



NetApp®

Success Story

York County School Division: 2,800-Seat Virtual Desktop Solution on Citrix and NetApp



KEY HIGHLIGHTS

Industry
Education

The Challenge
Deliver anytime, anywhere access to teaching and learning systems; streamline updates.

The Solution
Build scalable virtual desktop solution on Citrix XenDesktop and NetApp® storage.

- Benefits**
- In <12 months, deploy virtual desktops for 9 schools
 - Update desktops in hours, not months
 - Enable on-demand strategic-application rollouts
 - Shrink refresh cycles 86%
 - Use 60% less storage capacity
 - Enable 97% energy savings

Customer Profile

The York County School Division, located on the lower peninsula of Virginia, works in partnership with the community to engage students in educational experiences that prepare them to contribute positively as citizens and as productive participants in the global community. The division employs some 2,000 staff members and educates nearly 13,000 K–12 students at 4 high schools, 4 middle schools, 10 elementary schools, and 1 charter high school. The division’s 1.7 million square feet of space includes some of the nation’s most energy-efficient school facilities, including 11 buildings that boast the EPA’s Energy Star building label. (Source: www.yorkcountyschools.org)

The Challenge

Enhance access to desktops, streamline update process

There are no limits to the learning applications teachers and students discover and want to use—and that, says Douglas Meade, director of IT at York County School Division, is one of the major challenges of delivering IT services to a diverse and always-inquisitive education user community. “Our teachers and students are

constantly exploring and finding new learning tools that they want to put to use. Our job in IT is to be responsive to those requests,” he says.

But Meade also says that with a traditional physical-desktop infrastructure in place, the school division simply did not have the staffing resources to make rapid changes across 5,000 desktops at 21 sites: “Making changes to a single lab took hours. And of course there were always compatibility issues. It seems that every time we updated a plug-in like QuickTime or Adobe Flash Player, some critical instructional program that depended on the earlier version stopped working.

“Completing more comprehensive upgrades—like full hardware, operating system, and application refreshes—across the entire division took years. In fact, our average refresh cycle had stretched to seven years. It was just not possible to keep all of our systems up to date or to quickly take advantage of new learning resources. Another problem was accessibility. Security concerns prevented us from giving outside-the-classroom access to our systems. Although teachers could take

“Much of the work that teachers do—grading papers, generating report cards, preparing tests, creating lesson plans—has traditionally been done at home. But as we’ve moved away from paper-based to online processes, we’ve restricted teachers’ workspace to the classroom. Our virtual desktop solution gives them back the freedom to work from anywhere, anytime, and from any device.”

Douglas Meade

Director of IT, York County School Division

school-owned notebook computers home, they could only use locally installed applications.”

To address these issues, in 2007 the school division made its first foray into virtualization. A major renovation of the school board office coinciding with a planned desktop refresh gave IT the opportunity to implement an application-hosting model built on Citrix XenApp that enabled secure remote access from thin clients.

Meade says success of that XenApp project led the division to investigate a more comprehensive virtual desktop solution: “Our chief financial officer commented that any physical-to-virtual transition challenges paled in comparison to the benefits of anytime, anywhere accessibility. Based on such feedback, we began to investigate the benefits of using Citrix XenDesktop for greater application-delivery flexibility to extend the virtualization model to our classrooms.”

The Solution

Build a scalable virtual desktop solution on Citrix XenDesktop and NetApp

PLANIT Technology Group, an IT consulting services company and participant in the NetApp partner program, helped architect a virtual desktop infrastructure (VDI). Meade speaks of the process:

“Our team took an exploratory trip to a school district in Florida where we saw first-hand the flexibility and accessibility benefits that VDI could bring to the classroom. When we got back, we jumped into the project. A key decision was selecting NetApp storage that gave us the advantages of multiprotocol support to address all of our application needs on a single system, deduplication technology for space savings, and NetApp OnCommand™ management software to simplify administration.”

In 2009, the York County School Division standardized on NetApp FAS3140 storage solutions to provide resources to HP ProLiant BL460c Server systems across division sites. NetApp Flash Cache intelligent read cache modules optimize application performance. NetApp SnapMirror® technology enables replication to a NetApp FAS3140 system at another school facility. NetApp FAS2040 systems provide local storage at 15 division sites.

