

TINTRI

Citrix® XenDesktop

Deploying XenDesktop with Tintri VMstore™

TECHNICAL SOLUTION OVERVIEW, Revision 1.1, November 2012



Table of Contents

- Introduction 1
- Before VDI and XenDesktop..... 1
- Critical Success Factors 2
 - Planning for Desktops and Applications 2
 - Server and Storage Infrastructure 2
- Solution Architecture Overview..... 3
- Rapid Provisioning, Cloning and Recomposition 4
 - Key Operations Dependent on Storage 4
- Uniquely Powerful and Efficient 5
 - Thin provisioning, In-line Data Deduplication and Compression..... 5
 - Automatic VM Alignment 5
- Additional Information..... 5
 - Tintri VMstore Overview..... 5
 - NFS and vSphere Best Practices..... 5
- Summary 6

Introduction

CITRIX XenDesktop is a leading desktop virtualization solution that delivers users' desktops and applications to their favorite devices, whenever and wherever they needed. Centralized images at the heart of a XenDesktop deployment are efficiently maintained and updated as-needed by system administrators.

XenDesktop presents desktops and applications to client devices through *Catalogs*. Whether users are accessing lightweight mobile applications or industrial strength engineering applications, the concentrated demands on the core network, server, and storage resources necessitates a closer look at how VDI works, and what steps must be taken to ensure a successful deployment.

Among the key pillars supporting a virtual desktop infrastructure, such as XenDesktop, the Hypervisor (host) servers, and networking, the storage platform serves as the foundation upon which the entire deployment is built. Poorly implemented, storage can cripple a VDI deployment. Consequently, many companies over-provision costly traditional storage in an attempt to mitigate risks.

This paper briefly discusses how Tintri VMstore can empower XenDesktop in the most demanding of VDI deployments, predictably, reliably, and cost effectively.

Before VDI and XenDesktop

The prevailing pre-VDI big picture largely consists of centralized servers, and “thick” clients, such as PC’s. The maturation of virtualization and VDI has turned the tables so that it is not only feasible to centralize rich computing experiences like Windows and other desktops; it is becoming an economic imperative.

For some companies, the cycle of purchasing, maintaining and upgrading PC hardware has become a costly and distressful exercise that leaves both management and workers frustrated. XenDesktop is designed to optimize the VDI experience on both ends. Users enjoy an improved experience, their choice of devices is expanded beyond just the PC’s are their desks, and they always have access to their data. The company saves money, and everyone sleeps better at night because the data is more secure.

Critical Success Factors

Adjusting conceptually to VDI is not difficult, but there are potential pitfalls lurking below that must be factored into the planning and deployment processes.

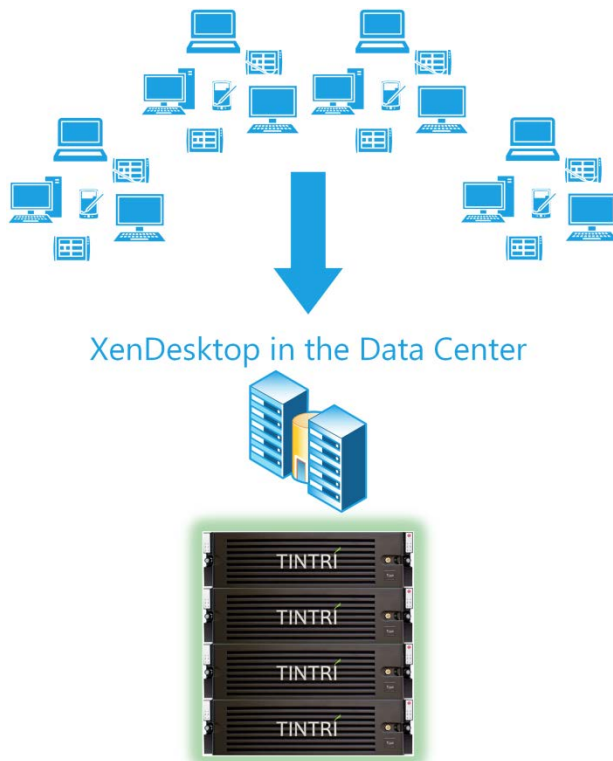
Planning for Desktops and Applications

XenDesktop users enjoy a broad level of supported software and options, but it pays to verify that legacy computing environments will work as-expected. Along with modern operating systems like Windows 7 and Windows 8, most companies still employ a collection of legacy desktop operating systems and application software.

Server and Storage Infrastructure

Moving desktop operating environments from the physical computers at workers desks to a centralized XenDesktop infrastructure means that the computing and storage activity from those desktops is also centralized. The processing and I/O of hosted virtual desktops runs on the servers and storage that comprise the XenDesktop deployment.

