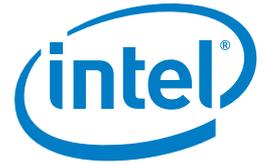


CASE STUDY

Intel® Xeon® processor 7500 series

Virtualization: Dynamic Resource Management



Opening the university

Empire State College uses Intel® Xeon® processors to virtualize IT, accommodating growth and reducing energy consumption by 90 percent

Empire State College, part of the State University of New York, wanted to build on its well-established distance-learning program and provide even easier access to higher education. The college needed to expand IT resources to accommodate significant student growth while also improving IT agility and reducing energy consumption. The IT group decided to virtualize servers and desktops using a hardware foundation of IBM System x* servers based on the Intel® Xeon® processor 7500 series. Through virtualization, the college scaled IT substantially and increased flexibility while using 90 percent less energy. As a result of this project, the college can launch new online programs, accommodate many more students, and enable anytime, anywhere access to education.



STATE UNIVERSITY OF NEW YORK



"We wanted to maximize hardware density. The Intel® Xeon® processors provide the raw compute performance and memory capacity we need to host numerous virtual machines on each physical host."

– Curt King,
Assistant Vice President of
Integrated Technologies,
SUNY Empire State College

CHALLENGES

- **Prepare for growth.** Expand IT resources to accommodate significant student growth and make it easier for faculty, students, and staff to capitalize on technology.
- **Increase responsiveness.** Accelerate provisioning of new IT resources to enhance responsiveness to new requests and facilitate the thorough evaluation of new technologies.
- **Cut energy consumption.** Drive down power and cooling costs, and minimize the environmental impact of technology.

SOLUTION

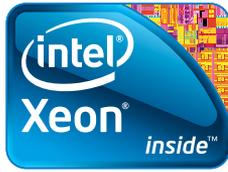
- **IBM System x* servers with Intel® Xeon® processors.** With help from system integrator Brite Computers, Empire State College virtualized servers and desktops with IBM System x servers equipped with the Intel Xeon processor 7500 series.

IMPACT

- **Increased capacity.** With five times greater server capacity availability, the school has the resources required for growth and the ability to provide easier access to higher education.
- **Greater agility.** Virtualization helped reduce the time for deploying new servers from two months to two minutes, enabling IT to be much more responsive to new requests.
- **Energy efficiency.** By virtualizing with energy-efficient systems, the school has reduced energy consumption by up to 90 percent, saving money and keeping IT green.

Since its founding in 1971, Empire State College has capitalized on technology to facilitate easy access to higher education. More than 20 years ago, the school introduced a distance-learning program to provide students with the opportunity to pursue a degree without having to travel to a physical classroom. Today, the college is working with the State University of New York (SUNY) to create an open university, offering open course enrollment and enabling open access to course materials online.

The open university initiative will provide new educational opportunities to people in New York State and beyond, but it presents new challenges for the IT group. "Some projections tell us that we might add 100,000 new students, who will need to register for classes, access course materials, and use online software applications," says Curt King, assistant vice president of integrated technologies at SUNY Empire State College. "We needed to expand our resources so we could streamline access to education and accommodate large-scale growth."



“By virtualizing on Intel® processor-based servers, we increased our server capacity by more than five times while reducing the server footprint by more than 90 percent. We gained the capacity for immediate needs and the scalability for long-term growth.”

Tony Costa, Server System Administrator, SUNY Empire State College



At the same time, the IT group wanted to improve IT flexibility and reduce costs. “We needed an agile infrastructure that would let us be more responsive to departmental requests and introduce new services more quickly, easily, and cost-effectively than before,” says King. “But we needed to control ongoing costs, including the costs of powering and cooling our data centers.”

Virtualizing with Intel® Xeon® processors

Virtualization provided the means to accomplish several goals at once. The IT group decided to replace aging hardware and then virtualize both servers and desktops on the new systems.

As the Empire State College team evaluated hardware platforms from multiple vendors, the local system integrator Brite Computers helped the IT group explore IBM systems based on Intel® processors. “Brite Computers introduced us to the right people at IBM and Intel, and made a strong design proposal,” says King. “As we narrowed down our selection, Brite continued to refine the design to make it more efficient and cost-effective.”

