Desktop Virtualization:

From the Massachusetts Legislature to Chester County, PA, secure remote access and mobility are transforming government.

For the Legislature of Massachusetts, desktop virtualization and the remote access it provides will transform the way business is conducted. It decreases the time it takes lawmakers to define and finalize legislation and state budgets, allows legislators to work from local district offices more efficiently and will potentially enable wireless access in the State House.

For Chester County in Pennsylvania, virtualization is not only a way to cut IT support costs, but a way to let county employees work more productively when they are delivering services outside of county facilities.

The Massachusetts Legislature and Chester County (learn more about their initiatives in the case studies following) are just two of the many government entities turning to desktop virtualization.

Desktop virtualization allows governments to replace costly desktop computers with a thin client — an inexpensive, slimmed-down personal computer that retains no data after a computing session ends. Instead, the data files and computing power reside on servers in a remote data center. This dramatically cuts down on what many governments say is their largest IT headache: supporting and maintaining personal computers. Applications, operating systems and other upgrades can be centrally managed, so there is no need for IT staffers to travel to remote locations to support individual PCs. New users can be up and running within minutes, and applications can be rolled out to all users at the same time. In addition, backups can be handled centrally and automatically.

Desktop Virtualization's Added Benefits: Remote Access and Improved Mobility

Although the maintenance and cost benefits of desktop virtualization are significant, the remote access functionality and increased mobility it offers may be the most important advantages it brings to the public sector. Because workers can also connect to the virtualized desktop from any networked client device, it "frees" them from coming into an office, allowing workers to connect from their own mobile device, work from a remote location or share an office workstation securely.

With secure access, this mobility has the power to transform government. Seventy-four percent of IT leaders believe BYOD programs can help employees improve their productivity.[1] In the public sector specifically, 58 percent of state and local CIOs said in 2012 that their agency's spending on smartphones and tablets would increase that year.[2] And state CIOs rank mobile workforce technology as their 2nd-highest priority, just behind cloud computing.[3]

In fact, mobility or remote access capabilities have already proven beneficial in a number of public sector jobs, including:

- Tax auditors in the field
- Legislators in their local district offices
- Case workers in child protective services
- Police officers on patrol
- State lottery machine inspectors
- Building and other types of inspectors
- Probation and parole officers
- Employees working from home

Allowing workers to use applications as if they were sitting at their office desks

reduces the time it takes them to process paperwork and shortens government's response time to constituents.

Security Issues and Lack of Resources Thwart Government Mobility

So why haven't more governments adopted mobility and provided remote access to employees? The main stumbling blocks include the fear of malware and security breaches over unsecured Wi-Fi networks, and the lack of IT resources to support multiple devices and data traveling over different types of networks.

Senior IT management personnel at Chester County, for example, worry about the difficulty of supporting and securing different devices. Many smaller governments also lack the budget needed to upgrade networks that have languished as IT budgets have been slashed.

With the expansion of remote work and different kinds of mobile devices, safeguarding data and the network has become more difficult because IT does not own and can't control the network all the way from the device to the data center. In addition, with the proliferation of smartphones, tablets and other devices, the data now travels over different types of public networks from different carriers and vendors — networks that IT may not be familiar with. These challenges have put a stop to some governments embracing mobility.

With desktop virtualization, however, security is centralized in the data center. Rather than maintaining security software for every endpoint in the organization, IT can focus solely on the virtualized desktops. Security updates are installed on the virtualized desktop within the data center, and then synced to the endpoint automatically. Desktop virtualization provides secure access to applications and data to remote users who are not within the company firewall.

Desktop virtualization solutions such as VMware Horizon View include SSL tunneling — which completely encrypts connections — and support for federal Personal Identity Verification (PIV) access cards, Department of Defense Common Access Cards and RSA SecurID®,

providing the added security of two-factor authentication.

In the following examples, CIOs at Pennsylvania's County of Chester and the legislative branch of Massachusetts share their insights into how they have overcome these challenges. Both have leveraged the power of desktop virtualization to provide remote access to employees and improve mobility using innovative solutions from VMware.

and incompatible computer systems, one for the Senate and another for the House.

To fix these issues, Legislative Information Services "built an integrated network and built it so they [the Senate and House] couldn't see each other," says CIO Edward Bell, addressing the need for separation between the commonwealth's different branches of government. "The productivity savings are in months. Users can now spend more time evaluating the budget

