

SOLUTION SHOWCASE

Nutanix and Citrix Solutions for Application and Desktop Virtualization

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Abstract: Application and desktop virtualization has enabled enterprises to mobilize their workforce, improve productivity, and protect business-critical data. While these benefits are critical for the modern digital workplace, enterprises struggle to reduce the overall costs and complexity of their data centers, and from these traditional implementations. With its separate management and hardware silos being managed by separate IT teams, traditional IT infrastructure has had a direct impact on organizations, putting constraints on the ability to swiftly respond to the growing needs of the business. While organizations expand, alternative infrastructure is needed to address new business requirements, which, in turn, can add to performance, compatibility, CapEx, and operational cost issues. So, how can organizations address these seemingly daunting challenges?

The Nutanix and Citrix solution offers a predictable infrastructure (one that's been configured, tested, certified, and incorporated inside a turnkey solution) that eliminates the countless hours once needed for IT to configure, test, and deploy applications and desktops. There is no longer a need for overprovisioning resources since this solution can accommodate the dynamic needs of a business.

Organizations looking for a means to bring IT's focus back to favorable economics, streamlined management, and scalability, while also maintaining a focal point on an enhanced user experience, would do well to look at the Nutanix and Citrix solution that leverages Nutanix Acropolis and, more specifically, Acropolis Hypervisor and a complete Citrix workspace.

Overview

The mobile workforce is growing stronger every day. With business being transacted anytime, anywhere, and from any device, employees expect 24/7 access to the applications and data they need. IT organizations have their work cut out for them, tasked with improving employee productivity, managing the infrastructure, protecting business-critical data, and mitigating risk. While application and desktop virtualization has helped address these IT challenges, it has also created additional challenges, such as managing VM sprawl and the underlying hardware architecture that includes separate management silos for compute, networking, and storage components. With separate IT teams managing separate areas containing separate resources, the entire process is inefficient, costly, and prone to human error. And while organizations expand, additional hardware is needed to address new business requirements, which, in turn, can add to performance, compatibility, CapEx, and operational cost issues. So, how can organizations address these seemingly daunting challenges?

Enter hyperconvergence.

Benefits of Hyperconvergence

Hyperconvergence is the integration of IT infrastructure components within a single-server, software-defined environment (think newest enterprise class servers, flash storage performance, and larger capacity spinning drives with small footprints). By layering specially engineered software on top of standard x86 servers, organizations are able to receive efficient, cost-effective virtualized infrastructures. The server turns into a scale-out infrastructure building block, incorporating built-in virtualization technology, self-contained storage, and an integrated management interface. Hyperconvergence offers businesses a viable approach that embraces orchestration and automation, leverages the advantages of cloud delivery, and is focused on improved end-user productivity. A hyperconverged infrastructure delivers a number of compelling benefits to organizations across the board, including simplified management, improved time to value, and increased efficiency, which translates into saving countless hours designing, configuring, and testing servers, networks, and storage subsystems.

A hyperconverged infrastructure offers:

- **A turnkey solution.** Since most hyperconverged infrastructures can be turnkey solutions, organizations will be able to quickly appreciate simplified management and realize faster time to value. With a hyperconverged infrastructure, everything resides inside a single appliance, and server, storage, and networking can be scaled on an appliance-by-appliance basis. Now that IT no longer has to spend hours configuring and deploying desktop infrastructures, it can focus on more important matters such as identifying ways to increase business revenue, profitability, and productivity.
- **Predictable infrastructure.** A hyperconverged infrastructure provides organizations with an infrastructure that is predictable—meaning that the infrastructure has been configured, tested, and certified ahead of time. Everything that needs to be configured is already incorporated inside that infrastructure.
- **Accommodations for dynamic business needs.** Traditionally, growing the business involved buying large quantities of server, storage, and networking resources. Organizations could not accurately calculate how much of what resource they would actually need as the business grew, so they overprovisioned, i.e., increased expenses for things they weren't sure would even be necessary.