The NetApp FAS3140 systems also provide storage to a VMware® vSphere™ 4.0 environment that supports Microsoft® Windows Server® 2003/2008 systems running Microsoft SQL Server® 2005/2008, Microsoft Office SharePoint Server® 2007, and a 1,600-mailbox Microsoft Exchange Server 2010 deployment.

Business Benefits

Working from home: anytime, anywhere, any-device accessibility

If satisfying the needs of the user community ranks foremost on the list of IT objectives, the desktop virtualization project is a resounding success. Meade elaborates: “Ask teachers about the impact of the new system and, to a person, they’ll answer, ‘I can access it from home.’ Much of the work that teachers do—grading papers, generating report cards, preparing tests, creating lesson plans—has traditionally been done at home. But as we’ve moved away from paper-based to online processes, we’ve restricted teachers’ workspace to the classroom. Our virtual desktop solution gives them back the freedom to work from anywhere, anytime, and from any device.

“After we bring our remaining elementary schools online, we’ll be planning for the delivery of that same accessibility to students, giving them unprecedented mobility and allowing them to be as fully functional outside the school division as from their desks in the classroom. Such accessibility will change the nature of homework, classroom projects, and assignments, offering as yet unimagined opportunities to learn.”

In the first year of the XenDesktop project, Meade’s IT team deployed some 2,800 virtual desktops (primarily

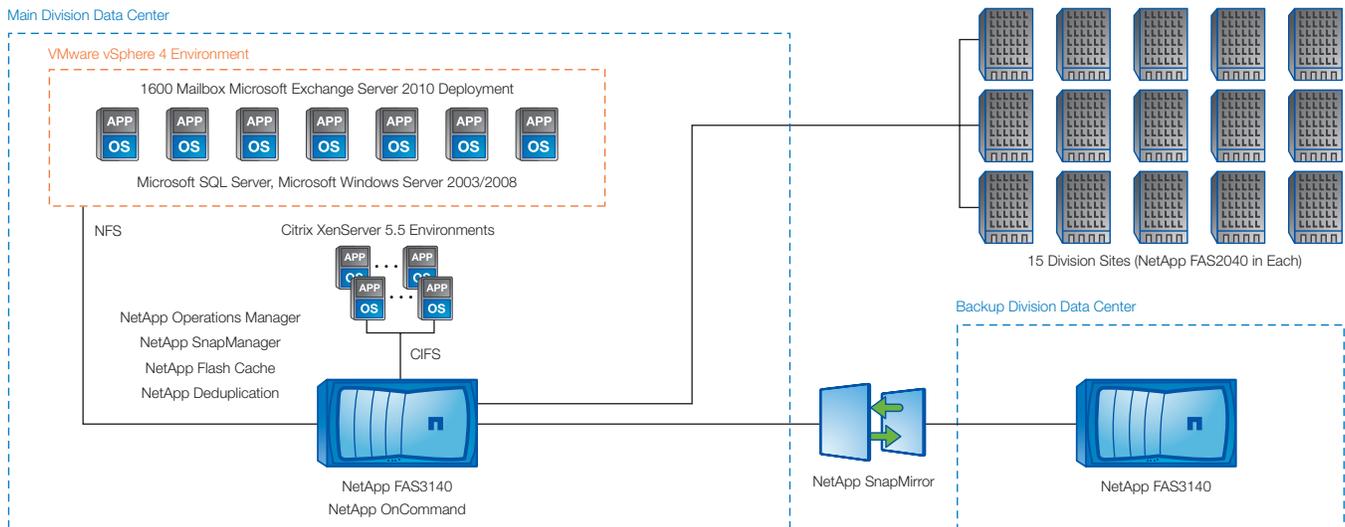


Figure 1) A NetApp high-availability FAS3140 system provides resources for the Citrix XenDesktop 4 and Citrix XenServer 5.5 environments and to user data, profiles, and application streaming. The virtual desktop solution supports more than 300 applications. For administration, IT utilizes Citrix Provisioning Services for desktop deployment and NetApp OnCommand software for central-console storage monitoring and management.

pooled desktops running Windows XP Service Pack 3) across 9 secondary schools. To date, schools have experienced minimal downtime and no delays from login storms. “By the start of the next school year,” Meade states, “we expect to have completed our target deployment of some 5,000 virtual desktops.”

