



# Five reasons why you need Citrix Essentials for Hyper-V now

## Overview

Server virtualization has the potential to yield dramatic savings through consolidation of datacenter infrastructure, streamlined delivery of server workloads, and more scalable IT administration. If not managed properly, however, it can also introduce challenges, both in infrastructure and operations. Having the right virtualization management tools is essential to maximizing the value of server virtualization and making a smooth transition from physical to virtual server infrastructure. This paper explores common challenges associated with server virtualization deployments and the ways Citrix Essentials™ for Hyper-V™ together with Windows Server® 2008 Hyper-V and Microsoft System Center Virtual Machine Manager can help organizations maximize the value of server virtualization.



## Challenge #1 – Storage cost and complexity

One of the first challenges many organizations face when virtualizing an existing environment is a potentially complex and costly storage architecture upgrade. To take advantage of virtualization's most powerful features, such as live motion, high availability, and fast virtual machine (VM) provisioning and cloning, organizations must have shared or networked storage. This upgrade requires organizations to migrate server workloads and associated data from internal or direct attached storage devices to fibre channel, iSCSI, or NFS devices. Both the initial migration of server workloads and subsequent management of storage in virtual environments can be challenging for a number of reasons.

Storage management challenges are compounded by server virtualization itself. Hypervisors create an abstraction layer between storage hardware and guest VMs making it difficult to map VM objects to appropriate storage LUNs. Inadequate mapping of storage objects can lead to performance degradation as environments grow. Additionally, server virtualization limits an organizations ability to take advantage of powerful array-based features, such as thin-provisioning, snapshots, and deduplication.

Some virtualization vendors remedy the storage dilemma by performing all advanced storage management functions on the host using cluster file system controls included with the hypervisor. This approach leads to unnecessary server resource consumption and generally limits administrators' ability to use advanced storage features.

## Solution #1 – Seamless storage integration

Citrix Essentials for Hyper-V with StorageLink™ offers seamless storage integration that unlocks the full potential of storage arrays in Hyper-V environments. StorageLink dramatically simplifies initial storage provisioning by condensing dozens of time consuming, manual configuration steps into just a few clicks. It intelligently coordinates complex storage provisioning operations helping to ensure optimal I/O performance and simplifies the overall storage management process. Additionally, it allows server administrators to easily tap into advanced storage features such as thin-provisioning, data deduplication, space efficient snapshots, backup and replication.

StorageLink helps organizations make a smooth transition to networked storage by eliminating such complex tasks as SAN fabric zoning for improved security and by providing hardware level assurance that only authorized servers are allowed access to specific storage resources. StorageLink complements the wide range of storage architectures supported with Windows Server 2008 Hyper-V. It supports all Storage Management Initiative Specification (SMI-S) based arrays as well as many non-SMI-S arrays through easily implemented custom storage adapters.

## Challenge #2 – VM sprawl

One of virtualization's greatest strengths can also be its biggest weakness—VM sprawl. Virtualization eliminates many of the costly and time consuming steps for procuring, installing and configuring new workloads. This reduces the time to deploy servers and applications from days to hours or even minutes. VMs can multiply quickly. Left unchecked, non-essential virtualized

workloads will fill spare capacity on physical servers, unnecessarily burden networking infrastructure and consume expensive storage resources.

VM sprawl is a risk in any virtualized environment, but it is especially a concern in test and development laboratories with limited resources where virtualized workloads are readily created—and then too often forgotten or not fully reclaimed. In addition to VM sprawl, many lab managers struggle with the consistent delivery and control of complex, multi-server configurations for testing, development, and staging purposes.

## **Solution #2—Automated delivery and management of virtual infrastructure**

Citrix Essentials for Hyper-V includes lab and stage management tools to help manage the creation, allocation and expiration of VM resources and help keep any virtualized environment under control. Citrix Essentials for Hyper-V offers Hyper-V users effective, full-lifecycle management of virtual workloads in both laboratory and production environments.

Through its lab management tools, Citrix Essentials for Hyper-V automates the management of lab infrastructures to reduce the complexity, time and cost of managing non-production environments used by development, test, support and training organizations. It allows administrators to automate the setup and tear-down of complex application workload configurations in conjunction with self, provide self-service template libraries to developers for rapid provisioning, reduce virtual machine sprawl and enable cross-team collaboration on common virtual environments.

In addition to tackling VM sprawl and resource control within lab environments, Citrix Essentials for Hyper-V extends its management of virtualized infrastructure from application staging environments all the way through to production. Stage management features enable simplified patching and updating of production applications across physical and virtual environments—tools for automating key processes for total lifecycle management.

