"Custom's onsite engineers were very supportive and responsive and helped move us through the project. Even before we signed the contract with them, Custom invested a lot of time and energy to make sure that we met NYCDOE regulations. They did a great job of making sure that we met our goals."

Daniel Rannells, Director of Information Technology, Bronx High School of Science

CASE STUDY

The Bronx High School of Science Maximizes the Educational Experience with Server and Desktop Virtualization

Bronx High School of Science
Founded in 1938, The Bronx High School of Science is a specialized school operated by the New York City Department of Education (NYCDOE). Considered one of the nation's best public high schools, Bronx Science counts eight Nobel Prize winners and six Pulitzer Prize winners among its graduates. Six alumni have won the National Medal of Science.

Industry: K12
Students: 3,000

The Challenge:
Most of the computers at Bronx Science were Windows-based PCs between 8 and 10 years old. Their aging processors and maxed-out RAM plagued students—and IT support—with performance problems. In addition, as the computers aged they were harder to manage and maintain.

The Solution:
The team at Bronx Science, Dell and Custom upgraded and virtualized the server environment and migrated to Microsoft Active Directory prior to implementing a virtual desktop infrastructure.

QUALITY EDUCATION

Founded in 1938, The Bronx High School of Science is a specialized school operated by the New York City Department of Education (NYCDOE).

Considered one of the nation's best public high schools, Bronx Science has been recognized by U.S. News and World Report, The Washington Post and The Daily Beast for the quality of its education.

Thousands of New York City students take the Bronx Science admissions exam each year, yet only a select few are admitted.

About 3,000 students, representing all five of New York City's boroughs, attend the school. Members of the school's economically, culturally and ethnically diverse student body experience Bronx Science's rigorous academic program and wide variety of extracurricular activities. The storied high school counts eight Nobel Prize winners and six Pulitzer Prize winners among its graduates. Six alumni have won the National Medal of Science.

A COMMITMENT TO A BETTER CLASSROOM EXPERIENCE

Bronx Science is deeply committed to the use of technology to improve the quality of education and provide better and more diverse learning opportunities. Its facilities include computerized science labs, greenhouses, a weather station, planetarium, distance learning lab and state-of-the-art library. High speed internet access is available throughout the school. “Our general mantra is not to use technology for technology’s sake,” says Daniel Rannells, Director of IT. “Instead, our strategy is to look for technology that will engage students in and out of the classroom.”

Twenty student computer labs with approximately 700 PCs are a critical part of the school’s technology resources. With the exception of labs dedicated to specialty applications like audio, video and computer-aided design, most of the lab computers were Windows-based PCs between 8 and 10 years old. Their aging processors and maxed-out RAM plagued students—and IT support—with performance problems.

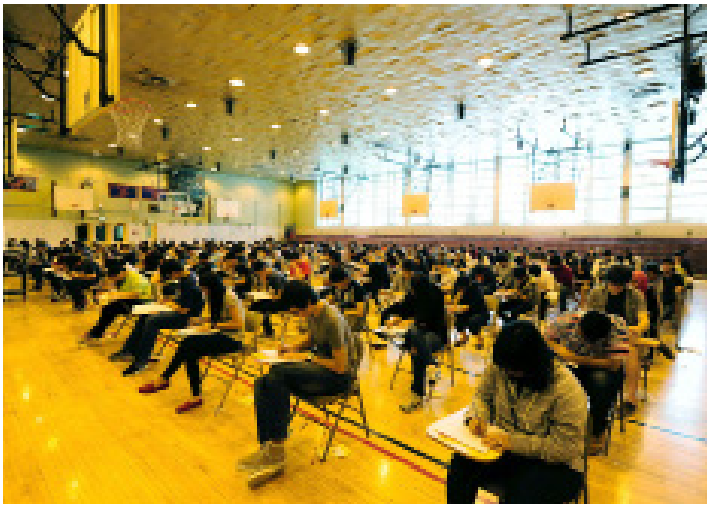
“As our computers aged, their performance was lacking and they were harder to manage and maintain,” Rannells explains. “Re-imaging computers can be challenging. Getting a desktop image that’s between 30 and 40 gigabytes over the network, reliably and simultaneously to 36 computers—let alone all 700 lab computers—would be a huge undertaking.”

Rannells and his team decided to pilot a virtual desktop infrastructure (VDI) in two of the labs. First, the school had to upgrade and virtualize its server environment and migrate from an aging private Novell enterprise network to a Microsoft Active Directory environment, a requirement for deploying VDI. “The servers and storage array were outdated and small,” Rannells says. “We needed to expand and increase server reliability.”

