



NetApp®

## Success Story

# Oak Hills Does the Math: VDI on Cisco UCS, VMware, and NetApp + Champion Solutions Group = \$1.27M Savings



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solution delivered by:



### KEY HIGHLIGHTS

**Industry**  
Education

#### The Challenge

Deliver anytime, anywhere teaching and learning despite district-wide budget reductions.

#### The Solution

Build a virtual desktop solution on Cisco UCS®, VMware®, and NetApp®.

#### Benefits

- Give students and teachers 24/7 access to learning systems
- Enhance extensibility for growth and e-learning leadership
- Virtualize 1,200 desktops in 2 months
- Support access from student-owned devices
- Update desktops 98% more quickly
- Achieve 13-month payback, 3-year savings of \$1.27M
- Slash desktop TCO by 67%

### Customer Profile

The Oak Hills Local School District in western Hamilton County, Ohio, is the county's third-largest district, serving about 8,100 students in preschool through grade 12. For 9 years, Oak Hills has earned an Excellent rating on the state report card while maintaining the county's lowest per-student spend. Caring, highly qualified teachers and staff deliver a wide range of youth and adult services, including programs for gifted students, special education services, and vocational and community education. "Among the best, we continue to strive for better" (source: [www.oakhills.k12.oh.us](http://www.oakhills.k12.oh.us)).

### The Challenge

#### Reduce IT Costs While Delivering Anytime, Anywhere Teaching and Learning

For the Oak Hills Local School District IT team, summer vacation is never a day at the beach—it's a brief, two-month window in which to make needed technology changes and prepare for the new school year, which starts in August.

In 2010, Oak Hills IT launched an aggressive project to implement a new virtual desktop infrastructure to expand

accessibility to online teaching and learning systems. Dave Kearns, instructional support administrator for the district, describes the challenges: "Our schools operate on a five-year technology-refresh cycle, and we needed to retire some 850 aging and increasingly high-maintenance desktops and laptops at the high school. Unfortunately, this refresh cycle coincided with district-wide budget reductions of 10%. Although we retained a capital budget for the refresh, we needed a solution that would significantly reduce ongoing costs. At the same time, we had to build on a foundation that could accommodate long-term growth and support objectives for e-learning leadership."

The district's goal was to deliver "anytime, anywhere" learning-systems accessibility to every Oak Hills high school student. But Kearns recognized that with flat or shrinking operating budgets on the horizon, buying 3,000 or more new laptops was not an option. IT approached the problem from two directions: maximize the number of devices the district could afford by deploying a solution that would reduce ongoing costs as well as enable the

“We had an aggressive schedule that required live production testing. Critical to our success was deploying the right infrastructure and choosing the right partner [Champion Solutions Group]. We’ve built a highly extensible infrastructure that will help us deliver the highest-quality education and achieve e-learning leadership—all while maximizing the value of taxpayer dollars.”

**Dave Kearns**

Instructional Support Administrator, Oak Hills Local School District

use of more affordable thin clients, and augment the desktop pool by letting students use personal laptops and mobile devices.

Oak Hills IT worked with Cisco® Services and Champion Solutions Group, a technology infrastructure solutions and professional services provider and participant in Cisco, NetApp, and VMware partner programs. The team designed a desktop virtualization solution to help the district do more with less. Specifications included:

- High availability for 24/7 accessibility
- Accessibility from desktops, laptops, cell phones, and other mobile devices
- Low total cost of ownership (TCO)
- Management simplicity to help offload management tasks from a lean IT staff
- Scalability for student-population growth and future e-learning initiatives

### **The Solution**

#### **Build a Virtual Desktop Solution on Cisco UCS, VMware, and NetApp**

The evaluation process included visits to Ohio schools and universities that were already using virtual desktop infrastructures, as well as reviews of networking, server, and storage solutions from leading vendors, including Cisco, NetApp, and incumbent server and storage provider HP. The Champion team assessed the Oak Hills IT environment to help analyze project cost and impact.