With its modular scaling, a hyperconverged infrastructure can readily accommodate the dynamic needs of a business. While desktop delivery may start out small in an organization, as the needs of the business change, the organization will require the ability to quickly scale to meet growing demands. With a hyperconverged infrastructure, nodes can be added one at a time, meeting the requirements of the business as they arise.

The Challenges of Application and Desktop Virtualization

There is too much complexity in traditional hardware infrastructure as a whole. Traditional virtualized infrastructures depend on siloed hardware and software components, each with their own management interface that requires dedicated personnel with specialized skill sets. From the complexity of the server, storage, and networking components, to the inability to scale independently from server to server, to the unpredictability of capacity and performance, there is nothing easy or efficient about traditional hardware infrastructure—especially for application and desktop virtualization deployments.

From a performance perspective, the traditional server and storage systems were not optimized to run applications and desktop virtualization—thus providing end-users with less than optimal experiences. And the economics are not feasible.

Traditional infrastructure is expensive, and organizations must over-scale capacity because they don't know what their needs might be tomorrow.

So, how can the IT organization be a lean, mean machine when the existing infrastructure management model is broken? It's no wonder that ease of infrastructure and virtualization management is the top driver for organizations considering hyperconverged solutions.¹

A hyperconverged solution allows IT to take an application or desktop environment and bring it right inside the data center so that IT has the ability to control and manage the application/desktop, simply and easily. By doing this, IT is able to protect and secure business-critical data (a challenge shared by all organizations), and provide end-users with an enhanced user experience, seamlessly delivering a user's own desktop to him, on his own device, no matter where he is and over any network.

The Nutanix and Citrix Solution for Application and Desktop Virtualization and Delivery

Nutanix, the next-generation, enterprise computing company, combines compute, virtualization, and storage into a single, software-driven computer platform to bring simplicity to the data center, providing organizations with predictable performance, linear scalability, and cloud-like infrastructure consumption. Its highly distributed architecture leverages software intelligence to create a fully integrated compute and storage environment that is completely software-defined, eliminating the complexity of traditional SAN and NAS environments and their reliance on costly, special-purpose hardware that often requires specialized IT personnel.

Used by more than 100 million users globally, Citrix solutions unite virtualization, mobility management, networking, and SaaS solutions, powering business mobility through secure mobile workspaces. Citrix solutions provide end-users with access to applications, data, and communications on any device over any network, and cloud.

Advantages of Citrix Application and Virtual Desktop Infrastructure (VDI) Running on Nutanix

With the Citrix validated solution for Nutanix, organizations can provide an improved end-user experience for a wide variety of users, using hosted shared, pooled, or dedicated desktops—from hundreds to tens of thousands of users.

Benefits of running Citrix on Nutanix include:

- **Simplified deployments.** Virtual desktops are ready to deploy in just a few hours, with a choice of hypervisors.
- **Predictable scale-out.** Organizations can achieve predictable VDI and hosted shared desktops (HSD) scaling, paying only for what is needed at the time.
- **Enhanced user experience.** End-users receive the right access to the right information at the right time, improving productivity and increasing user satisfaction.
- **Minimized sizing risks.** IT is able to eliminate performance risk by defining VDI in terms of end-user needs.
- **Lower costs.** Organizations can reduce CapEx as well as operational expenses with simplified VM-centric management and automation.
- **Easy integration.** IT is able to create desktops with preassigned Nutanix service levels through Citrix XenDesktop Studio using the Nutanix plug-in.

¹ Source: ESG Research Brief, [Integrated Computing Platform Trends](#), August 2014.

Application and Desktop Delivery Infrastructure

The Nutanix Xtreme Computing Platform (XCP)

The Nutanix Xtreme Computing Platform is a software-driven infrastructure that converges storage, compute, and virtualization into a turnkey appliance that can be deployed in minutes to run any application right out of the box. Organizations no longer need to overprovision since data center capacity can be expanded one node at a time, providing linear and predictable scalability with pay-as-you-go flexibility.