Figure 1: Activity that was once on various PC's becomes focused on the VDI infrastructure



A XenDesktop VDI infrastructure should be deployed with a storage platform that has the following characteristics:

- **High availability**
Redundant controllers designed to withstand multiple component failures.
- **Performance**
Read and Write from Flash with low latency, to accommodate peak VDI loads, boot storms, etc.
- **Easy to Deploy and Manage**
Simple to deploy, scale, and monitor.

Solution Architecture Overview

XenDesktop includes components designed to broker connections between clients and catalogs, to manage provisioning, and to maintain images of desktops and applications. This paper discusses only a few common components. For detailed information on XenDesktop, please visit the Citrix website: <http://www.citrix.com/xendesktop>.

Figure 2: High-level model of a XenDesktop deployment with VMware vSphere and Tintri VMstore

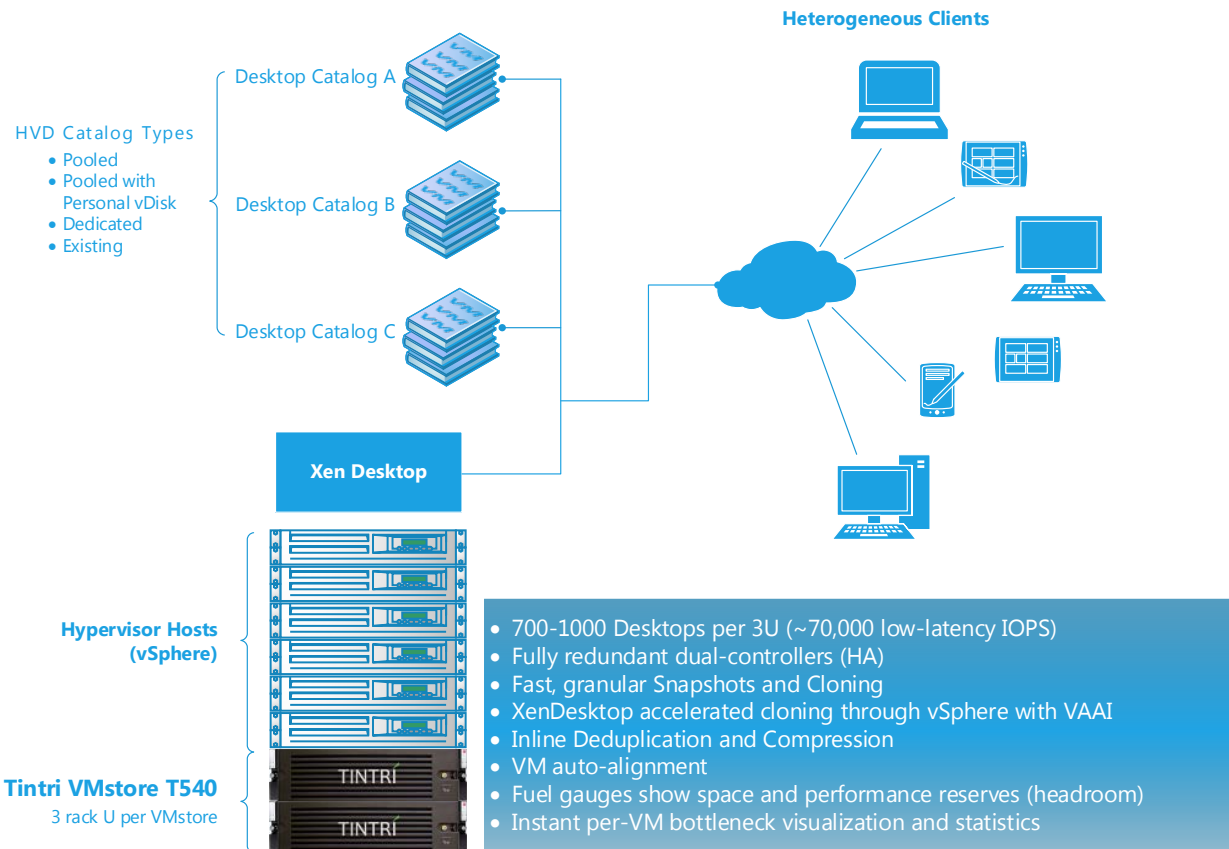


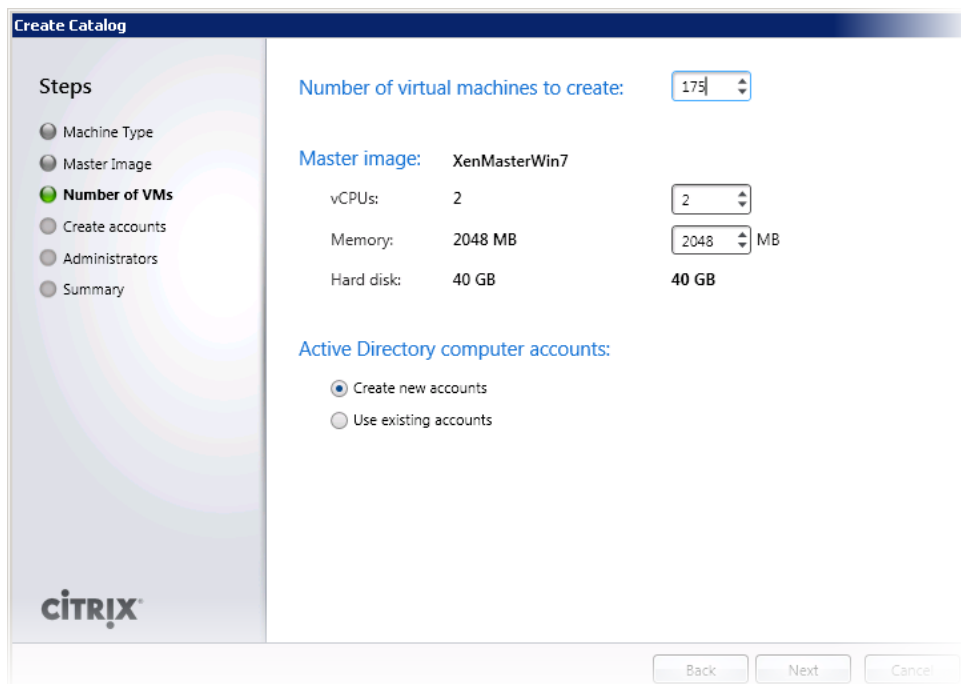
Figure 2 depicts a typical scenario in which Tintri VMstore is deployed with VMware vSphere Hypervisor servers, and XenDesktop. Tintri VMstore devices are added to vSphere as datastores, allowing vSphere and XenDesktop to leverage Tintri VMstore for VM and virtual desktop deployments and operations.

VM's that are pre-existing or created dynamically, with or without persistent user settings, are published to XenDesktop clients through Catalogs. Tintri VMstore operates as the fast, high-density, and scalable engine that empowers XenDesktop to efficiently service its clients.

Rapid Provisioning, Cloning and Recomposition

When creating or refreshing/recomposing catalogs, the creation of VMs should occur quickly, and without taxing the servers and without suffering delays related to poor storage performance.

Figure 3: Creating a new XenDesktop Catalog



Tintri VMstore has proven performance supporting 1,000 Hosted Virtual Desktops and in excess of 45,000 to 70,000 low-latency IOPS per 3-U, 13.5TB appliance. This includes the provisioning, operational, and boot storm loads associated with the virtual desktops, not just the steady state operational workloads. Factoring in the ability to handle the large “spikes” of activity that occur during provisioning and booting operations is a major consideration that cannot be overlooked.

Key Operations Dependent on Storage

- Catalog creation and provisioning operations
- User acceptance is sure to suffer if it takes an excessive amount of time to log in and gain access to their desktops
