

CASE STUDY | LITTLE ROCK SCHOOL DISTRICT

# EMPOWERING INNOVATION IN EDUCATION

VDI powered by NVIDIA GRID™ technology is delivering innovative science, technology, engineering, and mathematics curricula to students in Little Rock, Arkansas.



# NVIDIA GRID is giving students the ability to access cutting-edge Science, Mathematics, Engineering, and Technology (STEM) learning via cost-effective virtual desktops.

## AT A GLANCE

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### CUSTOMER PROFILE

**Company:** Little Rock School District

**Industry:** Education

**Location:** Little Rock, Arkansas

**Size:** 28,700 students, faculty, and staff

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### SUMMARY

- > School district in Little Rock, Arkansas
  - > Implemented VDI to support innovative STEM curriculum
  - > Excellent performance running various graphics-intensive applications
  - > Lower total cost over time compared to replacing desktop PCs
  - > Expanding VDI to more computer labs and adding BYOD/Chromebooks through the 1:1 initiative
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### SOFTWARE

**Hypervisor:** VMware vSphere

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

**Key Applications:** Autodesk Inventor, RobotC, various web and Flash applications

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### HARDWARE

**NVIDIA GRID Boards:** K2

**Servers:** Dell PowerEdge R720

**Clients:** Wyse P25 zero clients & Dell Chromebooks

Little Rock School District occupies approximately ninety-seven square miles in and around Little Rock, Arkansas. The district consists of fifty schools (thirty elementary, seven middle, and five high schools, plus additional learning centers) with a combined enrollment of approximately 25,000 students served by approximately 3,700 faculty and staff. More than 55% of their teachers hold a Master's degree or higher. Little Rock School District places a large emphasis on preparing its students to attend the best colleges and universities in the United States. This emphasis has led the school district to create the highest level of access to Advanced Placement (AP) and Pre-AP courses for their students of any district in the state.

## CHALLENGE

Delivering curriculum to tens of thousands of devices with over one hundred software titles spread across more than 40 locations is a serious commitment. The school district uses both desktop PCs and 2,000 Dell Chromebooks to support its 1:1 initiative. The challenge is significantly greater when the curriculum includes graphics-intensive applications, such as Autodesk Inventor and the RobotC robotics programming language.

Project Lead the Way (PLTW) is a nonprofit organization that offers curriculum and professional development in science, technology, engineering, and mathematics for students in grades K-12. In addition, grants are available to help schools purchase computer hardware, software, and other essentials required for teaching the PLTW curriculum. The district applied for and received grant money to help upgrade the computer labs at Forest Heights STEM Academy to support the PLTW courses.

"We began researching and rolling out VDI to some of our Career Development labs in late 2013," said John Ruffins, CIO for Little Rock School District. "However, the real impetus came from our new superintendent, Dr. Dexter Suggs. His previous school district in Indianapolis implemented VDI with great success, and it was his vision to adopt this technology for the students of Little Rock School District."



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John Ruffins  
Chief Information Officer  
Little Rock School District

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#### 5 REASONS FOR GRID

- 1 Superintendent directive to move toward implementing VDI.
- 2 High-end graphics performance.
- 3 Scalable to support additional users and increased resources per user.
- 4 Built in BYOD support for future expansion.
- 5 Cost effective compared to replacing desktop PCs.

“A significant part of our IT budget was allocated to replacing the desktop PCs in our labs every three to four years,” added Christopher Phillips, VDI Administrator for Little Rock School District. “Most of the PCs in our three labs at Forest Heights STEM Academy were nearing the end of their service lives, and it therefore made sense to replace them with VDI and zero clients. The fact that the PLTW courses require graphics-intensive applications meant that we needed a way to include a high level of graphics support.”

#### SOLUTION

“What first began as a solution to save time and money through a more efficient desktop strategy rapidly evolved into a solution to provide Windows-based applications on Chromebooks,” said John Bubenik, Account Executive at solutions integrator Logical Front. “In May of 2014, the school district reached out to us when the Project Lead the Way opportunity came along and asked whether we could satisfy the system requirements for implementing the PLTW curriculum using VDI. Right away, we knew that this would be a perfect fit for NVIDIA GRID technology because of the built-in GPU support that would boost graphics performance across the board. It was a no-brainer to recommend this; no other solution exists for accelerating all applications.”