To evaluate the situation and lead the deployment, Bronx Science brought in Custom Computer Specialists (“Custom”), a Long Island based technology solutions provider that has been a NYCDOE systems integrator for nearly 20 years.

Mariela Lombard for New York Daily News (File photo2012) Bronx High School of Science graduates hear an address from Mayor Michael Bloomberg at Lincoln Center.

SAME OLD COMPUTER, BRAND NEW EXPERIENCE



Custom and Bronx Science built the school's new network in tandem with the current network, allowing most of the installation to be done during the school day. Rannells wanted to cut over the entire building at the same time, so Bronx Science decided to "go live" over spring break.

Rannells and his team took on tasks such as switching out and configuring computers. Custom brought in the servers, and their engineers worked to make sure services such as user authentication, home directories and network shares access, network printing, internet and application access would work with the NYCDOE network. "We were running ahead of schedule until we had some additional configurations and compatibility issues," he says. "But Custom helped us sort all of it out."

The premier science magnet school in the United States

In its new network, the school is running 20 virtual servers on two Dell R620 rack servers. Depending on server load, additional servers could be created to maximize the physical servers' resources. Bronx Science has a building-wide Microsoft Active Directory Infrastructure where any student can log into his or her account from any computer in the building. Most important, the virtual server environment laid the groundwork for this school-wide VDI program.

For the pilot labs, Rannells chose two labs that are used for basic computer applications such as the internet, word processing, and other apps that don't require a lot of bandwidth. "We stayed away from the engineering labs that use applications like video streaming, Google Earth, 3D rendering and CAD," he notes.

Then, Custom and Bronx Science had to decide what to do about terminals in the two VDI labs. Since the program is a pilot, they decided to use the old desktops from the two labs as VDI client devices instead of purchasing thin clients. "We worked it out so that the cost of deploying VDI was about the same as replacing the 120 workstations in the two targeted labs." Rannells explains. "We were able to get the experience of a new computer without actually having to buy new computers." The entire process of deploying and migrating to a new virtualized server-based network and VDI took Custom and Bronx Science about six weeks to complete.

SIMPLIFIED ADMINISTRATION, HIGHER PERFORMANCE

The new VMware server environment has many benefits. "With new servers, the network is much more reliable—and that's critical when you have 3,200 users," Rannells says. "Also, the virtualized environment simplifies the process of adding servers and reduces the amount of time it takes to bring up a new server."

Rannells notes that there are plenty of benefits to VDI, especially since the school's lab PCs needed to be upgraded anyway. "It's easier to manage and maintain desktops. Instead of installing a new program 36 times, you do it once," he continues. "And imaging is much easier. You simply recompose the virtual image and it's there on every PC."

In addition to reducing administration time and resources and improving staff productivity, VDI has positively impacted the end user experience. "The students say there's a performance boost," says Rannells. "It has helped to reduce complaints to the help desk about speed." VDI helps Bronx Science increase its security profile by improving data integrity. "Because the end user devices don't contain actual data, we don't worry about someone stealing a computer and gaining access to something they shouldn't," he notes.

EXPANDING THE VIRTUALIZED ENVIRONMENT

In the future, Rannells would like to expand the VDI deployment to include the SPSS [statistical programming language] lab and other labs with very old computers. "We noticed a big performance improvement when we tested SPSS on VDI, so we have that on our wish list," he says.

In addition, Custom proposed future solutions for expanding VDI when the school is ready. For example, to ensure the right end user experience for engineering and computer science lab applications, the school might test special servers with 3D hardware built in.

Bronx Science is also piloting VDI use for several of its teachers. "For faculty, it's valuable to be able to keep their programs open as they travel around the building," notes Rannells. "We'd like to increase the pilot to 30 or 40 faculty, and if it's successful, we expect to roll it out to the entire 150 teachers and 50 support staff."

The school plans to eventually phase out all of the older computer lab PCs. "As the older computers fail and our supply of replacement stock runs out, we'll replace each computer with a thin client device," says Rannells. "This will really improve service because we still require a lot of staff support for hardware-related issues such as hard drive and power supply failure."

"Custom's onsite engineer was very supportive and responsive and helped move us through the project," concludes Rannells. "Even before we signed the contract with them, Custom invested a lot of time and energy to make sure that we met NYCDOE regulations. They did a great job of making sure that we met our goals."

About Custom Computer Specialists, Inc.

Since 1979 Custom has been partnering with school districts throughout the Northeast to maximize student achievement through the effective deployment of technology. We are committed to providing the technology that will make the 21st century classroom a reality.

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