

Loveland Public Library turns to virtualization and cloud PCs

Loveland Public Library install four times as many computers and help unemployed find jobs. Dell Wyse helps manage more computers without additional budget for increased staff.



Customer profile



Company	Loveland Public Library
Industry	Government
Country	US

Challenge

- Provide more PCs for public use
- Reduce IT support costs
- Allow for future expansion
- Support LEED certification

Solution

- WSM streams Windows 7, Internet browsers, and applications to 140 Dell Wyse Z00D cloud PCs

Results

- Quadrupled number of PCs, from 37 to 140, without increasing staff
- Slashed per-device maintenance time and increased uptime
- Enabled inexpensive expansion for future
- Reduced overall PC energy expenditure

"We were confident that the Dell Wyse cloud PCs would deliver a much longer useful life, while ordinary PCs cycle in and out... Plus, the Dell Wyse devices did the best in our benchmarks. They were stable, and performed just like native desktops."

*Shane Adamson
Library Technology Manager
Loveland Public Library*

"WSM has delivered the benefits of virtualization, but with a low-impact transition and low support costs that make it a better fit for our needs."

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Library Technology Manager
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The Loveland Public Library in Loveland, Colorado, recently embarked on an ambitious renovation project, adding nearly 25,000 square feet to its 32,000 of public space. As part of the project, the library planned a much-needed expansion of its computing resources. With just 37 PCs available for public use, the library's computers were fully booked at least 70 percent of the time. "We had hour-long wait times and were turning people away," says Shane Adamson, Library Technology Manager at Loveland Public Library. "We'd see at least 150 people a day on PCs. And if we wanted to hold a class, we had to close the Internet lab – that was unpopular."

The new plans specified almost 140 PCs for public use – but no additional budget for technical support. Adamson knew right away that he and his one technician, Kent Bumguardner, could not possibly support that many PCs – at least, not the way they were supporting the existing machines. "We had to physically touch each PC to maintain it or implement software updates, and that took about two hours per machine," Adamson explains. "To support four times as many PCs, we'd have to do something completely different."

Adamson and Bumguardner knew they needed some sort of virtualization solution. But which approach would best meet the needs of a 140-desktop implementation and a two-person IT department? Adamson began testing out alternatives, from virtual desktop infrastructure (VDI) with Citrix or VMware to desktop streaming with Doubletake or WSM and an assortment of PCs and Dell Wyse cloud PCs.

In tests, the ease of use of WSM set it apart from the VDI options and from Doubletake. Plus, it was faster than most other options, and WSM could support streaming to PCs with different

hardware specifications. This was important for the library: though the budget for the project would cover new endpoint devices, Adamson expected that eventually he'd be asked to expand the system with recycled PCs. With WSM, he could be sure of supporting them within the new system.

Having chosen WSM, Adamson still had many options for endpoint devices. He selected 140 Dell Wyse Z00D cloud PCs. "WSM is the first solution to use OS and application streaming to package and deliver the OS and applications independently of one another to cloud PCs, giving IT administrators the control they need to ensure the consistency of desktop software across their computing environment."

Deployment was fast and easy. In just three days of downtime, the team deployed two servers, built a network, set up DNS, DHCP, and a proxy filter. In the next two weeks they completed eight images for different uses in the library. "Building images is fast with WSM," comments Adamson. "If you have a server up and a reference device, you can get the first image done in just four to six hours."

Solution

Dell Wyse cloud PCs minimize device management

Now, Loveland Library's public internet lab has expanded from 21 PCs to 48 Dell Wyse Z00D devices that people use to browse the Internet or work with Microsoft Office applications. In the children's department, five Z00D cloud PCs with a child-friendly browser enable children to visit approved websites, where they play educational games and watch videos. In the teen's department, nine more Z00D devices offer shortcuts to social sites, access to multiplayer games, online research tools, and productivity tools including the Microsoft Office suite of applications. Other machines support reference and web catalog access.

WSM streams Microsoft Windows 7, desktop images, and the library's applications from three Dell R710 servers over 1GBe and Cat6 cable to the Dell Wyse cloud PCs. When each device is turned on, its BIOS directs it to boot seamlessly over the network by connecting to a common virtual Windows desktop through WSM. But these cloud client devices have a minimal footprint on the server side: unlike VDI, with WSM processing, memory, and graphics handling happen on the client side.

Adamson made the transition from XP to Windows 7 at the same time as switching to the Dell Wyse infrastructure. "It was just a part of a bigger transition," he comments. "It didn't seem like much additional work."



Students can access shortcuts to social sites, research and productivity tools.

Benefits

Right-sized solution maximizes efficiency

WSM is a virtualization solution that's just the right size for the library's needs, and a perfect fit for its limited resources. The minimal management that cloud PCs require means Bumguardner can maintain four times as many machines in less time than he used to spend maintaining the original 37 PCs.

Right-sized solution for small implementations

WSM doesn't require the same level of server investment and expertise as VDI does.

