing our game for the better.”

VMware vSphere provides the hypervisor with VMware Horizon serving the virtual desktops. The virtual desktops themselves deliver a Windows roaming-user profile with folder redirection that unifies the desktop experience across physical and virtual locations.

Four of the servers are equipped with NVIDIA GRID K1 cards to support users running graphics-intensive applications such as Autodesk Maya® 2015, Dassault Systèmes SOLIDWORKS® 2015, Siemens PLM Solid Edge ST, NX Nastran and NX, and MSC Software Adams and Nastran.



REASONS FOR NVIDIA GRID

- 1 Freeing students and faculty from physical labs simplifies scheduling and resource allocation.
- 2 Graphics-accelerated VDI supports BYOD from any device at any time.
- 3 vGPU profiles maximize user density without sacrificing performance.
- 4 Simplified IT management frees resources to focus on further enhancements.
- 5 The solution scales to support varying needs.

The other four servers are equipped with NVIDIA GRID K2 cards to support users running applications such as Autodesk AutoCAD, Revit, Civil 3D, Adobe® Creative Cloud® 2015, and MATLAB.

RESULTS

“We learned some valuable lessons during this deployment,” Goay continued. “First, make sure you find out how your software licensing will work in a VDI environment; the floating licensing model works best. Second, get the right people involved, from the administrators to the faculty, students, and IT department. Third, conduct a pilot that is true to scale. Fourth, know your workload and buy only what you need. Finally, be ready for change because technology is evolving more rapidly than ever. Take vGPU for example: We can double highly-intensive user density to 16 users per server (64 total) running the K240Q profile and support 64 medium-intensity users per server (256 total) running the K120Q profile.”

To learn more about NVIDIA GRID visit www.nvidia.com/GRID

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