The NVIDIA GRID VDI project at Forest Heights STEM Academy proceeded from inception to full deployment in only two weeks before the start of the 2014-2015 school year. The system consists of three Dell PowerEdge R720 servers with two NVIDIA GRID K2 cards per server that are connected to Dell storage and networking. VMware vSphere and Horizon View provide the hypervisor and virtual desktop broker, respectively. Students access virtual desktops using Dell Wyse P25 zero clients and/or Dell Chromebooks.



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We used to need ten people to support all of the labs across the district. If our VDI rollout keeps going like this, then one person will be able to handle everything. Software changes and updates used to take weeks because we had to go machine by machine. Now, we simply deploy a single updated image and we're good to go in about thirty minutes. Our teachers know that the system is up and running without having to come in and check on individual computers before each lesson. It's pretty awesome when you think about it.

John Phillips  
VDI Administrator  
Little Rock School District

This system provides redundant access to about 60 VDI users; however, it is designed to support future expansion to roughly 3,000 lab PCs and Chromebooks, as well as the STEM curriculum at Forest Heights STEM Academy. Going forward, more video RAM can be allocated to each user as the need for graphics-intensive application ramps up.

The school district plans to continue expanding the VDI environment wherever opportunities to add value for students and staff exist.

"The overall solution far exceeded our design expectations, thanks to the partnership between the school district, Dell, NVIDIA, VMware, and Logical Front," explained George Thornton, Vice President of Engineering at Logical Front. "Right now, we are allocating 512MB of video memory to each VDI user and are anxiously awaiting the release of VMware Horizon View 6.1 in the spring of 2015, which will allow us to increase the allocation to as much as 2GB per user. Still, the system is performing flawlessly right now and will only get better from here. We reached out to the teacher overseeing the Autodesk program and he was amazed at the performance and very pleased with the VDI solution."

"From an end user perspective, the middle and high schools tend to be more flexible and progressive than the elementary schools," explained Ruffins. "Our K-5 schools run a number of different applications, including several legacy applications designed to run over local networks. Those applications don't run in a VDI environment, but we have been able to create workarounds to get them to work, and the schools are coming around."

Every campus already has WiFi access, and the district is currently piloting a BYOD program with plans to continue evolving in that direction. Currently, some students receive mobile devices that they can take home to receive one-on-one access and instruction. The current goal is to move toward full BYOD access through virtual desktops.

## RESULTS

The VDI deployment has received very positive feedback from students and teachers. The number of support tickets has fallen significantly, and most software issues that used to require a technician visit now can be solved with a simple reboot/refresh in 90%-95% of cases. The zero clients are also proving more resistant to vandalism than the desktop PCs, thus helping ensure that all students have access to the technology.

“There is one master image for our labs,” said Phillips. “We used to need ten people to support all of the labs across the district. If our VDI rollout keeps going like this, then one person will be able to handle everything. Software changes and updates used to take weeks because we had to go machine by machine. Now, we simply deploy a single updated image and we’re good to go in about thirty minutes. Our teachers know that the system is up and running without having to come in and check on individual computers before each lesson. It’s pretty awesome when you think about it.”

“Implementing VDI with NVIDIA GRID technology has yielded two key benefits,” concluded Ruffins. “First, the flexibility is phenomenal. Applications used to be tied to particular machines, but VDI allows our students to access any application from any location. This means that a lab that could support, say, 60 desktop PC users can theoretically support thousands of VDI users. Second, increasing power and flexibility like this usually costs a fortune, but we are looking at potentially significant cost savings over the next several years because we no longer need to manage or replace desktop PCs. We’re looking forward to bragging about these savings in our annual reports to our CFO. Going forward, we will be implementing VDI anywhere we can within the district using NVIDIA GRID technology.”

To learn more about NVIDIA GRID visit  
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