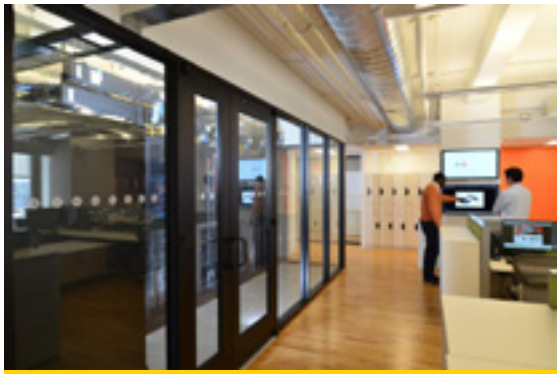


School of VISUAL ARTS®

School of Visual Arts

School of Visual Arts (SVA) is widely recognized as one of the finest colleges of art and design in the United States for its innovative programs, unparalleled faculty and active participation in the cultural life of New York City. Established in 1947, SVA serves more than 3,500 undergraduate and 500 graduate students; employs a faculty of approximately 1,100 artists, writers, designers, filmmakers and photographers and 600 administrative staff members; and provides continuing education to 2,400 New Yorkers each semester.

Background

Located in the heart of Manhattan, the SVA campus footprint extends from West Chelsea to Gramercy to the Lower East Side and is comprised of 17 buildings, including five residence halls. When chief information officer Cosmin Tomescu joined SVA's staff in 2009, the college was growing rapidly and its IT infrastructure of 50 physical servers along with it. Within a year, Tomescu and his team were deep into assessing the school's long-term data center needs to provide a strong foundation for a dynamic future. He and his design team began a journey to build a flexible, efficient infrastructure that today rivals an enterprise-size environment with three to four times the staff.

Case Summary

Location: New York, New York, USA

Emerson Network Power Products/Services: Row-based infrastructure design aligned with the SmartAisle™ approach, which optimizes infrastructure deployment through an intelligent row-based system, integrating data center racks, power, cooling, monitoring and control technologies from Emerson Network Power.

Challenges: The high cost and limited availability of dedicated floor space in Manhattan necessitated that SVA deploy a high-density, scalable infrastructure capable of accommodating long-term IT capacity growth within a finite data center footprint of 20 ft. by 20 ft.

Critical Need: Holistic, energy efficient solution to modernize and standardize the data center infrastructure, with all components integrated into a single monitoring platform and contained within a compact footprint.

Results:

- An enterprise-class data center with enough capacity to grow for at least 15 years without requiring additional floor space
- All mission-critical applications running in a fully redundant environment, from the server and storage, to the OS, network, routing and switching
- Calculated electricity savings of 302,944 kWh/yr from the combined energy efficiency measures of server virtualization and cooling system and lighting upgrades

EMERSON™
Network Power

Technologies:

SVA's SmartAisle infrastructure includes:

- Liebert® NX™ Uninterruptible Power Supply with Softscale™ Technology
- Alber® BDSi™ Battery Monitoring System integrated into the Liebert NX battery cabinets
- Liebert CRV™ Row-based Precision Cooling with Liebert iCOM® Control and Temperature Sensors
- DCM™ Enclosures
- Liebert MPX™ Adaptive Rack PDU System
- Liebert MB™ Modular Busway
- Liebert SiteScan® Monitoring Software

The Situation

The learning environment at today's art school is not as it was ten—or even five—years ago. The new normal is as technology-dependent as any environment can be, with many students creating work not in front of easels, but with Avid®, Adobe® Photoshop®, Apple Final Cut Pro and online content hosting services like iTunes U and Kaltura. Add to that the fact that the School of Visual Arts has a very rigorous program of study, and faculty members are all busy working professionals, so the time they spend in the classroom is precious. Reliability and availability of technology services is a prerequisite for student success.

"We're used to thinking of art students standing in front of easels or watching a slide presentation," says Cosmin Tomescu, SVA's chief information officer. "But with today's boom in digital content, both in and out of the classroom, information technology has a greater role in teaching and learning than ever before."

The data center is the backbone of the college's day-to-day operations. Many instructors and students rely on technologies such as podcasting and video conferencing to share information. More and more course materials are stored in a cloud-based Learning Management System, Moodlerooms. On the administrative side, web-based applications are critical to every office at the college, from recruitment and registration to budget, payroll and human resources, @sva.edu email and a cloud-based campus emergency notification system. Even student meal plans are supported by IT.