Adamson calculates that he would have needed five or six \$10,000 servers to manage the library's images but with WSM, the library was able to get by with just three \$6,000 low- to mid-grade servers, saving approximately \$42,000 in server hardware costs. Plus, Adamson observes, "WSM doesn't require us to have in-depth server expertise. We're more familiar with PCs, so WSM and the Dell Wyse cloud PCs were a more intuitive choice for us."

With fewer, less expensive servers needed to run the infrastructure, and the cost-effectiveness of the Dell Wyse Z00D devices, this solution proved to be the least expensive from a hardware point of view. The library also saves money on software: to run a PC with Windows costs \$50-70 up front, a one-time expense until the next upgrade. But with cloud PCs, the library pays just 90 cents a month for each cloud PC to run Windows.

The greater Loveland-Fort Collins metropolitan area has experienced increased unemployment since 2009. During these challenging economic times, the Loveland Public Library has become an invaluable resource for its unemployed library patrons and job seekers.



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Cost savings are set to continue: the library used to replace about 30 percent of its PCs each year – whichever ones were the most problematic. Adamson expects to get eight full years from the cloud PCs instead of three – but looking at the original Dell Wyse green-screen terminals that the library still uses to access its catalog, he wonders whether maybe they'll last even longer.

Ease of deployment and management

Deploying the new solution was a straightforward effort, complete within a few days.

Even better, ongoing management is simple. Adamson estimates that if the library had just extended its previous solution, adding more than 100 PCs, the team would need to spend 140 hours a week – a total of 3-4 full time employees, at \$14/hour – to manage its new PCs.

"It took me two hours to patch a PC," says Bumguardner. With 140 PCs, he calculates he would have spent 40 hours a week just to make images. "We didn't have a good way to auto-deploy images, so we had to make an image, capture it, then replot it. Simply updating Flash – which we had to do frequently – could take as long as two hours per machine." And finding a time when machines weren't already in use was a challenge, too. Now he can simply make any changes on WSM and it will distribute the changed application to all cloud clients in an identical way as soon as they reboot.

Flexibility to meet changing needs

The library has already benefited from the inherent flexibility of the thin clients. For example, when its teen area had to close for one phase of the renovation, Adamson simply repurposed the new classroom to serve as a teen room when there were no classes in session.

"All we had to do was switch the images and put up a sign on the door," he says. "It was that easy."

Security made simple

Security requirements used to cause an administrative burden, too. The library secured its desktop images using Faronics' Deep Freeze, but that slows performance. Plus, whenever Bumguardner had to make a change on a PC, he had to unlock Deep Freeze, reboot, make his changes, then re-lock the PC, and reboot again. The Dell Wyse devices don't need Deep Freeze – they don't even need an antivirus on each client, because they receive fresh copies of the operating system and applications every time they reboot.

Energy savings

The library has a LEED certification and is aiming for the gold standard level in its renovation. The fact that the Dell Wyse devices use just one tenth of the energy of PCs is very important to helping the library achieve LEED levels of energy efficiency. Even though the library has tripled the number of devices, it's still netting an energy savings on computing hardware.

ROI factor	ROI calculation	Annual cost avoidance
Reduced costs of endpoint hardware	Savings on hardware, software, and longer refresh cycles	Estimated savings over the next 8 years of 40-50 percent
Reduced cost of server hardware	Just 3 mid-grade servers needed instead of 6 high-end ones	Nearly \$42,000 every 5 years
Reduced cost of software	Instead of paying \$70 per device for a software license estimated to last 3 – 5 years, library pays 90 cents a month per device	\$9,800 up-front cost for 3 – 5 years, versus \$126 per month
Greater availability/reduced downtime	At least 2 hours down time and 2 hours staff time to resolve a PC issue; less than a few minutes for a cloud PC	Avoided many hours of downtime and repair
Reduction in support overhead	If the Library used the current imaging system, it would require 140 hours of staff time to update the entire building	Savings of approximately \$60,000 per year in new staff hours
Lower electricity consumption	Cloud PCs use one tenth the energy of standard PCs	Library quadrupled number of devices while still cutting energy costs because the Z00D uses 15W, and a standard desktop averages more than 150W

Conclusion

A solution that's always as big as it needs to be

Adamson is pleased with the new WSM implementation and its cost-effective, low-maintenance reliability and performance. He credits the Dell Wyse team and reseller Attain Technologies for their expertise and helpfulness in adapting to the issues raised by construction.

Adamson is confident that he can maintain higher service levels than before with less maintenance time, leaving him and Bumguardner free

to contribute to the library in other ways, through offering classes or extending new services to patrons. He's also confident that he can expand his solution if necessary – even if he doesn't have much funding to do so. With its solid backend infrastructure and seamless support for any PC, WSM enables the library to supplement its brand-new system if it needs to in the future, for as little as the cost of legacy PC hardware. That's important, because Adamson expects that the public will increasingly want computer resources and internet access as part of the library's services.

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Adamson and Bumguardner can now deliver better service to more people – and it's easier for them. Instead of spending their time fixing malfunctioning units and performing upgrades, they can improve the services they offer and educate staff and patrons. And, with more devices available, patrons are happier – and may even be more inclined to support the library the next time it needs fresh funding.

