

XenApp Gets Even Better with XenServer

10 Commonly Asked Questions

Introduction

Server virtualization has proven itself to be one of the most highly transformative IT technologies in the past decade. Adopted widely in the enterprise, server virtualization has already shown how it can be successfully utilized for server consolidation, especially in areas like development and test and IT infrastructure services. Still, many Citrix XenApp customers still ponder whether server virtualization can be successfully deployed in support of their application delivery infrastructure. Are these two technologies compatible and can they be successfully combined into a useful architecture? Before answering that question, let's first consider some of the common pain points and management challenges that face XenApp customers on a daily basis.

In many respects, IT organizations are struggling with many technical and architectural challenges while facing increasingly louder demands from the business to do things faster, better, and for less money. In terms of application delivery, IT organizations know that they must deliver enterprise applications with the highest possible availability, ensure service levels, and be prepared for a wide range of internal and external business contingencies. At the same time, IT may also be searching for ways to simplify their application delivery architecture or simply to rein in costs which have spiraled out of control due to server sprawl, heterogeneity, and management complexity. As a result, IT is gravitating toward new ways to reduce their operating expenses through consolidation, simplification, or just better utilization of existing resources.

This document will answer some commonly asked questions about server virtualization, provisioning, and application delivery as well as begin to articulate a strategy that you can use to successfully leverage these technologies with Citrix XenServer™ and Citrix XenApp™ in your own environment.

1. Why should I virtualize my Citrix XenApp server farm?

For a XenApp customer, server virtualization offers a unique set of benefits which specifically address common pain points in many deployments. Specifically, virtualization enables organizations to introduce greater degrees of **application availability** – providing the applications to their end users when they need them as well as ensuring far greater uptime and resiliency; **better manageability** – being able to manage and provision XenApp servers across your entire environment of physical and virtual infrastructure ; **more flexibility** – for testing, development, production, and DR environments, and for flexibly provisioning new XenApp servers as business demands dictate as well as being able to easily move back and forth from physical to virtual infrastructure for disaster recovery; and finally **greater consolidation** – maximizing your investment in existing IT resources through greater utilization and isolation allowing consolidation of underutilized XenApp servers and application silos.

2. Why should I consider Citrix XenServer Platinum Edition as the preferred server virtualization solution for Citrix XenApp?

In addition to being a full-featured server virtualization platform suitable for a wide-range of application workloads, Citrix XenServer Platinum includes a number of features and optimizations specifically designed for XenApp environments including:

Performance-optimized XenApp Server Templates

Introduced in Citrix XenServer 4.1, the in-built XenApp server templates allow XenServer administrators to easily configure performance-optimized virtualization for their XenApp server farms.

The performance optimizations in XenServer are significant. According to an independent benchmark published by The Tolly Group¹, the 64-bit XenApp template in XenServer 4.1 introduces a

virtualization overhead of just 7.6% for 64-bit XenApp 4.5 Feature Release 1 workloads (as measured by the degradation in the number of concurrent users for a single virtual vs. physical XenApp server). Furthermore, internal testing by Citrix showed that in certain scenarios XenServer can support up to 70% more concurrent users per virtualized XenApp server vs. a leading server virtualization competitor.

Virtual and Physical Server Provisioning

Citrix XenServer Platinum Edition includes server provisioning capabilities allowing IT administrators to stream server workloads on-demand, increasing resource flexibility while reducing overall storage requirements and minimizing costs associated with platform management and server provisioning. Using the provisioning feature in XenServer Platinum Edition, administrators can create a virtual image of a server workload – the operating system and its applications – and stream it on-demand from network storage to either physical or virtual servers.

3. How does virtualizing XenApp with Citrix XenServer Platinum Edition provide higher application availability?

In traditional XenApp server deployments, application workloads run directly on bare-metal servers. While this typically ensures best possible application performance, it also means that hardware maintenance events impact application uptime and availability. For example, in the event IT needs to replace a hardware module in a server, they must schedule a maintenance window in order to power down servers to replace the faulty or outdated component. During this window, the applications and user sessions running on that server are disrupted thus impacting availability of the application.

The live migration feature (XenMotion) of Citrix XenServer decouples hardware maintenance events from application uptime by making virtualized application workloads portable across multiple physical servers. With XenMotion, actively running virtual machines can be migrated at run-time from one physical server to another with literally no application interruption. This allows critical XenApp servers and applications to remain

¹ Please visit <http://www.tolly.com/ts/2008/Citrix/XenServer%20Enterprise%20Q4.1.0/Tolly208304CitrixXenServer.pdf> for more details.

running, even if an entire server needs to be taken down, enabling zero-downtime maintenance. Live migrations of XenApp virtual servers are seamless – they occur at run-time via a simple drag-and-drop operation and do not introduce any perceptible impact to the end-user or the running applications.

