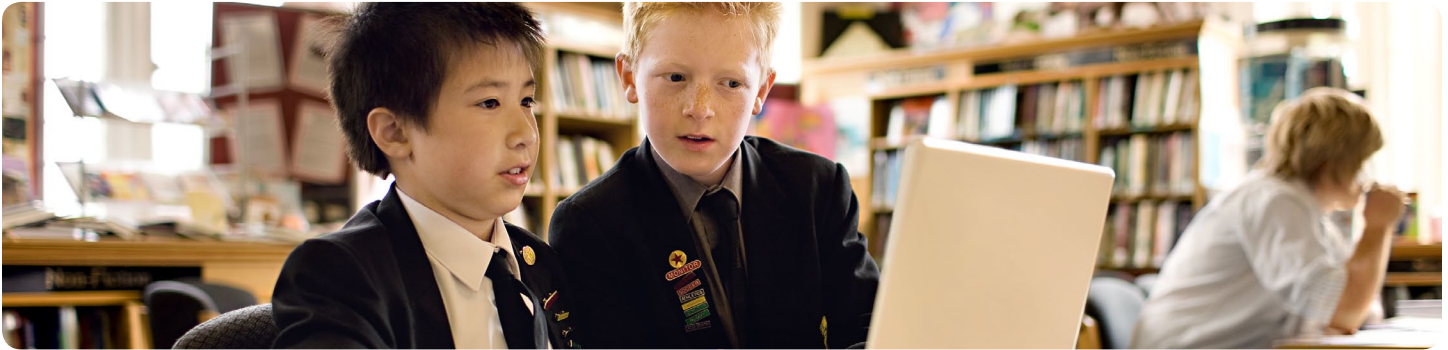# School Expands Services with Virtual Desktop Environment

Executive Summary

- **Customer Name:** Oaks Christian School
- **Industry:** Education
- **Location:** Westlake Village, California
- **Number of Students:** 1500
- **Number of Employees:** 250

Challenge

- Expanding academic services for students and faculty across devices
- Reducing expenditures by extending life of aging computers
- Maintaining high availability for critical academic applications

Solution

- Cisco Desktop Virtualization Solution
- Citrix XenDesktop built on Cisco Unified Data Center and Nimble Storage

Results

- Reduced time and cost of IT management, while extending life of existing end point devices
- Improved availability of services
- Reduced boot times by 75 percent, decreased login times by more than 90 percent for virtual desktops, and boosted storage performance by 200 percent

Oaks Christian School uses Cisco Desktop Virtualization Solutions to improve educational services for students, faculty, and parents.

Challenge

Located just outside of Los Angeles, Oaks Christian School (OCS), an independent college preparatory school, has helped hundreds of students pursue academic excellence, artistic expression, and athletic distinction. Since 2000, OCS has grown to include a thriving student population of nearly 1500 students in grades 6 through 12 with a reputation for all-around excellence. In recent years, OCS has expanded its programming with summer and online classes to meet the needs of even more students.

With the school's desktop computers beginning to show their age and an overall IT infrastructure in need of an update, OCS IT reevaluated its IT investments and looked to adopt solutions that would offer maximum impact to students, faculty, and parents. The IT department established a strategy around a three-tier effort.

First, the school wanted to explore the use of virtual desktops to extend the life of current PC hardware, while improving performance and enabling students, faculty, and parents to access systems remotely. OCS also wanted a more scalable, flexible data center architecture to support the expansion of online courses, which already included a successful program with 40 full-time and several hundred part-time students enrolled. Finally, OCS wanted to expand the availability of academic services, including computer-based coursework, lesson planning, and the student information system to students, parents, and faculty.

"Our first priority clearly is to foster student learning," says Darrell Parker, director of information systems at Oaks Christian School. "As we bring more technology into the classroom, it becomes more important to adopt flexible solutions that reliably support the changing needs of students and educators."
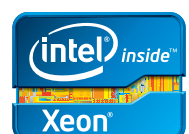
> "Service profiles in Cisco UCS Manager make provisioning new servers incredibly easy, requiring only minutes instead of hours. We can move or migrate virtual servers on the fly, effectively eliminating downtime caused by routine maintenance or unexpected failures."
>
> – Ryan Aquino
> Senior Systems Engineer
> Oaks Christian School

Users across the enterprise have varying performance, personalization, and mobility requirements. Some require the offline mobility provided by laptops, while others need a high-performance, fully personalized desktop or simple access to any number of apps from their iPad. Citrix XenDesktop meets all these requirements in a single solution with its unique delivery technology. With XenDesktop, IT can deliver every type of virtual desktop or app, hosted or local, optimized to meet the performance, security, and mobility requirements of each individual user while optimizing the cost of deployment and ongoing management.

In addition, rather than continuing to support a growing number of expensive hardware solutions, OCS decided to expand upon its existing Citrix implementation with Cisco® Desktop Virtualization Solutions housed on a powerful Cisco Unified Data Center environment. OCS chose Cisco Unified Data Center solutions not only because of its past successes using Cisco products, including voice over IP (VoIP), but also for its excellent support of high-performance virtualization. Using Cisco Desktop Virtualization, IT staff can spend less time managing and maintaining individual computer terminals and more time delivering reliable services to students and faculty, no matter where they are.

OCS also chose to upgrade its storage environment. The school selected the Nimble Storage CS array because of its stellar performance, the ability to easily scale, and its compatibility with both Cisco Unified Computing System™ (UCS®) and Cisco Unified Communications solution.