The team determined the best fit to be a VMware View® desktop delivery system on the VMware vSphere® 4.0 virtualization platform running on a Cisco Unified Computing System™ (Cisco UCS) data center platform with NetApp unified storage. Selection of the Cisco UCS was based on its efficient form factor and high-performance processors, extended memory, and scalability, which make it well suited for virtual desktop hosting workloads. On the storage side, NetApp was chosen for its deep integration with VMware, performance, efficiencies, manageability, and scalability.

Deployed at the Oak Hills primary data center, the Cisco UCS solution is configured with eight full-width Cisco UCS B250 M2 Extended Memory Blades, each running two six-core Intel® Xeon® X5680 processors with 192GB of memory. A high-availability NetApp FAS3140 provides 12TB of storage capacity via Fibre Channel. To date, Oak Hills has deployed about 1,200 virtual desktops. Configured with NetApp Flash Cache™ intelligent read cache, the NetApp solution effectively handles the heavy I/O loads that occur during peak access times—for example, during daily desktop startups and at the beginning of classes, when large numbers of students log in simultaneously.

Kearns notes, “Cisco Services design validation and knowledge transfer and

Champion’s strategies for smooth adoption helped us meet an aggressive schedule and ensure that our staff could effectively manage the solution.”

### **Business Benefits**

#### **All Learning, All the Time**

Kearns reports that the solution was up and running for the start of the school year on August 25. Students and teachers can now access learning applications from any of the high school’s more than 1,000 desktops and laptops. The infrastructure also enables 24/7 access to data and services from a broad array of endpoint devices, including personal laptops and mobile devices such as Apple® iPad® and iPod® touch tablets.

“In the past,” says Kearns, “students had to work from the school’s media center or in classroom mobile labs with restricted access hours. Today, information is at their fingertips, any time, day or night. They can use their laptops or iPad tablets to work on projects during study hall or in the evenings to download homework assignments or to use Adobe Dreamweaver e-learning applications. This infrastructure has changed the rules about when and where students can learn—it dramatically expands their opportunities to research, develop teamwork and problem-solving skills, and progress through a curriculum.”

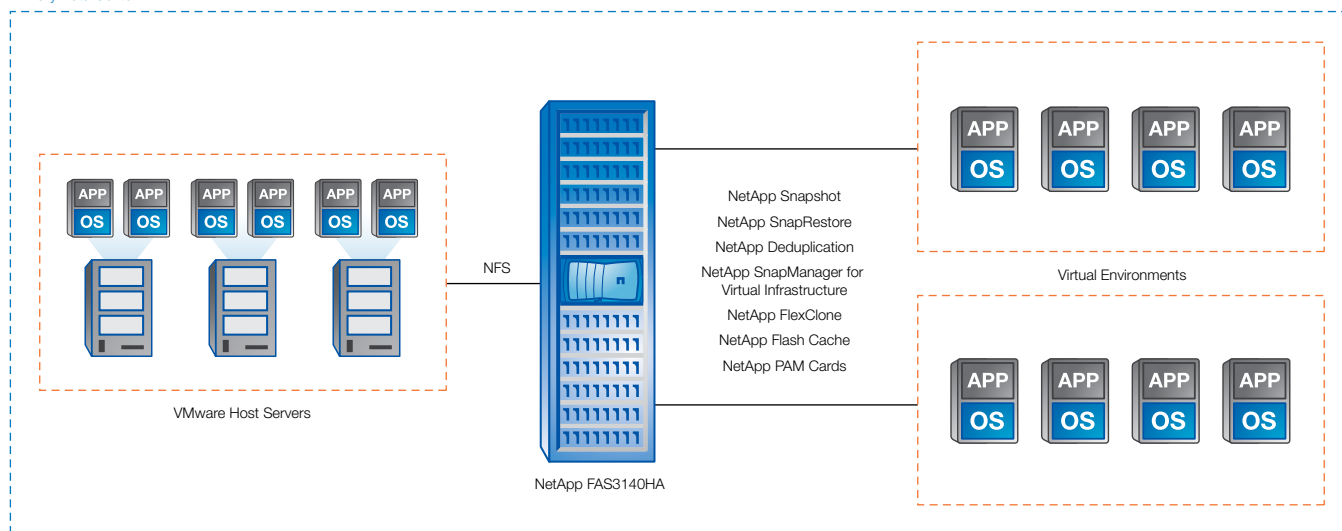


Figure 1) Oak Hills School District storage infrastructure.