The IT group ultimately selected IBM System x3690 X5* servers with the Intel® Xeon® processor 7500 series for server virtualization. The IT group uses VMware vSphere* virtualization software and multiple editions of the

Microsoft Windows Server* operating system to run a variety of software applications. IBM BladeCenter HX5* blade servers with the Intel Xeon processor 7500 series provide the foundation for desktop virtualization. Citrix XenApp* software virtualizes individual applications; Citrix XenDesktop* software delivers virtualized desktops to client systems.

The Intel processors were the right fit for virtualizing both servers and desktops. “We wanted to maximize hardware density,” says King. “The Intel Xeon processors provide the raw compute performance and memory capacity we need to host numerous virtual machines on each physical host.”

To scale resources, administrators can install IBM MAX5* memory expansion modules to servers or add processors—currently only two of four sockets are used. “Using these IBM servers with Intel processors, we can expand our virtualized environment and add more virtual machines without a forklift upgrade,” says Tony Costa, server system administrator at SUNY Empire State College.

Energy efficiency also played a role in the choice of Intel processors. “The Intel Xeon processors were the most energy-efficient processors we evaluated,” says King. “The ability to automatically regulate power consumption depending

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Curt King, Assistant Vice President of Integrated Technologies, SUNY Empire State College

on the workload was a huge advantage. With the Intel Xeon processors, we can maximize the performance per watt.”

Once the solution was selected, the IT group engaged Brite Computers to deploy the new systems. “This was a large project, but the Brite team was undaunted,” says King. “They did outstanding work implementing the solution and transferring knowledge to our staff so we can carry on management going forward.”

Scaling to five times greater capacity with 90 percent fewer servers

The IT group is migrating server applications from 60 physical hosts to just two IBM servers, which are deployed in a mirrored configuration using two additional servers in a secondary data center. With just a small number of new Intel processor-based servers, the IT group has substantially greater processing power and memory available than before. “By virtualizing on Intel processor-based servers, we increased our server capacity by more than five times while reducing the server footprint by more than 90 percent,” says Costa. “We gained the capacity for immediate needs and the scalability for long-term growth.”

Cutting energy use by up to 90 percent

By using fewer physical hosts, the IT group has dramatically decreased energy consumption. “We will use 70 percent less energy to power servers and reduce heating and cooling by up to 90 percent—and that’s with everything running,” says King. “The intelligent power-saving features of the Intel processors will help us further reduce consumption by automatically regulating energy use as workloads change. Those savings will enable the school to invest money in additional innovative projects.”

Accelerating server deployment from two months to two minutes

With virtualized servers, the IT group can respond to new requests much faster than before. “It used to take two months to deploy a new server—now we can create a virtual server in two minutes,” says King. “As a result, we can thoroughly explore new solutions before deploying them in production, and we can implement new services much more quickly for faculty and staff.”

SPOTLIGHT ON EMPIRE STATE COLLEGE

Founded in 1971, Empire State College is one of the 13 colleges of arts and sciences in the State University of New York. The college is uniquely designed to serve adults pursuing associate, bachelor’s, and master’s degrees in a wide range of fields. In addition to on-site instruction, the college offers access to its broad curriculum through an extensive distance-learning program.

SPOTLIGHT ON BRITE COMPUTERS

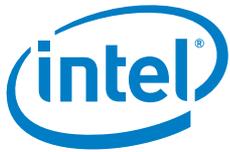
For more than 25 years, Brite Computers has provided IT system integration and consulting services that help businesses achieve their unique objectives. Brite has provided IT security, network infrastructure, and a range of other solutions to more than 2,500 customers across multiple industries.

Facilitating access to higher education

Virtualizing desktops will give faculty and staff greater flexibility in how they work while supporting the school’s vision of providing easier access to higher education. “With desktop virtualization, students will be able to tap into resources and use software applications from any client system or mobile device, anywhere,” says King. “We can deliver a rich educational experience to the broadest possible population.”

Virtualization: Dynamic resource management. Optimize server utilization and increase agility through virtualization and dynamic policy-based resource management.

Find a business solution that is right for your company. Contact your Intel representative or visit the Reference Room at www.intel.com/references.



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