"The impact of downtime in a higher education environment is just as significant as in other industries," says Tomescu. "Whereas a financial company may be devastated by not being able to process stock trades, or a retail company by not being able to take and process orders, at SVA, if our network sees a slowdown or outage, many of the college's operations are disrupted, from processing applications and financial aid to advising students, collecting tuition and generating transcripts. Students may be delayed in completing assignments, or they may not be able to communicate with their instructor."

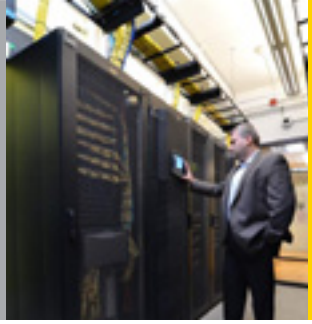
When Tomescu joined SVA in 2009 and assessed the school's data center environment, there were **issues with battery backups, noise and power, and the overall environment was at maximum cooling capacity.** The IT team lacked visibility into the data center, such as a dashboard for monitoring. "We did a review of our infrastructure and found that **we were not well positioned for growth.** We had to scrutinize individual devices, and we had **no way of knowing at a glance if all systems were running to spec,**" says Tomescu.

SVA sought a solution that was flexible and cost-efficient in the long term. "We can't 'rip and replace' each time a new device comes out," says Tomescu. "We must ensure that in three years, we're not looking at taking out the technology we put in before, because we haven't yet thought of what's next. Our data center must be able to accommodate the future as well as the present."

> ***"Our data center is the foundation of every application that is used at the School of Visual Arts. Having a solid foundation is imperative for our technology planning and overall strategic planning."***
>
> Cosmin Tomescu, chief information officer, School of Visual Arts

A further consideration for SVA: in 2008 the school became a partner in Mayor Michael Bloomberg's **"30 in 10" challenge to New York City's universities to reduce greenhouse gas emissions 30 percent by 2017.** Learning from a citywide carbon inventory that New York's buildings were the primary source of these emissions, SVA decided to participate, taking stock of its carbon footprint and taking steps to move toward sustainability.

"Making smart decisions about the design of the data center is one of the many ways the college can reach our goal," says Michael Grant, SVA director of communication.



"We decided on Emerson Network Power for our vendor because of their reputation, reliability, market share and the company's history."

Cosmin Tomescu,
chief information officer,
School of Visual Arts

The Solution

Managing a networked campus in a congested city like New York brings unique challenges – building and floor space constraints, power and cooling constraints and availability of telecom carriers and services, to name a few.

Having outgrown a retrofitted space within a former dentistry school, the SVA IT team secured a new 7,500 sq. ft. space in Chelsea that would be built to spec. Here, SVA planned to consolidate IT-related functions like the Student Information System (SIS) group and administrative computing and network services all on the same floor as the data center, where all connectivity, cooling and power issues could be addressed. In constructing the new facility, **SVA sought to leverage the most efficient technologies available, while also building an infrastructure that could easily scale** to meet the needs of the institution for at least the next ten years.

"The immediate challenge was, how do we get the cooling and the tonnage we need in a very constrained space? That had to be figured out early," says Tomescu. "It became very clear that in-row cooling was the way to go." The SVA team knew that selecting a partner to deliver an in-row cooling solution, along with other critical infrastructure technologies, would be imperative to the success of the new data center. "Less is more, that's our motto. We want to keep our infrastructure lean and agile. Too many vendors, too many platforms yields less standardization, which in the end leads to poor management and reactive IT," says Tomescu.

SVA's design team, comprised of Tomescu, SVA facilities and IT managers and a consulting-specifying engineer, was introduced to Deborah Maffettone, an Emerson Network Power local infrastructure specialist. Maffettone collaborated with the team to understand SVA's unique challenges, and set up a demo of her proposed solution at her office.

"Since this was going to be built from the ground up in a small space, our **SmartAisle™ design approach seemed perfect for SVA,**" says Maffettone. "The SmartAisle approach from Emerson Network Power uses row-based building blocks to optimize efficiency, availability, capacity and control benefits in one end-to-end solution. In our demo, I was able to show them how each product fit in with the others. I was pleased to be able to assist them from design phase through delivery and installation."