- Catalog refresh or “recompose” operations require at the very least at least one reboot operation for each virtual desktop

Storage that can't efficiently handle these loads will negatively impact the entire XenDesktop environment. Tintri VMstore is purpose-built for aggregated and demanding virtualization workloads.

Uniquely Powerful and Efficient

Tintri VMstore incorporates intrinsic features; purpose built for VM's, which combine to provide a tightly integrated, high-performance and easily managed storage platform for XenDesktop VDI deployments.

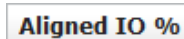
Thin provisioning, In-line Data Deduplication and Compression

Thin provisioning, inline data deduplication, and compression, are all automatic on Tintri VMstore.

Thick-provisioned vDisks are supported, but thin-provisioned vDisks are preferable because they allow for a much greater potential of automatic space savings.

Automatic VM Alignment

Tintri VMstore intrinsically understands each virtual disk, and dynamically adapts on-the-fly to each guest's internal (vDisk) file system layout when VM's are created, copied, or vMotioned onto the VMstore. No special software is required in the guests. Tintri VMstore's user interface even includes an "Aligned I/O %" column to visually verify alignment in real-time for each individual VM.



Aligned IO %

Additional Information

This paper provides a quick glance at the full power of Tintri VMstore. For more detailed information, please see the following documents on Tintri's website:

Tintri VMstore Overview

<http://info.tintri.com/vmstore-whitepaper/>

NFS and vSphere Best Practices

<http://www.tintri.com/wp-content/uploads/2012/08/Tintri-NFS-best-practices-whitepaper-Aug-2012.pdf>

Summary

Deploying a Virtual Desktop Infrastructure (VDI) with XenDesktop provides numerous benefits to organizations, system administrators, and end users, by delivering desktops and applications to devices whenever and wherever they are needed.

Two of the critical success factors that should be considered in a XenDesktop deployment are the planning and validation of desktops and application software, and the infrastructure that will provide the foundation responsible for the operational success of XenDesktop.

Tintri VMstore is purpose-built for virtualization and offers a highly available, scalable, and easily deployable storage foundation for VDI in a tightly integrated, compact, high-performance package.