## **Challenge #3—Delivery and maintenance of server workloads**

Server administrators spend most of their time rolling out new server workloads or maintaining existing ones. The administrative burden of deploying, maintaining and upgrading server environments exists regardless of whether individual server workloads are running on physical or virtualized servers.

As physical and virtual server environments grow, it becomes more difficult to effectively manage multiple workload images. Manual operations increase the likelihood of error and downtime. The time to roll out new server workloads increases as configurations grow more complex. Without the ability to respond quickly, IT is not able to respond to fluctuating demands on critical applications.

Organizations need an automated way to roll out new server workloads and maintain existing environments using standardized workload images.



### Solution #3— On-demand provisioning

The dynamic provisioning services available with Citrix Essentials for Hyper-V offer a fast, consistent way to roll out and maintain dozens of server workloads. Citrix Essentials for Hyper-V allows administrators to provision multiple physical or virtual workloads on-demand using a single standardized image stored in a shared image library on the network. Unlike other provisioning technologies, no software is pre-loaded or permanently loaded; instead, Citrix Essentials *streams* server workloads on-demand to a target physical server or Hyper-V hypervisor.

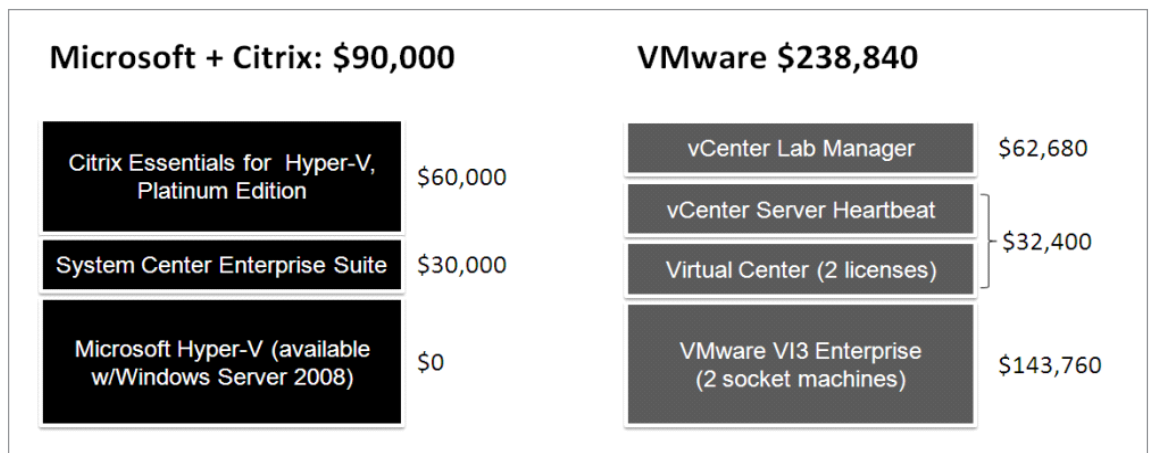
Administrative efficiencies scale with each duplicate workload in your environment. To roll out, upgrade, or completely re-provision dozens of server workloads requires no more time than would be required for a single machine. Dynamic provisioning with Citrix Essentials also results in dramatic storage savings. Because Citrix Essentials allows organizations to run dozens of server workloads from one shared image, the storage capacity normally required for redundant workload images can be completely eliminated.

Organizations that want to streamline the delivery and management of server infrastructure should use the dynamic provisioning capabilities of Citrix Essentials for Hyper-V for physical and virtual workloads within the datacenter.

### Challenge #4— The high cost of virtualization

Companies consolidate physical servers to reduce costs of server hardware, datacenter space, power and cooling, and a host of direct and indirect management costs. While infrastructure costs are reduced by most virtualization platforms, lowering operational and software costs depends on the advanced features included in a virtualization solution.

For basic consolidation, there are a number of inexpensive, even free, virtualization technologies that organizations can employ to shrink their server footprint. Unfortunately, some virtualization vendors charge such a premium for advanced features that any operational benefits gained through virtualization are offset by software acquisition costs. IT organizations need a way to achieve cost-effective consolidation, operational efficiencies and cost-effective advanced virtualization management to fully realize the benefits of server virtualization.



## Solution #4—Cost control with Hyper-V, System Center, and Citrix Essentials

Microsoft Hyper-V and System Center Virtual Machine Manager, together with Citrix Essentials for Hyper-V, offer an unbeatable alternative to competing virtualization solutions in terms of overall virtualization value. For example, the server virtualization software costs for a 20-server lab environment reveals that an end-to-end virtualization solution based on Hyper-V is about one-third that of VMware for equivalent functionality.