Citrix XenServer also offers in-built high-availability for virtual machines as well as third-party fault-tolerance options². With high availability, virtual machines and their associated workloads can be automatically restarted on another physical host in the event that the original host fails. This provides the IT administrator with peace of mind that application workloads will automatically restart with zero human intervention in the event of a physical host failure.

Fault-tolerance extends the concept of high availability by adding an even higher degree of resiliency and proactive protection against component and system-level failures. Fault tolerance can protect applications continuously and ensure zero application downtime or end-user disruption even in the event of hardware failures. Fault tolerance and XenServer virtualization are two of the most cost-effective ways to introduce the highest degrees of application resiliency for your most mission-critical XenApp deployments.

4. How does virtualizing XenApp with XenServer Platinum Edition give me better manageability?

Server virtualization and provisioning can transform static datacenter environments into dynamic ones where application workloads can run across a shared pool of computing resources. For example, XenServer Platinum Edition can shift XenApp workloads across virtual and physical infrastructure as business needs demand in order to maximize resource utilization (virtual) or performance (physical). Still, while many of these promises are compelling, many IT organizations are still leery of the additional management overhead that virtualization and provisioning may bring to their XenApp deployment.

XenServer Platinum Edition has taken a unique approach to ensure simple, powerful manageability with all the benefits of a unified management

² Fault-tolerance is provided by Marathon Technology's everRun VM product.

approach. One area where XenServer Platinum Edition enhances manageability is in the management of the underlying virtualization platform. At its core, XenServer Platinum Edition provides bare-metal server virtualization allowing multiple virtual machines to run on a single physical server without the need for a heavyweight operating system. This bare-metal approach to virtualization differs significantly from earlier generation hosted virtualization solutions in which virtualization software ran atop a general-purpose operating system. This had a number of disadvantages, not the least of which was severe degradations in performance and scalability as well as the introduction of additional management overhead for the underlying host operating system. In the case of XenServer, management is simple and effective. There is no underlying host operating system to manage and management of the virtual machines is encapsulated within the easy-to-use and remarkably lightweight XenCenter management console. The XenCenter console can even be made available as a published XenApp application.

With the provisioning capabilities of Citrix XenServer Platinum Edition, XenApp workloads can be delivered on-demand rather than physically installed on individual servers. In other words, servers are stateless until a XenApp workload is streamed to it. This concept can be extended to other types of workloads enabling the delivery of any application workload to any server on demand. Virtual and physical servers can even share the same virtual disk thus dramatically reducing the amount of network storage required as well as unifying server provisioning across physical and virtual infrastructure.

5. How does virtualizing XenApp with XenServer Platinum Edition give me more flexibility and business agility?

With so many complex and multi-tiered XenApp deployments, many customers are looking for greater flexibility when managing development, test, and production environments. For example, trying to keep a XenApp test environment in synch with a production environment, let alone expending the resources to fully replicate each environment, is a thankless task. This difficulty is compounded by the fact that test environments are not the main focus of the business. Test environments are inherently temporary and discarded once they've

served their purpose. Furthermore, the core focus of IT is centered on the production environment with the most stringent service level agreements and highest end-user expectations. It is this very practical contradiction which causes XenApp testing and production environments to fall out of synch thus making it more complicated, time-consuming, and expensive to deliver new applications.

XenServer Platinum Edition helps provide greater flexibility in a XenApp environment by allowing application workloads to be streamed to physical or virtual infrastructure from a single virtual disk. This makes it much easier to maintain, manage, and update XenApp server images as well as ensure consistent process regardless of whether physical or virtual infrastructure is utilized. In many cases, IT organizations may opt to deploy XenApp on virtual infrastructure in their test environments to ensure maximum utilization of limited physical resources, but standardize on physical infrastructure in production environments for greatest possible performance or third-party ISV (independent software vendor) support. The fact that XenServer Platinum Edition can provision XenApp workloads agnostically to physical and virtual infrastructure means that there does not have to be rigid roles assigned to individual servers.

Provisioning also allows IT organizations to dramatically reduce the total number of XenApp server images that have to be maintained and it empowers organizations to switch between physical and virtual XenApp deployments quickly and easily as business conditions dictate. For example, consider the scenario of seasonal staff increases which put tremendous pressure on IT to scale out their XenApp application delivery capacity. XenServer Platinum Edition can help provision new XenApp servers dynamically thus allowing IT to rapidly scale up to meet application demands as well as scale down when demand diminishes.

Finally, Citrix XenServer Platinum Edition can help organizations streamline their approach to disaster recovery of XenApp server farms by giving IT the ability to rapidly transfer their XenApp workloads and applications from a primary datacenter to a disaster recovery site (and back again) as part of a simple business process. By leveraging the power

of provisioning and virtualization, IT organizations can shift applications from one site to another in literally minutes using a fraction of the physical infrastructure.

