



Data Center Consolidation for Federal Government

Virtual computing transforms IT environments so agencies can cut costs, bolster efficiency and agility, and improve user productivity

In a slow economy, the call for fiscal responsibility is heard louder in the halls of the federal government than anywhere else. Public servants, entrusted with taxpayer dollars, find themselves more under the gun than ever to satisfy the needs for increased services while operating with less funding.

Agencies participating in the Federal Data Center Consolidation Initiative (FDCCI) have closed nearly 3,800 data centers, saving a total of \$3.3 billion since the initiative began in 2011. But there is still work to be done, with 6,000 data centers still operating around the country. Citrix can help agencies realize their goals through an enterprise-ready, cloud-proven virtualization platform that contains all the capabilities required to create and manage a virtual infrastructure.

This paper explains how virtual computing from Citrix provides an effective tool for the data center consolidation process. Citrix virtual computing allows federal IT departments to transform static and complex IT environments into more dynamic, easily managed virtual data centers, leaving the cumbersome and inefficient legacy model of one server, one application behind. As a central component of this transition, the Citrix XenServer virtualization

platform allows agencies to cut costs, bolster IT efficiency and agility, and improve user productivity.

Benefits of virtual computing

With the rollout of FDCCI, the federal government has laid out an aggressive program that dovetails with the White House's Cloud First policy, which directs agencies to adopt cloud computing in some capacity. The data center consolidation movement provides agencies with a speedy and effective means for cutting IT costs while still providing the public with a high level of service. Moreover, this approach delivers timely and inexpensive access to powerful tech resources, freeing IT departments to focus on key initiatives and tasks as opposed to their network infrastructures.

The move to server virtualization is bringing about a multitude of benefits for the federal government:

- Reduced energy, cooling, administration, and real estate expenditures
- Better security through a smaller, more defensible digital footprint
- Augmented service levels and information availability
- Easier deployment of IT resources
- Reduced management staffing

ROI and beyond

The standard aims of a consolidation effort include lessening server or storage sprawl, cutting power use, and simplifying the IT environment, all of which have their own financial advantages. Identifying and overseeing metrics such as energy cost savings is not where the discussion of return on investment (ROI) ends, however. Calculating ROI for data center consolidation and optimization should take into account the added value of a more versatile dynamic agency that can roll out new services to the public in a timely and efficient manner. In this sense, increased customer satisfaction is a benefit that can't be fully measured but remains invaluable nevertheless.

The case for doing more with less is only becoming more urgent. Driven mostly by a reduction in military IT expenditures, the president's fiscal 2016 IT budget of \$86.4 billion is up only slightly from \$84.1 billion in 2015. Instead of increasing IT spending over the past few years, the White House has kept its tech budget essentially flat while asking managers to make up the shortfall by trimming costs through better operational efficiency.

Server virtualization

For federal IT managers, any

discussion on consolidation should begin with how to virtualize agency servers. Server virtualization is a proven technology that enables multiple virtual machines to run on a single physical server; each virtual machine is completely isolated from other virtual machines and is decoupled from the underlying host by a thin layer of software known as a hypervisor. This allows each machine to run a wide range of different operating systems and

applications within a federal agency. Because the virtual machines are decoupled from the underlying host, the guest can be moved from one physical server host to another while still operating; this is known as live migration. These attributes are transforming how the federal government approaches virtual computing.

XenServer capabilities

Citrix XenServer is a complete

managed server virtualization platform built on a powerful hypervisor. XenServer technology is widely acknowledged as the fastest and most secure virtualization software in the industry. It is designed for efficient management of Windows and Linux virtual servers and delivers cost-effective server consolidation and business continuity. Government agencies trust it to run the most mission-critical applications.

Citrix products

Citrix virtual computing solutions help federal agencies build simpler and more cost-effective environments that deliver IT as a service and make it easy for government staff to work in the most optimal way—anytime, anywhere, and on any device:

- **Citrix XenDesktop** is a desktop virtualization solution that delivers Windows desktops as an on-demand service to any user, anywhere.
- **Citrix XenApp** is an on-demand application-delivery solution that enables you to centralize and manage applications in the data center and instantly deliver as a service to users anywhere.
- **Citrix XenServer** is an enterprise-ready, cloud-proven virtualization platform with all the capabilities needed to create and manage a virtual infrastructure at half the cost of other solutions.
- **Citrix NetScaler** available as a network device or as a virtualized appliance, makes web applications run five times better by accelerating application performance, optimizing application availability, and enhancing web application security while substantially lowering costs.
- **Citrix Netscaler Gateway** is a secure desktop and application access solution that provides administrators granular application-level control while empowering users with access from anywhere.
- **Citrix Branch Repeater** is a branch optimization solution that provides a high-definition desktop and application experience to branch and mobile users while dramatically reducing bandwidth costs and simplifying branch infrastructure.
- **Citrix Receiver** is a high performance, universal client technology that enables on-demand delivery of virtual desktops, Windows, web, and software as a service applications and IT services to any device.
- **Citrix Workspace Suite** securely delivers the apps, desktops and data people need for business productivity. Only Citrix offers the most complete and integrated digital workspace. CWS streamlines IT control and simplifies accessibility for users and gives complete choice of device, cloud and network. Citrix Workspace Suites combines the power and flexibility of XenApp, XenDesktop, Shapefile, and XenMobile in one easy to manage product offering.
- **NetScaler SD-WAN** is a WAN optimization solution that provides a high-definition desktop and application experience to users while dramatically reducing bandwidth costs and injecting resiliency into branch infrastructure.

The free edition of XenServer starts with a 64-bit hypervisor and centralized management, live migration, and conversion tools to create a virtual platform that maximizes guest density and performance. Its premium editions extend the platform to enable agencies of any size to integrate and automate management processes, delivering a virtual data center solution.

Streamline operations

By consolidating server workloads, XenServer reduces power, cooling, and management costs and helps optimize the use of existing hardware.

Shrinking the overall number of servers, however, is only one of the benefits of XenServer. Administrators can automate key IT processes to improve application service delivery, saving both time and money.

Adapt to increasing IT demands

Virtualization delivers the flexibility to adapt a data center to meet constantly evolving IT requirements. For example, XenServer optimizes the location of server workloads to improve performance and utilization while increasing server readiness within resource pools. This ensures that application

requirements and expected performance levels are always met and helps deliver new applications into production more quickly.

Reduce unplanned downtime

Natural disasters and other man-made disruptions can cripple any agency—but downtime and data loss are not acceptable in today's working environment. To protect the bottom line, the federal government must protect its IT and data investments and keep the infrastructure running. With server virtualization, servers are separated from underlying hardware and delivered as virtual machines, making the protection of virtual machines and associated data easier than in a physical infrastructure. This makes server virtualization a key strategy to protect IT infrastructure against all types of disruptions, helping agencies reduce downtime and increase worker productivity.

Leverage the cloud

Now more than ever, federal enterprises are moving to cloud computing to lower capital costs and deliver more responsive and timely IT services to taxpayers. XenServer helps federal IT departments achieve cloudlike economics through data center automation, increased administrative efficiency, high reliability and business continuity, and the ability to leverage the cloud as an extension of their infrastructure. With the growth of both public and private clouds, the IT environment is rapidly expanding beyond traditional data center boundaries and exposing new concepts such as platform as a service or infrastructure as a service to users via an enterprise network. Inherent in the promise of

How Citrix XenServer works



1. Download and activate: Dedicate a 64-bit system with either Intel VT or AMD-V technology and a Windows OS computer to install XenServer and the Citrix XenCenter management console from www.citrix.com. Easy-to-follow steps will guide you through the entire installation process.



2. Convert and consolidate: Convert existing physical servers to virtual machines using Citrix XenConvert and create new virtual machines from the XenCenter management console. Establish virtualization templates to further facilitate the creation of new virtual machines. Reduce the number of physical servers required by migrating virtual machines.



3. Operate and manage: Perform key data center and management virtualization tasks using the features of XenServer Free Edition in your live production environment. See how features such as XenConvert, XenMotion, and XenCenter provide the necessary tools to manage a virtual data center.

cloud computing is an IT infrastructure that is extremely flexible and can be quickly customized to meet the needs of the government agency, rather than having the agency bend to the needs of the IT environment.

Set up and manage with ease

You can install XenServer and have it running in 10 minutes. Its unique management architecture and console eliminate single points of failure, allow IT managers to centrally manage hundreds of virtual servers, and install with only 4MB of storage.

Benefit from free technology features

By providing features like live migration, shared storage support, centralized multi-server management, and physical to virtual (P2V) machine and virtual to virtual (V2V) conversion tools in the free version, XenServer enables any federal agency, no matter the size or budget, to immediately benefit from the power of server virtualization for data center consolidation, business continuity, and overall agility.

Conclusion

For federal government agencies, the era of data center consolidation is in full swing. Cost savings, enhanced performance, and a reduced IT



footprint can all be realized through a partnership with Citrix, a recognized leader in server virtualization. With Citrix XenServer, government IT environments get the speed, agility, flexibility, scalability, and ease of use that meet today's taxpayer demands, while helping to achieve data center consolidation goals in the future. Doing more with less was never so easy.

For more information, visit www.citrix.com/government.

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