The SmartAisle approach is ideally suited for rapidly growing facilities and offers **savings in room costs of as much as 11 percent over a conventional design approach.**

The SmartAisle solution selected by SVA includes the **Liebert® NX™ with Softscale™ technology, an uninterruptible power supply** that can sustain the school's demand for high IT availability, while offering a path to cost-effective growth.

The Softscale technology enabled SVA to purchase and deploy the Liebert NX at 100 kVA of capacity, and scale to 120 kVA, enabling the unit to operate at optimal capacity for the current IT load, while consuming the same, compact footprint at 80, 100 or 120 kVA of capacity. The UPS provides enough backup runtime to last several hours.

Next came a **Liebert CRV™ row-based precision cooling** system, which fits within a row of racks to deliver horizontal airflow directly at the heat source to increase energy efficiency. Liebert iCOM® controls, a digital scroll compressor and variable speed fans also help to prevent under-or over-cooling the space to optimize efficiency while providing the high reliability demanded by SVA's virtualized environment.

DCM rack enclosures were selected for their depth, flexibility in cable management and compatibility with the Liebert MB modular busway and Liebert MPX™ power distribution units (PDUs). The **Liebert MPX adaptive rack PDUs** fit in the zero-U space within the racks, and allow hot swappable modular power monitoring and distribution all the way to the receptacle level. A core requirement for the design team was the flexibility of the 120/208V output power, and ability to configure multiple different receptacle types in a single strip. The **Liebert MB modular busway** was selected to provide power feeds to the Liebert MPX rack PDUs, which prevented electricians from needing to customize power connections for each rack.

The final piece of the solution was the **centralized monitoring system to help manage the data center infrastructure, power usage, cooling and temperature control,** as well as the overall energy efficiency of the infrastructure. Liebert® SiteScan® is set to constantly rotate through monitoring screens on wall-mounted televisions in the main IT office, which became the visual centerpiece of the deployment. Another wall-mounted TV displays the status of the network (LAN, WAN, Wi-Fi and microwave wireless). The visualization of the data center environment has proven to be especially appreciated in a visual arts environment.

The Results

By August 2011, thanks to the SmartAisle™ design, SVA had what any IT professional would be proud to claim for his or her own – an enterprise-class "data center in a box," as Tomescu calls it, which can grow for at least 15 years without requiring additional rack space. Tomescu estimates that 60 percent of the rack space is in use now.

"In New York City, it is an achievement to build this level of reliability into such a small space. Our solution offers the same features in terms of scalability and availability that other data centers have on multiple floors and in five times the space," says Tomescu. "While we heavily rely on virtualization in the data center, we also leverage cloud services and applications and probably always will run a hybrid environment. Today, we are **95 percent virtualized,** which gives us the ability to manage our environment with only a handful of system administrators."

In 2011, 47 physical servers were virtualized across 12 new blade servers. As of January 2013, SVA's infrastructure grew to 200 virtual servers without any additional physical servers.

Since the deployment of the SmartAisle technologies, Tomescu reports that reliability has increased immensely. **"Outages due to unreliable cooling, power feeds or UPS units have been eliminated,"** he says. All mission-critical applications now run in a fully redundant environment, from the server and storage, to the OS, network, routing and switching. Through the power distribution and monitoring solutions, the team is able to deliver, control and monitor the energy used by each rack and, ultimately, each device.

"The monitoring system we've deployed has really changed our daily operations," says Tomescu. "Knowing that the data center is working properly lets us see that things run more efficiently. We can operate the data center with just a small group of IT engineers, because we have tools such as the monitoring and alerting at our fingertips. **We've taken the complexity out of management."**

The infrastructure has also supported the school's energy efficiency goals. During the deployment, Maffettone introduced the team to a New York State Energy Research and Development Authority (NYSERDA) rebate program that rewards organizations for deploying data center infrastructures that are measurably more energy efficient than traditional designs.

The project's total energy savings stemmed from both server virtualization and upgrades to the cooling system and lighting. Calculated electricity savings from these initiatives totaled 302,944 kWh/yr and 30.4 kW in peak demand savings, with a corresponding **annual cost savings of $60,589. This earned SVA a $48,471 NYSERDA rebate, lowering the overall project cost.**

"Operations efficiency starts with better-utilizing the people on our team and having the tools and systems in place to allow better visibility and control of our infrastructure," says Tomescu. **"Our team has become more proactive due to the simplicity, scalability, reliability and flexibility of our data center.** We can identify possible issues before they become larger problems. We are maximizing our ROI."