



## Earning an A with Intel® Architecture

### Clayton County Schools targets TCO and the environment with Intel® innovations

#### Case Study

##### Enterprise Client Enterprise Server

Intel® Core™2 processor  
with vPro™ technology

Intel® Xeon® processor  
5400 series

“Intel vPro technology puts our fingers and eyes all the way out to the desktop. It will shrink time and bend geography by letting us manage PCs as if they were right in front of us. With broader deployment, Intel vPro technology is going to have an impact comparable to what centralization and virtualization have had in the data center.”

*Chris Petersen  
Network Systems Engineer  
Clayton County Public Schools*

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#### Challenge

- **Drive down TCO—and fuel emissions.** Clayton County Public Schools (CCPS) needed to make the most of its IT budget—and cut down on an average 1,000 desk-side support calls per month for its aging PCs.

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#### Solution

- **Centralize and virtualize.** To optimize asset utilization and increase agility, Clayton County Schools virtualized approximately two-thirds of its server infrastructure by utilizing the quad-core performance and hardware-assisted virtualization capabilities of the Intel® Xeon® processor 5300 series.
- **Improve PC asset management, diagnostics, and repair.** The school system is standardizing on HP PCs that incorporate the Intel® Core™2 processor with vPro™ technology.<sup>1</sup> Intel vPro technology offers powerful client capabilities to access information when and where it's needed to run an organization.

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#### Impact

- **Server savings.** CCPS runs 122 virtual machines on 22 Dell PowerEdge 2950\* servers, producing a more agile, reliable environment that's easier and less expensive to manage.
  - **Less downtime, lower PC management costs.** With accurate asset management data and improved remote troubleshooting, CCPS can resolve issues faster with fewer desk-side visits. A pre-deployment assessment indicates potential annual savings of \$676,000 on hardware and software ticket remediation.
  - **A greener environment.** Consolidating on the energy-efficient Intel Xeon processor helped cut server power consumption by more than 90 percent. With increased remote management of PCs, tech staff can implement consistent power-on and power-off policies, reducing power consumption and spending less time on the road for repairs and upgrades.
  - **Free space.** CCPS eliminated the equivalent of 17 server cabinets and freed a half-rack of space at each school.
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A sprawling school system in the fast-growing suburbs of Atlanta, Clayton County Public Schools covers 143 square miles. It's crisscrossed by freeways and commuter roads, and one of the world's busiest airports sits within its boundaries. School buses log over 30,000 miles daily.

Delivering and managing the technology for such a highly distributed, heavily trafficked district is a daunting task—but one that CCPS is easing by making the most of Intel technology innovations. Over the last two years, CCPS has used multicore Intel Xeon processor technology to virtualize, centralize, and consolidate its server and storage environment. Now, the district is adopting Intel vPro technology to enhance remote management of its 25,000 PCs.

## Horsepower for Virtual Machines

Virtualization with Intel quad-core technology has generated massive savings—both dollars and energy—for the district. “With 122 VMs on 22 physical servers, that’s 100 physical machines that we don’t have to purchase, run, support, and otherwise manage,” says network systems engineer Chris Petersen.

The district has virtualized Microsoft Exchange, Microsoft Active Directory,\* storage infrastructure, and other essential computing tasks, eliminating both in-school and data center servers as they reached end of life. Virtualization is also a high priority as the district evaluates new solutions. “The benefits are so compelling that we’re militant about it,” he says. “Anything we can virtualize, we do.”

Computing performance is a key requirement for virtualization platforms, and the Intel Xeon processor 5300 series has exceeded expectations. “Horsepower is the biggest factor when you do virtualization, because you’re asking one machine to do the work that six or ten machines used to do,” says Petersen. “We thought we’d need more horsepower when we migrated from Exchange 2003 to Exchange 2007, but our Dell 2950s with the Intel Xeon processor gave us the horsepower we needed. It’s a testament to the performance of those boxes.” By eliminating 100 6U Dell PowerEdge 4640\* and 2850\* servers in favor of the Intel Xeon processor 5300 series-based Dell 2950 servers, CCPS estimates it has reduced power consumption ninefold.

## Enhancing Remote Management

On the client side, Support Technician Marc DeSilva says the district has provisioned approximately 2,500 PCs with Intel vPro technology and is excited about how vPro technology enhances remote PC management. He shares a typical scenario. “We had a run of bad hard drives, and it was typically a two-trip process to fix them—one to identify the problem, and another to bring a replacement disk and reimage it,” he recalls. “With Intel vPro technology, we can redirect the system to a CD-ROM or a shared boot drive, identify the problem, have someone onsite pop a new drive in, and we can image it remotely.”

Intel vPro technology also helps solve what DeSilva calls one of the support team’s biggest problems—a lack of accurate asset management information. “If you’re upgrading 4,000 PCs, you want to know the specific configuration of each machine,” he says. “We did our best to manage by spreadsheet, but we were basically blind to a lot of system details. Intel vPro technology becomes our eyes. It provides accurate information because it’s pulling it right out of the BIOS.”

DeSilva expects the remote power management capabilities of Intel vPro technology to produce windfall savings on power consumption—and a better educational experience. “We can shut the PCs down consistently,” he states. “We can power them on remotely to do any software upgrades or virus patches, and then turn them off again. And when the teachers come in on Monday morning, they don’t have to spend first period waiting for upgrades to occur.”

The net result, in DeSilva’s words: “Intel vPro technology saves us quite a few steps, quite a lot of time, and quite a bit of gas.”

That’s the type of value Clayton County Schools counts on from Intel. “Technology is so essential to our mission as educators,” says CIO Angie Bacon. “Intel’s innovation and leadership in education play an important role in helping us deliver an outstanding educational experience in challenging economic times and prepare our students to prosper in a technology-oriented society.”

### Spotlight on Clayton County Public Schools

Located just south of Atlanta, Clayton County is Georgia’s fifth-largest public school district and the 113th largest in the U.S. It enrolls over 50,000 students at 9 high schools, 14 middle schools, and 38 elementary schools. Nearly half the district’s teachers hold advanced degrees, and CCPS was one of the first in Georgia to have full-time music and arts specialists at every school.



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