Integral to Nutanix XCP are Nutanix Acropolis and Nutanix Prism. Acropolis provides a distributed storage fabric, supplying organizations with enterprise storage services, and an application mobility fabric that enables workloads to move easily between virtualization environments. In addition to supporting VMware vSphere and Microsoft Hyper-V, Acropolis integrates a native hypervisor based on open source KVM technology, called Nutanix Acropolis Hypervisor (AHV). By integrating server virtualization and VM-centric storage, Nutanix provides enterprises with a streamlined software stack. The web-scale architecture and more specifically, their distributed storage fabric is inspired by technologies and architectures that originated in large Internet and cloud companies, such as Google, Facebook, and Amazon. It uses a 100% software-based, shared nothing approach to deliver storage to the supported hypervisors.

Nutanix Prism is the simplified interface for configuring, managing, and monitoring Acropolis. This comprehensive management tool provides IT administrators in organizations across the board with the ability to maintain control over expanding virtualized environments, allowing them to visualize the whole environment and identify potential problems more quickly. This control extends to the management and automation of deployment, data protection, and performance tasks and workflows. A REST-based API enables integration with third-party cloud management systems.

Citrix XenApp and XenDesktop: Core Components of Validated Solutions

Organizations are using Citrix XenApp and XenDesktop in a variety of industries to give end-users quick and easy access to their applications, data, and desktops.

Citrix XenApp is a leading solution for application and desktop delivery, providing organizations with the flexibility to adapt to the changing needs of the business, reduce the risk of data loss, and prevent unwanted intrusions while providing end-users with an enhanced experience. XenApp enables secure, remote access to Windows applications and server desktops from any device over any network, on demand. Business-critical information, applications, and desktops are secured in the on-premises data center.

Citrix XenDesktop delivers individual Windows, web, and SaaS applications, and desktops as secure mobile services. With XenDesktop, IT can mobilize the business, while reducing costs by centralizing control and security for business-critical data. Incorporating the full power of XenApp, XenDesktop can deliver full desktops by integrating several distributed components with advanced configuration tools that simplify the creation and real-time management of the virtual desktop infrastructure (VDI) with a device-optimized look and feel.

Citrix StoreFront

Citrix StoreFront is an enterprise application store that enables IT to deliver an enhanced user experience to end-users—allowing them to work anywhere, on any device, with instant access to business-critical resources. StoreFront gives IT central control, improves security, and simplifies deployments, making it easier for IT to manage and scale multi-site XenApp and XenDesktop environments.

Citrix NetScaler VPX

Citrix NetScaler VPX is a web application delivery virtual appliance that helps IT to optimize the end-user experience by accelerating web application performance and delivering high availability for applications by dynamically responding to

changing workloads (scaling up, out, and in), while lowering data center costs by offloading server functionality. Deployed directly in front of web and database servers, NetScaler delivers scalable solutions that combine L4-7 load balancing, high-speed data compression, content caching, SSL acceleration, application flow visibility, and an integrated application firewall into a single, easy-to-use platform.

Citrix ShareFile

With the burgeoning trend of bring your own device (BYOD), organizations are looking for ways to provide employees with a productive end-user experience, while protecting their business-critical data *and* maintaining compliance with regulatory requirements. But in order for IT to prevent employees from turning to non-corporate-sanctioned file sharing tools, IT must provide users with a secure, easy-to-use solution. Citrix ShareFile answers the needs of a swiftly growing mobile workforce, with an enterprise file sync and share tool for users across all corporate and personal devices—offering easy collaboration for improved business productivity, while enabling IT to protect corporate data and retain control of the IT environment.