### A+ Performance, Plenty of Room in the Locker

Mike Cooper, technology coordinator for the Oak Hills Local School District, says that the infrastructure keeps up with demands, even at peak usage: “Boot storms have not been an issue. That’s important, because you can’t ask classrooms to stagger logins.

“We know that we can bring at least 1,500 virtual desktops online with the current configuration. Cisco UCS extended memory technology will be especially beneficial as we move to new platforms like Windows® 7 that may require a larger memory footprint. We now have scalability to reach our goal of providing one virtual desktop to every high-school student or to expand services to other district schools. Affordable growth was a key benefit of combining Cisco UCS with NetApp storage.

“When we spec’ed this solution, we estimated that we’d need 12TB of NetApp storage for our initial deployment. Supporting the same 1,200 virtual desktops on a competing SAN would have required 100TB, or more than 8 times the storage we needed from NetApp. The efficiencies of NetApp storage make it a much more viable solution for virtual environments.”

NetApp also provides storage resources (via iSCSI) to the Oak Hills virtualized-server environment based on VMware.

“The NetApp native multiprotocol gives us flexibility,” says Cooper. “Today we’re leveraging FC and iSCSI connectivity, but we may move to FC over Ethernet. When you’re making this kind of investment, you have to know that as your needs and technologies evolve, the solution can evolve with you, and that you won’t be faced with a costly rip and replace. With the Cisco UCS, VMware, and NetApp infrastructure, we don’t have to worry about that—we’ve deployed a solution from industry-leading vendors collaborating to deliver technologies that work and scale together.”

### Lunch Money and Innovation

Kearns suggests that although the initial capital investment required was comparable to that of a traditional desktop deployment, long-term cost savings make the virtual desktop solution much more economical. Bill Ginn, client manager at Champion, offers the financial details: “We worked with Oak Hills to do comprehensive cost analyses that show a 13-month payback, 166% ROI, and IT capital and operating savings of more than \$1.27M over 3 years. The savings from this infrastructure come in many forms, including hardware, space, energy, and administrative efficiencies. Oak Hills, for example, can now leverage low-cost thin clients—instead of buying \$1,200 laptops for students, they bought \$450 HP thin clients. Desktop TCO is 67% lower.”

Kearns emphasizes administrative benefits: “Teachers seem by nature to be always researching, exploring, and striving to expand horizons. It can be challenging for an IT team to keep up with their appeals for better, faster, more innovative. But this new infrastructure helps us be more responsive.”

“In the past, a desktop update would have taken five or six people 4 days,” Cooper observes. “Using Cisco UCS pre-configured service profiles in conjunction with VMware and NetApp rapid cloning capabilities enabled us to complete the same process in 6 hours—and because much of that process is automated, it actually took just an hour of my time. We have tremendous flexibility to support our 150 teachers without overburdening a lean IT staff of 9 that supports 8,100 students at nine district schools.”

### Among the Best, Striving for Better

“Our staff and teachers have been patient and supportive of this project,” summarizes Kearns. “We had an aggressive schedule that required live production testing without the luxury of comprehensive Q&A. Critical to our success was deploying the right infrastructure and choosing the right partner. The Champion team has been with us at every bump and every milestone. They understand the technology and the demands of our environment, where everything is time sensitive. As a result, we’ve built a highly

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**Mike Cooper**

Technology Coordinator, Oak Hills Local School District

extensible infrastructure that will help us continue to attract the best teachers, deliver the highest-quality education, and achieve our goals for e-learning leadership—and do it all while maximizing the value of taxpayer dollars.”

#### SOLUTION COMPONENTS

##### NetApp Products

NetApp HA FAS3140 with NetApp Flash Cache solution  
NetApp FlexClone® software

##### Protocols

NetApp SAN (FC, iSCSI)

##### Environment

Cisco UCS, B250 M2 blades  
VMware View, VMware vSphere 4.0  
Microsoft® Windows Server® 2003, 2008

##### Partner

Champion Solutions Group  
[www.championsg.com](http://www.championsg.com)

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