Fast learners: updates in 86% less time

For Charles Healey, York County School Division’s assistant supervisor for computer maintenance, the ability to more quickly publish updates across hundreds or thousands of systems has transformed him from cog in the wheel to hero. He says, “My job is to build software loads and deploy those updates to all of the desktop computers at every site, a process that routinely took four months per school. We were always behind—just last year, for example, we were still running Office 2002 at one of our sites. Today, we can update multiple sites in less time than it used to take to update one lab. An entire refresh cycle that averaged seven years now takes less than one.

“Teachers are ecstatic about how fast we can fix problems, update plug-ins, or bring new applications online. And it’s certainly a boost to my own job satisfaction to be part of the team bringing in the program that could revolutionize

reading or video content that will transform the learning process. It’s extremely gratifying to finally respond to an application request with ‘Yes, you can have it now—and so can all of the other schools.’”

IT can also better address software conflicts. David Kilburn, software configuration specialist, explains: “Education resources are becoming increasingly Web based and reliant on up-to-date plug-ins. Today we can update our plug-ins as frequently as every few weeks if needed to support new applications or functionality. On a recent update, we spent just 10 days pushing out new images to 9 schools. Over the past year we’ve published 6 major updates. Alternatively, because we can isolate plug-ins on specific software versions, we can sandbox applications that are dependent on earlier releases.”

Jason Brousseau, software configuration specialist, provides another example: “Migrating to Exchange Server 2010 required upgrading school board systems to Microsoft Outlook 2010. In the past, that process would have taken at least a month while we worked around the schedules of ‘do-not-touch’ users running critical processes. With the VDI, one click moved 100 people to the new environment. We sent out a same-day e-mail notifying users that, if they

logged back in after 4 p.m., they could start using the Microsoft Office 2010 suite.”

Efficiency, energy savings, empowerment

Fewer versions to support and no-touch updates free IT staff to focus on more strategic projects and processes. Steve Barsten, the division’s network administrator, with responsibility for storage engineering, states: “In the past, we allocated storage management by geographical area to each of seven administrators. Today, one administrator manages storage across the entire division.”

“We frequently hear industry IT managers reference computer-to-technician ratios of 75:1 or 100:1,” Meade remarks. “In contrast, we’re staffed at 340:1, so eliminating administrative overhead, travel time, and the high-touch update processes of the past has been a major benefit of the new VDI. Virtualization has allowed us to modernize and greatly expand functionality and services within the staffing constraints of a school division.”

Other savings come from NetApp deduplication—IT estimates up to 60% capacity recovery across some datasets—and reduced energy usage, including more than 240 watts savings per device from the transition to Wyse thin clients.

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Charles Healey

Assistant Supervisor, Computer Maintenance, York County School Division

Reflecting on project success, Meade is mindful of the benefits of teamwork. He says, “To maximize the benefits of this VDI deployment, we brought together two sets of experts: our own IT team, intimately familiar with the needs of our teachers and students and experienced in matching technology to education; and PLANIT engineers, who brought their wealth of knowledge and resources to help us hone and enable our vision. Together we met aggressive schedules and deployed a solution that empowers our user community with on-demand applications and expanded access to teaching and learning systems.”

SOLUTION COMPONENTS

NetApp Products

NetApp HA FAS3140 and FAS2040 systems

NetApp Flash Cache modules

NetApp Snapshot®, deduplication, and SnapMirror technologies

NetApp FlexClone® software

NetApp OnCommand software, including SnapManager for Microsoft Exchange, SnapManager for SQL Server, and Operations Manager software

Protocols

NetApp SAN (iSCSI), NAS (NFS/CIFS)

Environment

Citrix XenServer 5.5 Update 2, Citrix XenDesktop 4

Citrix XenApp 5

Citrix Provisioning Services 5.6 Feature Pack 1

Microsoft Windows Server 2003/2008

VMware vSphere 4.0

Microsoft Exchange Server 2010

Microsoft SQL Server 2005/2008

Microsoft Office SharePoint Server 2007

Partner

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