Nutanix and Citrix Workspace Cloud

Nutanix hyperconverged infrastructure (HCI), built on Nutanix Acropolis, in conjunction with Citrix XenApp and XenDesktop, offers a complete solution for application and desktop virtualization that enhances security, enables workforce mobility, and lowers the cost and complexity of application, desktop, and infrastructure management. Citrix Workspace Cloud offers simple cloud-based management, which gives IT control over where application workloads are run and where data is stored.

Whereas many cloud services place management and workloads in one cloud, Citrix Workspace Cloud allows IT to retain control of where to locate and manage workloads—on-premises data center, public, or private clouds—with the ability to align with their specific security, compliance, data sovereignty, or governmental requirements. The combination of Citrix Workspace Cloud and Nutanix XCP provides IT organizations with fast deployment, simplified management, and a turnkey infrastructure stack for virtual applications and desktops. By decoupling and focusing on running the end-user desktops and applications, IT truly gains a simple solution without the day-to-day tasks of maintaining the infrastructure services.

Common Business Scenarios across Industries: The Case for Application and Desktop Delivery

When it comes to VDI, more often than not, organizations are finding themselves experiencing one of the following scenarios, ranging in experience from “not quite there yet” to “not sure where to go now.”

Scenario #1: We haven't tried VDI yet, but realize its value / We're just starting a proof of concept with VDI.

With VDI, organizations can accelerate their rate of success and reliability over traditional infrastructures. Customers should be looking at the Nutanix and Citrix solution because it's very predictable, simple to deploy, and provides quick time to value. Additionally, IT can deploy a VDI with existing generalist IT staff, as opposed to adding extra personnel trained in specialized skill sets, thus saving time and resources.

Scenario #2: We have existing investments inside the hypervisor, but we're running into complexity.

Other organizations have existing investments inside the hypervisor and may even have a VDI infrastructure, but are still running into complexity. They'd like to scale further, but high licensing costs have them struggling to come up with a cost-effective solution. The Citrix/Nutanix solution offers favorable economics. The solution is able to scale dynamically with the changing demands of the business, and total licensing costs are reduced since the Citrix/Nutanix solution uses the integrated Acropolis Hypervisor. Organizations can leverage the scale-out model, enjoying operational efficiency and

reduced costs. Because the solution is simple to deploy, it's easy for IT generalists to work with, and also cost-effective since there is no need for additional, specially trained personnel.

Scenario #3: We're migrating from older versions of Citrix XenApp and XenDesktop

Some organizations would like to migrate from older versions of Citrix XenApp and XenDesktop. They're looking to refresh the older version they're running on, or maybe refresh the operating system. This is an opportunity for IT to look at a new way to deploy infrastructure—a hyperconverged infrastructure. This solution certified from Citrix and Nutanix enables organizations to take their existing XenApp and XenDesktop environments, and look at how a hyperconverged infrastructure can simplify the means by which they deploy, operate, and manage the environment.

The Citrix/Nutanix Advantage

Cost and complexity are two of the key elements compelling organizations to move from a traditional infrastructure to a hyperconverged one. With Nutanix HCI built on Nutanix Acropolis, and combined with Citrix XenApp and XenDesktop, organizations can enjoy a fully supported solution for application and desktop virtualization.

Eliminate Design Variables

The Citrix/Nutanix solution provides a complete virtual application and desktop delivery system by integrating several distributed components with advanced configuration tools, which simplify the creation and real-time management of app and desktop virtualization and delivery.

Deploy in Hours Not Days

Unlike traditional infrastructures that require days to weeks to configure, test, and deploy, the Citrix/Nutanix solution streamlines and simplifies the process, allowing IT to have the hyperconverged infrastructure up and running in hours, with overall deployment taking less than one day—saving time and resources, while increasing business productivity. As a result, IT can provision and deploy desktops rapidly, giving users a seamless and improved user experience.