Together, Microsoft Hyper-V, System Center Virtual Machine Manager and Citrix Essentials for Hyper-V deliver all the capabilities you need for advanced virtualization management.

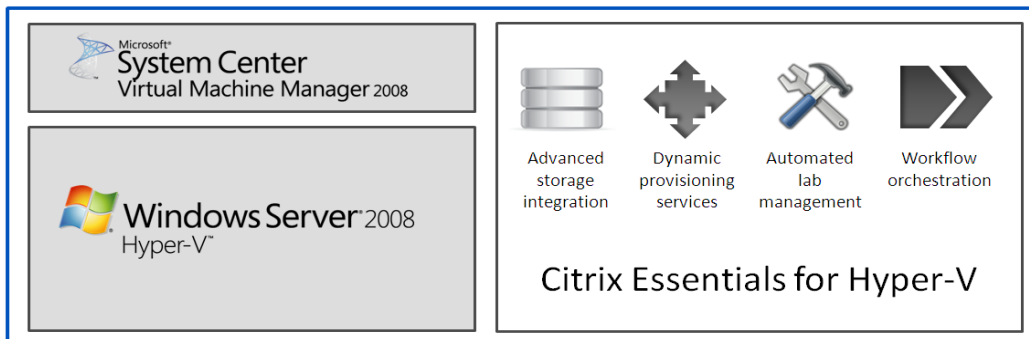
## Challenge #5—Efficient management of desktop infrastructure

Virtual desktop technologies have the potential to completely change the economics of delivering desktop computing to employees. However, IT organizations need to make sure the value of desktop virtualization is not diminished by potential increases in storage cost and complexity. Desktop virtualization projects can multiply storage and management burdens by introducing thousands of new, centrally managed desktop images. The storage impact can be severe when desktops require customization for individual users.

## Solution #5—Storage reduction technologies with Citrix Essentials for Hyper-V

The StorageLink capabilities of Citrix Essentials for Hyper-V help organizations reduce storage cost and complexity through scalable VM-based storage snapshots. Often referred to as ‘linked-clones’, dozens or hundreds of storage snapshots of a single parent desktop VM can be quickly created using StorageLink resulting in virtual desktop images that all share a common source image. After initial creation, however, desktop VMs can be modified individually without changing the parent VM or any of the other linked snapshots. This allows users of Citrix® XenDesktop™ and Microsoft VDI to offer a traditional, customizable desktop user experience with IT efficiencies that result from centralized image management.

The StorageLink capabilities of Citrix Essentials for Hyper-V allow organizations to reduce storage costs associated with virtual desktops without losing the flexibility to offer end users the desktop experience they’re after.



## About Citrix Essentials for Microsoft Hyper-V

Citrix Essentials for Microsoft Hyper-V extends Hyper-V by adding seamless storage integration, dynamic provisioning services, lab and stage management, and workflow automation capabilities that allow infrastructure and operational efficiencies far beyond basic consolidation. Citrix Essentials for Hyper-V helps build scalable, manageable virtual infrastructures that allow organizations of any size to realize the full potential of a virtualized environment with Hyper-V.

Citrix Essentials for Hyper-V provides customers with a powerful set of advanced virtualization management capabilities that extend the enterprise management capabilities of Hyper-V and System Center to help make virtualized environments more scalable, more manageable and more agile.

## Take charge now

Don't let storage complexity, server sprawl or hidden costs of virtualization reduce the return on your investment in server virtualization. Make sure your virtualization solution helps you deliver desktop virtualization, agile workload deployment and efficient utilization of infrastructure through advanced virtualization management. Microsoft Hyper-V, Microsoft System Center Virtual Machine Manager and Citrix Essentials for Hyper-V form an unbeatable, cost-effective combination for server farms, lab environments, storage architectures and datacenter management infrastructures.

Learn more about Citrix Essentials for Hyper-V and download an evaluation version at [www.citrix.com/ehv](http://www.citrix.com/ehv).



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### About Citrix

Citrix Systems, Inc. (NASDAQ:CTXS) is the leading provider of virtualization, networking and software as a service technologies for more than 230,000 organizations worldwide. Its Citrix Delivery Center, Citrix Cloud Center (C3) and Citrix Online Services product families radically simplify computing for millions of users, delivering applications as an on-demand service to any user, in any location on any device. Citrix customers include the world's largest Internet companies, 99 percent of *Fortune* Global 500 enterprises, and hundreds of thousands of small businesses and prosumers worldwide. Citrix partners with over 10,000 companies worldwide in more than 100 countries. Founded in 1989, annual revenue in 2008 was \$1.6 billion.