Sparking creativity and preparing students for tomorrow

Clayton Public Schools supports a technology-driven vision with Dell servers, storage and networking

Business need

Clayton Public Schools, in New Jersey, wanted to upgrade its IT infrastructure to support new district IT initiatives and eliminate application performance issues.

Solution

The school district consolidated its data centers and implemented a Dell PowerEdge converged solution alongside Dell PowerEdge blade servers, Dell Storage and Dell Networking technologies.

Benefits

- Speeds the performance of learning applications for students and teachers
- Supports high-definition streaming video and digital learning tools
- Enables IT staff to spin up servers in seconds instead of 30 minutes
- Cuts application installation costs by 20 percent

Solutions at a glance

- Client Solutions
- Converged Infrastructure
- Data Center

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Dan Marakowski, Technology Coordinator, Clayton Public Schools

New Jersey's Clayton Public Schools is a small school district with three schools serving 1,500 students in grades Pre-K to 12. But when it comes to technology, the district thinks big. "We need to prepare students for the future, whether that be college or a career, and technology plays a vital role in making that happen," says Dan Marakowski, the district's technology coordinator.

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> *Technology Coordinator,*
> *Clayton Public Schools*

To put that vision into practice, Clayton has increasingly deployed modern technologies in its classrooms, from interactive teaching panels to a 1:1 tablet initiative and web-based teaching and testing applications. However, the district was concerned that its aging virtual environment couldn't keep up with its growing focus on educational technology. "We only had a gigabit network, and it was causing performance and reliability issues," says Marakowski. "The interactive classroom panels, for example, require a solid network so students can display their mobile device screens on the panels. We also have a media server to push streaming high-definition video and other streaming media services out to the classrooms, and that wasn't performing as well as we needed it to. We had a lot of streaming issues."

To properly support its new initiatives, Clayton made the decision to upgrade its IT environment.

Upgrading the IT environment with Dell servers, storage and networking

Clayton considered storage and server solutions from four technology providers, including Dell. But its previous experience using Dell technologies influenced the district to choose Dell solutions once again. "We looked at all the major server and storage players, but in my experience, Dell has always had superior support and service, and the technology itself has been reliable for us," says Marakowski.

For better performance and a smaller footprint, Clayton first chose the Dell PowerEdge FX converged architecture to support its VMware® infrastructure. The district deployed a PowerEdge FX2 server enclosure, consisting of a chassis with three PowerEdge FC630 servers. The FX2 is a modular 2U converged platform in which servers and storage share power, cooling and networking functions. "With the FX2, we were able to remove five 2U servers, and now we have more space in our second rack if we need it," says Marakowski.

Products & Services

Hardware

Dell Networking N4032F switches

Dell PowerEdge FX2 server chassis

Dell PowerEdge M630 blade servers

Dell PowerEdge VRTX

Dell Storage SC4020 arrays

Dell OptiPlex 3020 all-in-one desktop

DELL

The district also implemented the Dell PowerEdge VRTX shared infrastructure platform, which integrates servers, storage and networking into a compact infrastructure for office environments. At its elementary school, Clayton deployed a VRTX solution, consisting of two Dell PowerEdge M630 blade servers. "We were able to replace four physical servers by virtualizing them and hosting them on the VRTX solution," says Marakowski. The district uses the FX2 and VRTX solutions to run all core Windows Domain services, the library card catalog server, the antivirus server, a student management system, print servers, streaming media servers, statewide online testing caching servers, and file servers.

Additionally, Clayton implemented a Dell Storage SC4020 10Gb iSCSI hybrid flash storage array at its high school. The disk configuration includes six SSD drives for write-intensive workloads, six SSDs for read-intensive workloads and 12 7K RPM drives. "We doubled our usable storage capacity and increased our performance by using the SC4020 hybrid array," says Marakowski. The solution also offers auto-tiering to optimize data location on demand. Clayton completed its infrastructure upgrade by implementing Dell Networking N4032F 10Gb switches, which support traffic from the SC4020 to the FX2 solution. Clayton also deployed 100 Dell OptiPlex 3020 SFF desktops for use in classrooms and labs. "Having a Dell end-to-end infrastructure gives us greater flexibility and visibility when diagnosing client/server issues, which increases overall service reliability through the district," says Marakowski.

Clayton was assisted by Dell partner VirtuIT Systems in the deployment of all its new technologies. "VirtuIT is very knowledgeable, and their help was critical because there were a lot of moving pieces to manage," Marakowski says.

Enabling higher performance in the classroom

Clayton has been able to make major improvements by upgrading its IT infrastructure. "We can support more simultaneous logins now, and we have significantly increased our IOPs with the 1-gig capabilities we have with the Dell server and storage solution," says Marakowski. "As a result, saving, retrieving and sharing digital files are much faster for our students now, and computer login speeds are 10 times faster than before for our teachers."

The district's IT team is also benefiting from the increased performance. "I can spin up a new virtual server in seconds, as opposed to the 30 minutes it used to take," says Marakowski. "I can launch replacement servers in the blink of an eye, because the performance is so good with the Dell infrastructure."

Giving teachers and students access to powerful learning technology

With better performance, Clayton can ensure that teachers and students have the technology to support high-definition video streaming and other requirements in the classroom. "Our streaming media server has a huge catalog of education videos teachers can display on the interactive panels, and all that content streams directly to their browsers because of the capabilities of the Dell Storage SC4020 array," says Marakowski. "In the past, we didn't have nearly the storage capacity or performance to be able to provide a solution like this across the district. With more reliable access to this content, there's no limit to what our students can do in the classroom."

Additionally, Clayton can better support the needs of its elementary school students. "Our elementary school always has a need to use application servers for reading and writing applications, and we

now have the ability to quickly launch additional virtual servers to support that with the Dell PowerEdge VRTX solution," says Marakowski.

Reducing installation costs by 20 percent, cutting IT administrative time by 50 percent

The district is also saving money on licensing costs by using the VRTX solution. "In the past, we had to purchase or lease a server from the company that provides learning software," says Marakowski. "Now, with the Dell PowerEdge VRTX solution there, we can easily spin up our own server and only pay for the software application. We will save roughly 20 percent of new hosted application installation costs at the elementary school going forward as a result."

And because of its server consolidation and easier-to-manage virtual environment, the three-person Clayton IT staff can put more time into new technology initiatives. "I'm seeing a 50 percent time savings on IT administration because of our consolidated environment and the increased performance and reliability we get with the Dell technologies," says Marakowski. "That gives me and our staff more time to focus on exploring and rolling out new technologies, rather than just keeping servers up and running and doing firmware upgrades."

Preparing students for the future

With better performance and scalability, Clayton Public Schools can easily expand its capacity to support any future technology needs. "We can now roll out new services and support more devices without having to worry about the data center costs, thanks to the Dell servers and storage we have," says Marakowski. "Even though we're a small school district, we're now running an enterprise-level infrastructure here because of the Dell solution. That means we can give our students and teachers the tools they need to spark their creativity and prepare for the workforce."

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