Start Small and Scale Up

With Citrix XenDesktop on the Nutanix solution, organizations can start small and scale up incrementally, adding individual nodes as the needs of the business grow, or scaling up from hundreds of desktops to thousands of desktops without any impact to performance, which gives end-users a consistent, enhanced experience. With a XenDesktop/XenApp implementation, businesses will enjoy faster time to value because they'll no longer need to spend money on overprovisioning.

Improve Operational Management

Organizations no longer need to struggle to find viable ways to streamline management, improve predictability, and increase operational efficiency. With a XenApp/XenDesktop environment, businesses are able to implement a common infrastructure platform for multiple XenDesktop or XenApp deployments—simplifying deployment and management, while decreasing costs. An intuitive management interface serves as a single pane of glass for IT to easily monitor and manage an expanding environment, while also being able to quickly identify and mitigate or eliminate potential risk.

Eliminate Risk with a Simplified Infrastructure

Citrix-validated solutions for Nutanix provide organizations with high availability and reliability, allowing IT to deliver responsive desktops and applications regardless of scale or deployment type. The Nutanix VDI Assurance service eliminates performance risk, giving businesses the server and storage resources they require to provide end-users with a consistent,

enhanced experience. The service allows IT to scale based on the needs of their end-users, eliminating the costs of overprovisioning.

Citrix XenDesktop delivers individual Windows, web, and SaaS applications, and desktops as secure mobile services. With XenDesktop, IT can mobilize the business, while reducing costs by centralizing control and security for business-critical data. To further help organizations lower their risk associated with deployments, Nutanix VDI Assurance service combines an upfront workshop to create vetted designs for application and desktop virtualization based on best practices with periodic health checks and resource assurance to practically eliminate the risk associated with ongoing patching, upgrades, and scaling.

Lower Total Cost of Ownership (TCO)

When it comes to managing virtual desktop infrastructure, complexity and expense are two common complaints of many organizations looking to cut costs and simplify the IT infrastructure. Hypervisor licensing expenditures can considerably grow the cost of application and desktop virtualization. But since the Acropolis Hypervisor is integrated with Nutanix HCI solutions and supported by Citrix for XenApp, XenDesktop, NetScaler VPX, ShareFile, and CWC, virtualization licensing costs can be significantly reduced, if not eliminated. In addition, with the Citrix and Nutanix solution, IT can now run application, desktop, and server virtualization on the same Nutanix cluster, making more efficient use of resources. The Nutanix Prism interface eliminates the need for IT to manage a separate virtualization stack, making it easy for IT to configure, manage, and monitor a virtualized desktop infrastructure.

The Bigger Truth

Enterprises across the board are facing high cost and complexity in their application and desktop virtualization space due to the misalignment between infrastructure, virtualization, and workspace delivery, inclusive of applications, desktops, and data. With its separate management and hardware silos, traditional IT infrastructure has had a direct impact on organizations, putting constraints on the ability to swiftly respond to new business opportunities, and the growing needs of the business. This rings especially true in virtualized infrastructures, which are great at consolidating application workloads for potential CapEx savings, yet with the complexities around management and IT administration, operational costs can rapidly increase.

Consolidated infrastructure management enables organizations to reclaim control of a sprawling virtualized infrastructure. Rather than focusing on routine infrastructure administration, IT can now concentrate on more important initiatives such as ways to grow the business, generate revenue, and improve productivity. Capacity savings through storage optimization technology allows organizations to eliminate the practice of overprovisioning server, storage, and networking resources—adding capacity and performance only when necessary, thus saving on resource consumption.

The Nutanix and Citrix solution offers a predictable infrastructure that eliminates the countless hours once needed for IT to configure, test, and deploy applications and desktops. A joint Nutanix and Citrix solution, leveraging Nutanix Acropolis—including Acropolis Hypervisor—and a complete Citrix virtual workspace, will help data center and desktop teams bring IT's focus back to favorable economics, streamlined management, and scalability, while also maintaining a focal point on an enhanced user experience.

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