> "Desktop virtualization provides us with a nice platform for full accessibility, giving legislators access to applications and all forms, letters and documentation for their virtual offices."
>
> –Edward Bell, CIO, Legislative Information Services for the Commonwealth of Massachusetts
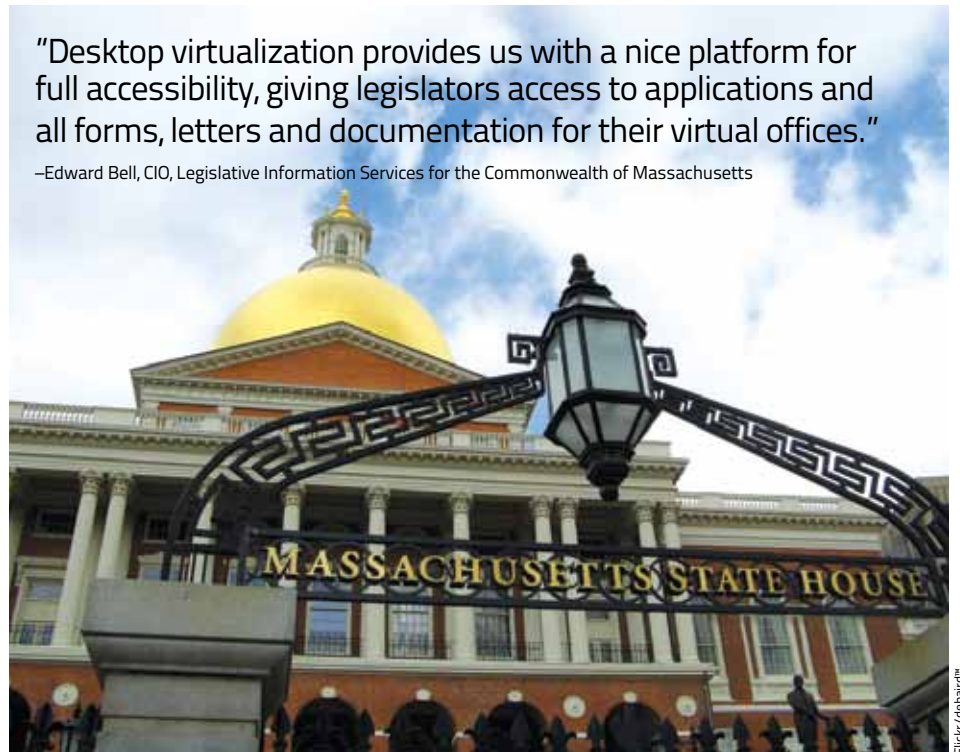
Shaving Months off Budgeting in Massachusetts

Two years ago, the Massachusetts Legislature implemented a newly re-engineered integrated application that provides all capabilities for legislative processes. While transitioning onto this platform, another system was developed and implemented for budget processing.

Before these changes, editing, reconciling and aligning large documents, including budget details from hundreds of state agencies and departments, was a time-consuming nightmare fraught with errors, security problems and multiple versions. Every agency's budget, for example, was manually entered into two different

and looking for opportunities rather than entering and validating data."

Now, when the governor files his approximately $32.3 billion budget, it is populated into one area electronically, and each branch has a copy of the same core to massage and change as it sees fit. After each side is done working with the data, the two sides come together in an integrated system that allows them to go forward smoothly with each budget item. "It's amazing, and the accuracy has gone up immensely," Bell says.

The Legislature was also grappling with connectivity issues. Previously, legislators were unable to access important government files from their local district

offices — where they spend upwards of 40 to 50 percent of their time — due to the antiquated mainframe application in use. Legislators had to email files, transfer them to thumb drives or CDs and then load them onto home computers, only to download those files again to physically transport them back to the State House. For a limited number of employees, their only remote access option was to try to log in over the state's very slow VPN solution.

Legislators and staffers also couldn't log into the files wirelessly from their handheld devices, as there is no wireless capability in the 215-year-old State House, which was built with walls that are several feet thick in some parts of the building. A few staffers tried to set up rogue wireless networks with their own routers, only to have IT shut them down due to potential security issues.

To address these concerns, Bell overhauled the entire network and IT operations, paving the way to implement desktop virtualization using VMware Horizon View.

"Desktop virtualization provides us with a nice platform for full accessibility, giving legislators access to applications and all forms, letters and documentation for their virtual offices," Bell says. "We've rolled it out to the entire Senate of 400 users and are now rolling out to the House, which is another 700 users. With VMware, we've also gained the transportability of the virtual office, which is very important."

An internal staff of 20, along with some 10 to 15 consultants, supports the roughly 1,100 legislators and staff. The 3-month initial implementation coincided with desktop lease expirations and is part of an applications upgrade to Windows 7, Internet Explorer 9 and Office 2010. The Senate, whose leases expired first, has been fully upgraded. The House will follow, with the VMware Horizon View implementation expected to be completed by November 2013.

Virtualization has allowed the IT team to bring all its outsourced services back in house, where the team has much more control and is able to provide support. Previously, IT was mostly a desktop support team that had to call in private firms to fix network, storage and other problems.

With virtualization now on the desktops, the next phase is to open the State House up to wireless access. Currently, no wireless devices are allowed with the exception of a few isolated events and a few devices logging in via a very slow VPN experience, due to security concerns and facilities issues.

That mandate is now being reconsidered, thanks to a successful State House event where wireless was required for visiting dignitaries and the secure connections that virtualization enables.

