IBM

Pike County Schools
Cloud Computing with IBM

Problem
Enable equality in the classrooms while simplifying district-wide desktop management.

Solution
IBM Smart Business Desktop Cloud / SBDC

Goals
- Extend the life of existing computer hardware
- Gain more functionality from existing computers
- Keep user-to-computer ratio to a minimum

Results
- Equitable access for 9,720 students and faculty using existing equipment
- One thousand, four hundred virtual desktops allowing a low user-to-computer ratio
- Simple desktop manageability—reduced desktop images from 40 to one
- Sixty four percent cost savings over self-implemented system
- Dramatic performance improvements

The Pike County school system is, geographically, the largest school district in the state of Kentucky. It supports technology for 27 campuses and 14,000 end users across a distance of 788 square miles. Located in the rural foothills of the Appalachian Mountains, Pike County is isolated from many amenities that are common-place in urban and metropolitan areas, making access to IT resources vital to meeting students' educational needs. Despite drastic budget cuts, Pike County Schools is committed to offering equitable educational environments enabling a successful learning experience for all its students.

Recognizing that it needed an alternative way to provide desktops to its users due to failing hardware, Pike County Schools turned to the emerging market of desktops-as-a-service, which can be thought of as hosted desktop virtualization delivered as a cloud service. Using the IBM service and software provided by Desktone, Pike County Schools was able to ensure consistent and transparent access to working desktop images—from a wide variety of obsolete PCs, desktop configurations, and locations.

The Challenge
As a rural Kentucky school district, Pike County Schools faced significant challenges in providing IT resources to its students, teachers and staff. Desktops, many still running Windows 98, were failing! Hard drives and CD drives stopped working, rendering many machines inoperable. On functioning computers, Internet access to the district's portal site, housing the applications and information students and teachers needed, was inconsistent at best. Online formative assessment and progress tracking in a timely manner was nearly impossible. IT staff time and resources were strained due to far too many hardware models and software versions to maintain in schools—some located 60 miles apart! Network access for homebound students was non-existent. Unfortunately, matters were made worse in 2008 when the IT budget was slashed more than 80 percent. This meant that a hardware refresh was out of the question.

IBM Cloud Academy

Pike County Schools

Harnessing Virtualization to
Restore Obsolete Computers
to Usefulness

"We knew we needed a way
to centralize and standardize
our infrastructure, and
enable all our machines to
function equally. We thought
virtualized desktops would
be the right solution, but we
didn't have enough
manpower
or budget to create
and implement a solution."

—Maritta Horne,
Chief Information Officer,
Pike County School District

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In an effort to gain more functionality from existing equipment and coordinate school and district funds, Pike County Schools tried several initiatives to alleviate the pressure:

• *At first*, to encourage schools to upgrade their hardware and software and have more uniform environments, the district initiated a program in which it would match purchases made by individual schools. However, when schools didn't prioritize technology in their limited budgets, they fell behind in acquiring the resources needed and did not take advantage of the matching district funds. As a result, some classrooms had six-year-old computers and applications, while others had a mix of old and new computers. This made it difficult to ensure equal education across the district.

• *Next*, the school district looked to hosted application virtualization to remove applications from the desktop and deliver them to users over a network connection. Unfortunately, their implementation lacked important functionality, including printing and saving files to students' home directories. In addition, the virtualized application servers also consumed more power than anticipated, driving up the costs.

• *And last*, the school district also attempted to replace their Microsoft® Windows® operating systems with a Linux® implementation. Unfortunately, the Linux implementation failed because users found the interface unfamiliar and the district wasn't able to integrate it with their identity authentication system.

The Solution

Pike County Schools found its solution in Desktone-based desktops as a service (DaaS). In June, 2008, Pike County signed a five-year agreement with IBM, which would provide virtual infrastructure access desktop hosting services. The service includes IBM storage, System x® servers, and VMware virtualization technology aggregated through the Desktone Virtual-D Platform. Using the IBM service and software provided by Desktone, Pike County Schools was able to ensure consistent and transparent access to working desktop images from a wide variety of obsolete PCs, desktop configurations, and locations. DaaS fulfilled Pike's primary requirement in making sure that their current hardware could provide high performance access. This enabled the district's portal site and hosted all of the required user applications. By hosting its desktops in IBM's data center, Pike County also received the benefits of virtualized infrastructure without increasing capital expenses or creating additional IT complexity for IT. The Desktone Virtual-D Platform helps Pike County Schools maintain ownership and control over its Windows OS® images, applications and all related licensing, while outsourcing the physical data center infrastructure powering the virtual desktops to IBM.

> " Universal access is the most phenomenal benefit of the IBM-based solution. In the past, some machines couldn't run key applications, or would be very slow accessing the Internet, or couldn't stream media. Now, it's an equal playing field. There isn't any desktop that won't give users the access they need."
>
> —Maritta Horne,
> Chief Information Officer,
> Pike County School District

The Results

DaaS: Desktops-as-a-Service enabled old PCs to act like new! The benefits included:

• **Cost savings of 64 percent**. Pike County has calculated that over a five-year period, the cost of ownership for the hosted virtual desktop solution will be less than half of the cost of supporting them on-premise. By hosting the desktops in IBM's data center, Pike County avoids the additional infrastructure and staffing costs of administering the servers itself. Because the existing machines need only to connect to the network to access the virtual desktops in the data center, the speed of the hardware is irrelevant and a working hard drive is not a concern. Pike County Schools can double the life of its client hardware using six to seven-year-old machines without sacrificing performance.

• **Dramatically simpler management**. The initial deployment of the DaaS architecture took less than two months. It quickly helped students and teachers to "have access to all of their applications on machines that [before] were just sitting on the floor." Now, Pike County is only responsible for maintaining one desktop image (instantiated as a virtual machine for each user) instead of the 40 they had to deal with before. Users are still able to save files in personalized home directories that the district keeps on-premise, soothing security concerns.

• **Equal, transparent access for all users**. It's no surprise that 40 different images across a variety of hardware didn't deliver a consistent experience. With virtual desktop architecture, all Pike County users see and use the same standard Windows desktop, regardless of the hardware they're using. Consequently, "desktop" performance is greatly improved as the application processing is now off the PC hardware and in the data center. Most users don't realize that the hardware hasn't changed. In addition, the success of this implementation will allow Pike County Schools to add support for additional devices, such as teachers and students' home machines.

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