Solution

OCS transformed its IT infrastructure by transitioning from Dell servers to Cisco UCS B200 Blade Servers. The Cisco UCS B200 Blade Servers deliver performance and density for virtual applications in a flexible form. Housed in the Cisco UCS 5108 Series Blade Server Chassis, the Cisco UCS servers streamline the data center by enabling connections and switching delivered through the chassis instead of to each individual server.

Cisco Switches form the backbone of the network, delivering high performance that supports all services to students and faculty. Cisco UCS 6248 Fabric Interconnects and Cisco UCS 2208 Fabric Extenders extend the fabric between the network and the Nimble storage solutions with unified ports that are capable of providing Gigabit Ethernet, Fibre Channel over Ethernet, and Fibre Channel connections. With a consolidated footprint and fewer connections to manage in the single data center, IT has seen productivity improvements that enable existing staff to deliver more services.

Cisco Desktop Virtualization Solutions integrate easily with Citrix XenDesktop and Citrix NetScaler to produce efficient, secure, and scalable virtual desktops. Rather than loading applications onto every computer, users can access virtual desktops and school systems simply by logging in from any computer with an Internet connection, even from home or after school hours. Since applications, updates, and security measures, such as malware detection, are all handled from a centralized location, Cisco Desktop Virtualization Solutions reduce the management burden placed on IT staff by nearly eliminating the need to maintain individual computers around the campus.

Pushing processing from individual computers to the central servers also lowers the performance requirements from each computer, reducing the need for costly upgrades. For OCS, this capability means that it could extend the life of its aging desktop computers by repurposing many of them as virtual desktop endpoints. Centralizing services on virtual systems also makes it easier and more reliable for users to access services from personal computers and mobile devices.

Results

The Cisco Desktop Virtualization Solutions help enable OCS to provide new technologies that give students an advantage in the classroom. Students gain more experience with advanced creative software, such as Adobe Photoshop, over virtual desktops to enhance class work and increase technical skills. Teachers can enter grades or work on lesson plans from anywhere. Expanded online education provides a particular advantage to OCS, enabling the school to reach many more students beyond the physical limitations of its campus.

By transitioning the data centers to virtualized Cisco UCS servers, OCS improved both accessibility and continuity of services by eliminating downtime, as well as reduced power requirements. While Cisco Desktop Virtualization Solutions improve access to services on campus and off, the accessibility means nothing if services go down. Students in particular need to be able to access services online so that they can complete their assignments according to their busy schedules.

"Service profiles in Cisco UCS Manager make provisioning new servers incredibly easy, requiring only minutes instead of hours," says Ryan Aquino, senior systems engineer at Oaks Christian School. "We can move or migrate virtual servers on the fly, effectively eliminating downtime caused by routine maintenance or unexpected failures."

OCS is also using Cisco solutions to manage bring-your-own-device (BYOD) initiatives. Modern OCS students are more likely to bring their own laptops, tablets, or mobile devices to access notes, research, and assignments in the classroom. Virtual desktops create a standard platform where all students have access to the exact same applications, including the same updates and versions, which makes lesson planning much easier for teachers. "Because they minimize the need to provide technical support and enable students and teachers to spend more time concentrating on lessons, virtual desktops with Citrix and Cisco are a great solution to BYOD," says Parker.

Powerful Cisco UCS servers have also greatly improved application performance on virtual machines. Unlike physical servers, virtual machines are better able to balance loads and are, therefore, less affected by boot storms or login storms that can occur when many people try to log into the system at the same time.

"We usually don't hear from users unless there's a problem, but staff and faculty have been wowed by the change in boot and login times," says Aquino. "Cisco UCS has helped us speed up boot times from four minutes to less than one minute and login times from 45 seconds to under five seconds. Additionally, we've achieved three-times the performance from our new Nimble storage array, adding to the overall performance and responsiveness of the new infrastructure."

Efficient Cisco UCS servers have also significantly reduced power and cooling in the data center. Transitioning to Cisco UCS lowered the average temperature in the data center from 73 to 69 degrees Fahrenheit, decreasing the need for powerful cooling fans. Combined with the reduced power consumption associated with the Cisco UCS blade servers, OCS cut power consumption by two-thirds in the data center for a significant cost savings.

CISCO

Product List

Cisco Desktop Virtualization Solutions

Cisco Data Center Solutions

- Cisco Unified Computing System (UCS)
- Cisco UCS B200 M3 Blade Servers
- Cisco UCS 5108 Series Blade Server Chassis

Routing and Switching

- Cisco Catalyst 6506 Series Switches

Fabric Interconnects

- Cisco UCS 6248 Fabric Interconnects
- Cisco UCS 2208 Fabric Extenders

Network Management

- Cisco Unified Computing System Manager
- Cisco Call Manager

Applications

- Citrix XenApp
- Citrix XenDesktop
- Citrix XenServer
- Citrix NetScaler

Storage

- Nimble Storage CS240G array

Next Steps

As part of continuing efforts to better serve more people, OCS is planning to grow the number of virtual desktops from 300 to 500. Scalable Cisco UCS servers will streamline expansion and accommodate virtual desktops for both BYOD users and the growing online school and remote student population. The school is also looking at upgrading its switching to flexible Cisco Nexus 5248 Switches, which feature broad connectivity support, to expand the use of Cisco Unified Fabric across the entire network.

For More Information

To find out more about Cisco Unified Data Center, please visit: www.cisco.com/go/unifieddatacenter.
To find out more about Cisco UCS, please visit: www.cisco.com/go/ucs.
To find out more about Citrix XenDesktop, please visit: www.citrix.com/xendesktop.
To find out more about Citrix NetScaler, please visit: www.citrix.com/netscaler.
To find out more about Nimble Storage, please visit: www.nimblestorage.com.

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