"The functionality we've gained is oh-so-far beyond what we would have expected," Bell says of the legislature's virtualization efforts. "Virtualization was never based on the cost, but rather on its capabilities. However, from an investment standpoint, we are very comfortable with the results."[4]

Paving the Way for BYOD at Chester County, PA

CIO Glenn Angstadt and Deputy Director Jim Ray at Chester County's Department of Computing and Information Services (DCIS) started thinking about desktop virtualization many years ago as part of a phased overhaul that included a network upgrade, a data center move and the consolidation of county facilities.

Although county officials have always supported funding for IT infrastructure, DCIS knew that serious budget constraints meant that it had to be increasingly aware of IT costs.

Angstadt and Ray knew they had to make incremental upgrades to their data center, storage facilities, servers and network over time before they could even begin to think about endpoint virtualization. They didn't have the luxury of being able to create a dedicated network.

"It was Glenn's vision along with the practical notion of being more efficient and doing more with less," Ray says.

Phase one of their VMware desktop virtualization plan was to replace traditional mini towers with zero clients as the desktop computer leases expired. During phase two, the plan was to use desktop virtualization to enable a mobile workforce.

According to Ray, "phase two has become more of a focus or game-changer than phase one." That's because IT has seen an uptick in requests from the government's 3,000-strong workforce to connect remotely. For example, the head of human resources recently upgraded to a Windows 8 personal device, and still needs remote access, which wasn't supported by the county's existing remote connectivity solution. Additionally, a director at one of the county's long-term care facilities recently switched over to Apple computers at home and, with employee evaluations

Rebecca Brain

> "The advantage we have is that any BYOD project request we get will be enabled by sound, proven technology through our backend infrastructure that we implemented and now have available to leverage."
>
> —Glenn Angstadt, CIO, Department of Computing and Information Services, Chester County, PA

and budgeting coming up, asked how he could log in remotely to work from home.

"The HR manager was disturbed to learn that she couldn't log in the traditional way because we didn't support Windows 8," says Angstadt, explaining that remote access is currently provided through a multi-step process whereby workers log in through a VPN and an Internet browser.

Most of the remote access comes from case workers, law enforcement and finance. Angstadt and Ray are looking forward to rolling out VMware Horizon View remote

access to the full roster of workers over the next 18 months. "Rather than figuring out the nuances of different operating systems, different browsers and different handheld devices, [we now just ask whether an employee] has a sufficient network connection that they can connect to, and we say they are good to go," says Ray.

Virtualization eliminates many support problems. "With the HR director, I don't have to worry about where she is connecting from, the state of her home network or the state of her laptop," says Ray. "If the VMware Horizon View client is installed and working, then she's connecting to a standard Windows desktop not unlike the other 2,000 others we support. I get my economies of scale, and from a support standpoint, it's like she's in the office."

Desktop virtualization has given the county a leg up on its peers when it comes to Bring Your Own Device (BYOD), Angstadt says. "Most in county government are just beginning to talk about BYOD. They are concerned about what to do with the varied amount of devices and are approaching it from the endpoint. The advantage we have is that any BYOD project request we get will be enabled by sound, proven technology through our backend infrastructure [desktop virtualization] that we implemented and now have available to leverage."

This advantage allows for flexibility regarding the type of device connecting to county records and data, without the worry or headaches that come when trying to be proficient in many different types of devices — a common concern for a smaller IT staff.[5]
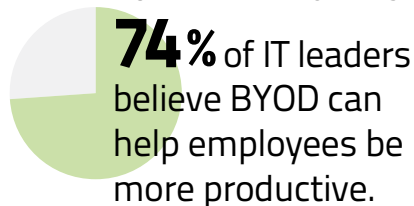
Benefits Beyond the Desktop

With the rapid pace of change in the technology world, desktop virtualization provides a cross-platform, multi-device solution that offers benefits beyond simply cutting IT costs. With a trusted partner like VMware, governments can cut travel costs, increase worker productivity and embrace the mobility movement securely.

Endnotes
[1] "BYOD By the Numbers." Infographic. http://www.govtech.com/infographics/BYOD-By-the-Numbers-Infographic.html.
[2] "Mobility Spending Will Grow in 2012." *Government Technology*, March 9, 2012. http://www.govtech.com/wireless/Mobility-Spending-Will-Grow-in-2012.html.
[3] NASCIO State CIO Priorities for 2013. http://www.nascio.org/publications/documents/NASCIO-CIO-Priorities-2013.pdf
[4] Interview with Edward Bell, February 25, 2013.
[5] Interview with Jim Ray and Glenn Angstadt, March 12, 2013.

MOBILITY BY THE NUMBERS:

74% of IT leaders believe BYOD can help employees be more productive.

58% of state and local CIOs said their agency's spending on smartphones and tablets would grow in 2012.

The **#2** priority technology for state CIOs is mobile work-force technology, right behind cloud computing.

vmware®

VMware is the global leader in virtualization and cloud infrastructure solutions. More than 480,000 customers rely on VMware to lower IT costs, increase the agility of their IT environments, and reduce time to market for new services.

carahsoft.

Carahsoft is the trusted government IT solutions provider, combining expertise in technology and public sector procurement processes to help agencies implement the best solutions. Carahsoft serves as the master government aggregator for many leading solution providers, including VMware.