6. How does virtualizing XenApp with XenServer Platinum Edition allow me to achieve greater consolidation?

While many XenApp deployments are already operating at high utilization rates and may not be good candidates for consolidation, there are still several common scenarios in which IT organizations can achieve meaningful consolidation of their XenApp server farms with XenServer Platinum Edition. For example, many XenApp administrators discover that they can consolidate some number of underutilized XenApp support and infrastructure servers. In many XenApp deployments, there may be the need for a specific standalone component, such as a Web Interface or licensing server. In some cases, these servers will rarely, if ever, be highly utilized, but still consume the same amount of power, cooling, and datacenter real estate as more aggressively utilized systems. As a result, these support and infrastructure servers often make excellent candidates for virtualization allowing the XenApp administrator to achieve consolidation without impacting application performance.

Another opportunity for consolidation is virtualizing silos of 32-bit XenApp servers and consolidating them on a few 64-bit servers running XenServer. There are a number of reasons why administrators pursue this type of consolidation. Firstly, consolidation of 32-bit servers on a 64-bit virtualization platform allow the XenApp administrator to break through the 4 GB memory barrier imposed by 32-bit platforms. With 64-bit x86 servers shipping from the factory with 32, 64, or even 128 GB of RAM pre-installed, virtualization also provides the opportunity to consolidate a large numbers of relatively small 32-bit XenApp workloads on a handful of larger 64-bit servers. More importantly, for organizations which are not ready to migrate off their legacy 32-bit applications, virtualization allows them to conveniently leverage the capacity of 64-bit servers without dictating an expensive and complex forklift upgrade for the underlying applications.

Finally, virtualization with XenServer Platinum Edition allows XenApp administrators to consolidate rarely utilized application silos. Again, multiple application silos can be isolated and consolidated as unique virtual machines running on a single host server. Depending upon the prevalence and footprint of these XenApp application silos, the savings in power, cooling, and real estate achieved by virtualization can be quite significant.

7. What are some of the things I should consider before going down the server virtualization path?

When building a virtualized XenApp farm, the same considerations for dealing with the line-of-business owners to build the XenApp solution apply. So, organizations will have to account for the very same things they had to with a physical implementation.

The same applies from a security viewpoint. In some instances the security considerations are more important in a virtual state. This is because organizations need to make sure those virtual machines are not crossing over security boundaries.

Regulatory requirements such as Sarbanes-Oxley are going to have to be revisited again when going down the path of virtualizing XenApp; these requirements will still need to be met, as will any of the other regulations that are currently requirements in a physical XenApp environment.

Finally, many XenApp customers will discover that virtualization is not an all or nothing proposition. There may be some parts of the XenApp farm which can highly benefit from virtualization while others cannot. Your mileage will vary, but there are lots of resources to help you make the right decisions along the way.

8. If I'm interested in implementing XenServer with my XenApp solution where do I start?

What has to be considered up front is the need for a process and a path to follow in order to get to a virtualized environment. Under the right circumstances virtualizing all or part of a XenApp farm can make perfect sense.

Next, identify your goals and objectives for virtualization - for XenApp customers these could be about availability, manageability, flexibility, or consolidation. Also, remember that it's not just

about server virtualization. In a XenApp environment, there are many other things that are going to be derived as a joint benefit of virtualization and provisioning as well as the unification of virtual and physical infrastructure.

Finally, take a phased implementation approach. By utilizing all of the tools and features of XenServer Platinum Edition, including provisioning, customers can very easily put together a roadmap for delivering a more agile and responsive XenApp environment. More importantly, it's not unreasonable to expect that the future state of the XenApp environment will probably include a mix of some physical and virtual servers. Most XenApp customers will ultimately settle on a balance, or hybrid architecture, that is going to make sense for their organization.

9. Where can I find more information?

There are additional resources available which will help you get started on virtualizing and provisioning your XenApp environment with XenServer Platinum Edition, and these resources are available through your preferred Citrix Solutions Advisor including:

- "Benefits of Virtualizing XenApp with XenServer" White Paper
- "Optimizing XenApp Performance with XenServer" White Paper
- The Tolly Group Report – "Performance Evaluation of XenApp in a 64-bit Virtualize Server Environment Using XenServer"
- Your preferred Citrix Solutions Advisor will have information on reference architecture, design considerations, and implementation guides

10. How can I get started on transforming my XenApp environment with Citrix XenServer Platinum Edition?

Talk to your Citrix Solutions Advisor today so they can help you to decide the best path forward for virtualizing your XenApp farm with XenServer Platinum Edition. If you are looking for a Citrix Solutions Advisor in your area, please go to <http://www.citrixsa.365media.com/citrixsa/> and use the Solution Advisor Search function.

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